Appendix G.2 Table of Contents

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SW–221: Sand Filter – Sub–Surface

SW–230: Pond Setback Details

SW–231: Pond – Secondary Riser Stack

SW–232: Pond – Emergency Overflow Spillway Weir

SW–233: Pond – Inlet / Outlet Anti–Seepage Collar

SW–234: Pond – Inflow Riser Manhole with Grate Cover

SW–250: Rainwater Harvesting

SW–260: Detention Tank Facility

SW–261: Access Riser Detail

SW–262: Detention Vault Facility

SW–263: Orifice Location Tee Riser

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– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Performance Facilities –

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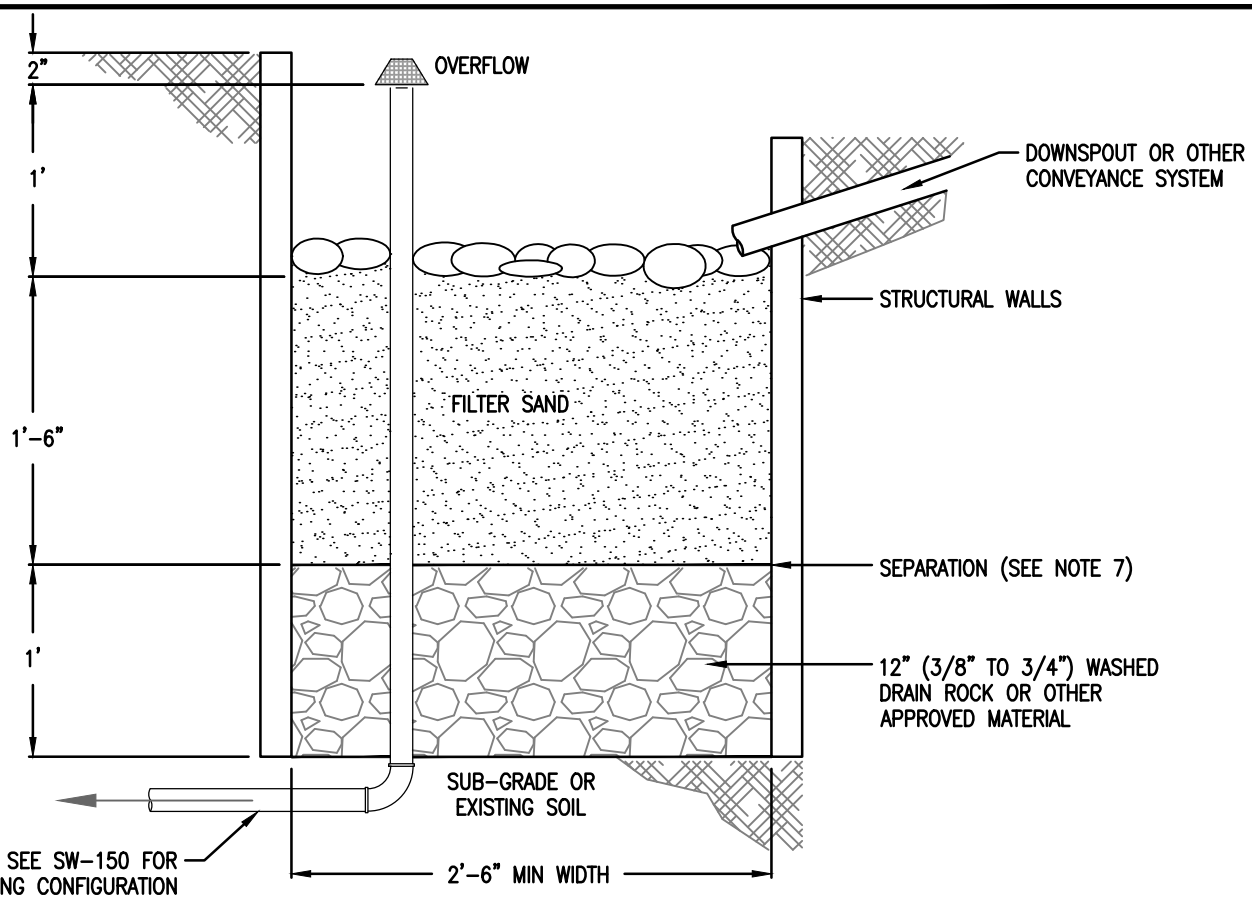
Bureau of Environmental Services



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of sand filter: 18" minimum.
   b. Depth of sand filter (from top of sand to overflow elevation). Simplified: 12"; Presumptive: 6"– 18".
   c. Slope of sand filter: 0.5% or less.

3. Setbacks (from centerline of facility):
   a. Infiltration sand filters must be 10' from foundations and 5' from property lines.
   b. Flow–through sand filters must be less than 30" in height above surrounding area if within 5 feet of property line.

4. Overflow (where required):
   a. Overflow required for Simplified Approach.
   b. Inlet elevation must allow for 2" of freeboard, minimum.
   c. Protect from debris, sand, and sediment with strainer or grate.

5. Piping: shall be ABS Sch.40, cast iron, or PVS Sch.40. 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping must have 1% grade and follow the Uniform Plumbing Code.

6. Drain rock (minimum):
   a. Infiltration sand filter: 12" of 1–1/2" – 3/4" washed.
   b. Flow–through sand filter: 8" of 3/4" washed.

7. Separation between drain rock and sand:
   Use a gravel lens (3/4 – 1/4 inch washed, crushed rock 2 to 3 inches deep) or approved equivalent.

8. Filter sand:
   a. 18" minimum.
   b. See sand spec in SWMM Exhibit 2–4.

9. Sand filter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Concrete, brick, or stone walls shall be included on foundation plans.

10. Waterproof liner: Shall be 30 mil PVC or equivalent when lining is required.

11. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

12. Inspections: Call BDS IVR Inspection Line, (503) 823–7000, for appropriate inspections.

– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

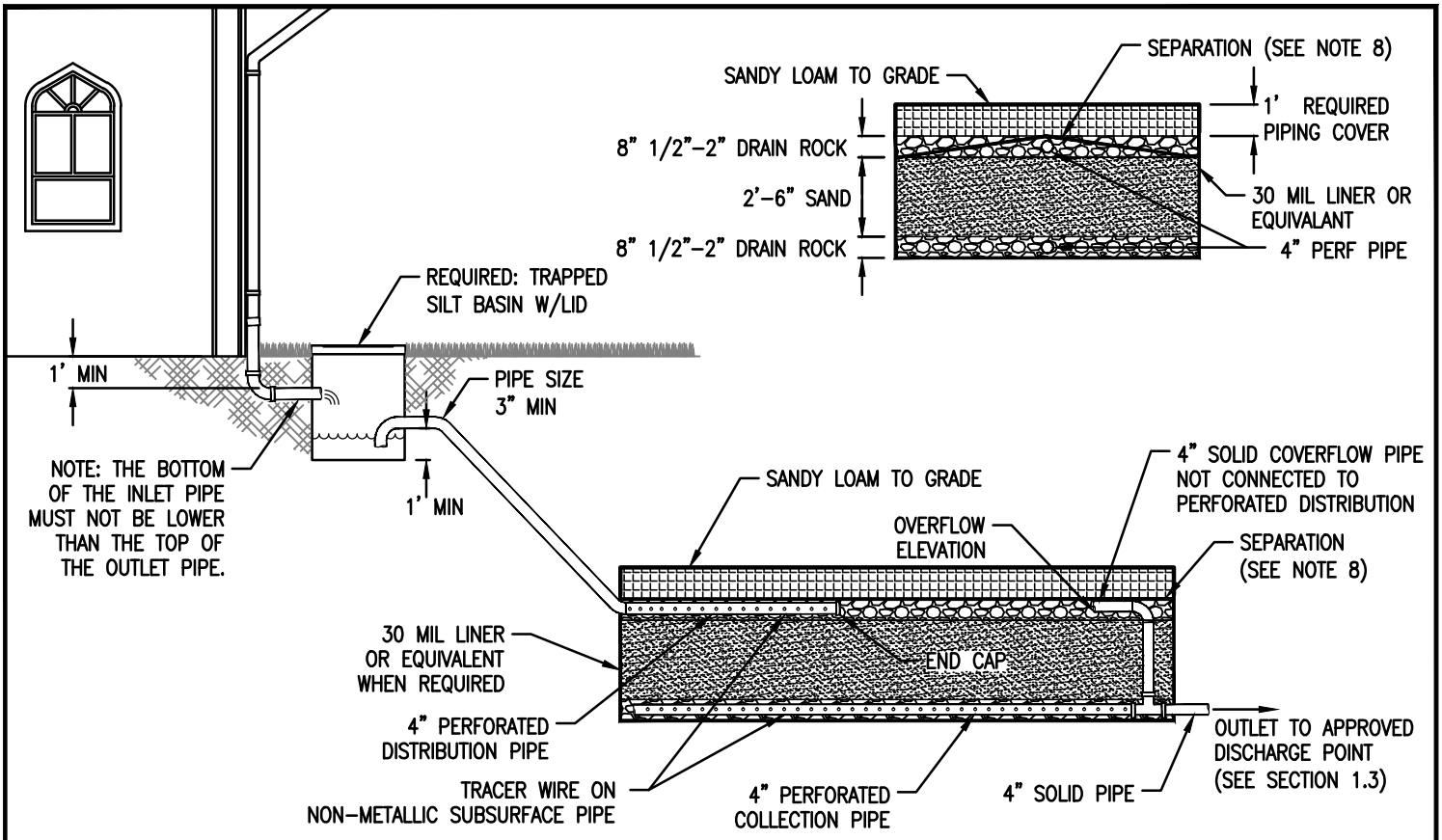
– Performance Approach –

Sand Filter

NUMBER

SW–220

Bureau of Environmental Services



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to and during construction.

2. Dimensions:
   a. Height of subsurface sandfilter: 46" from base.
   b. Depth of excavation: 58" Min. (to accommodate 12"of cover).

3. Setbacks (from centerline of facility):
   a. Infiltration facilities must be 10' from foundations and 5' from property lines.
   b. Flow-through facilities may be within 10' of foundation and within 5' of property line if properly lined.

4. Trapped silt basin required prior to inlet to subsurface sand filter.

5. Overflow: perforated collection pipe within top gravel layer connected to approved discharge point according to Section 1.3.

6. Piping shall be ABS SCH40, cast iron, or PVC SCH40. 3" pipe must be used for up to 1500sf of impervious area, otherwise 4" minimum. Piping must have 1% grade and must follow current Uniform Plumbing Code.
   a. Underdrain piping system shall consist of minimum 4" diameter collector manifold with perforated lateral branch lines.
   b. Underdrain laterals shall be placed with minimum 1% positive gravity drainage to the collector manifold.
   c. The collector manifold shall have a minimum 1% grade toward the discharge joint.
   d. Lateral spacing of collection or distribution pipes shall not exceed 10'.
   e. All laterals and collector manifolds shall have cleanouts installed, accessible from the surface without removing or disturbing filter media.
   f. Outlet to approved discharge point shall be protected from soil, gravel, or sand displacement with filter fabric or equivalent.

7. Drain rock and sand depth:
   a. 8" of 3/4" washed drain rock as base.
   b. 30" of washed sand (See sand spec in SWMM Section 2.3.3).
   c. 8" top layer of 3/4" washed drain rock over sand.

8. Separation between drain rock and sand: Use filter fabric (see SWMM Exhibit 2-4 Geotextile table) or a gravel lens (3/4 - 1/4 inch washed, crushed rock 2 to 3 inches deep) or approved equivalent.

9. Waterproof liner: Shall be 30 mil PVC or equivalent for flow-through facilities when lining is required.

10. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, for appropriate inspections.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

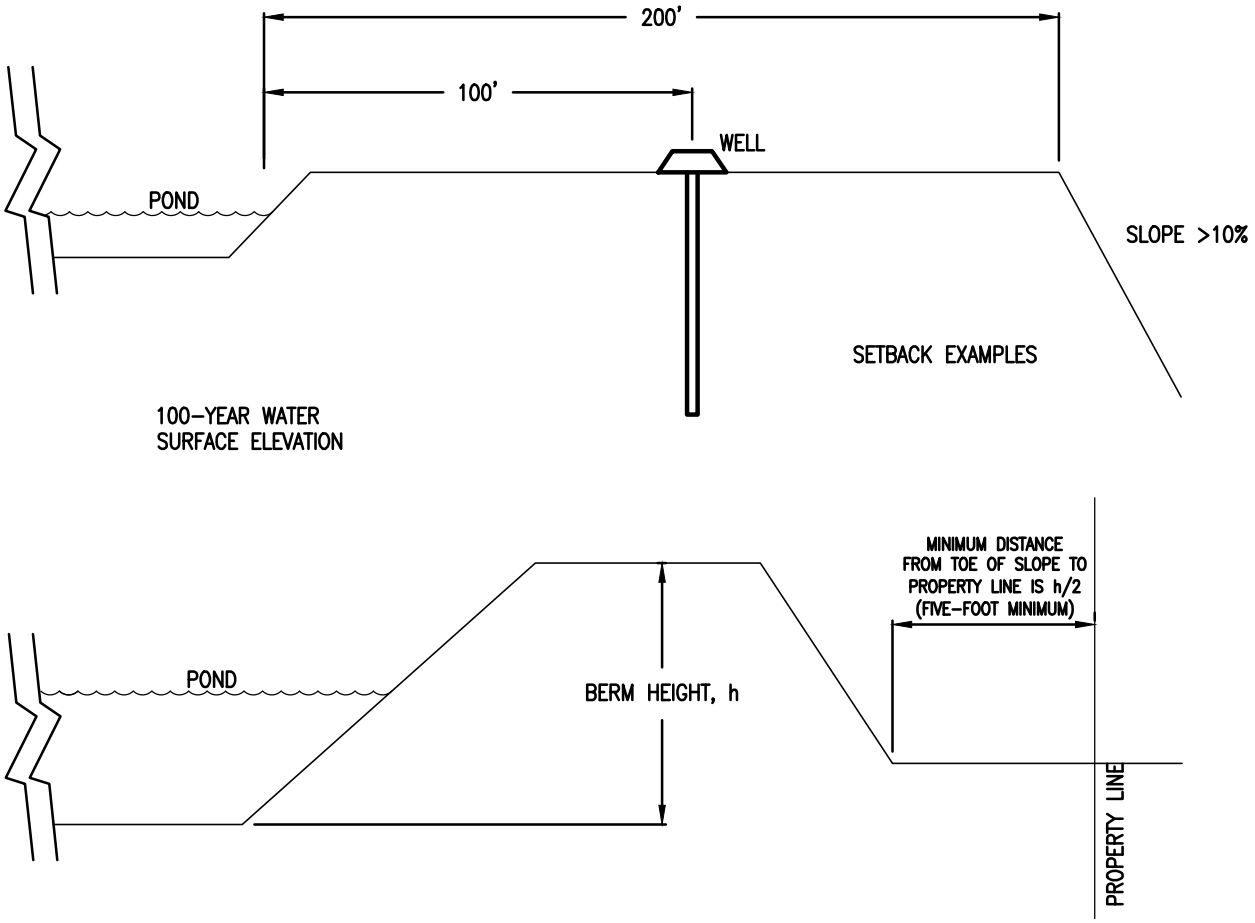
- Performance Approach -

Subsurface Sand Filter

NUMBER

SW-221

Bureau of Environmental Services



- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Performance Approach -

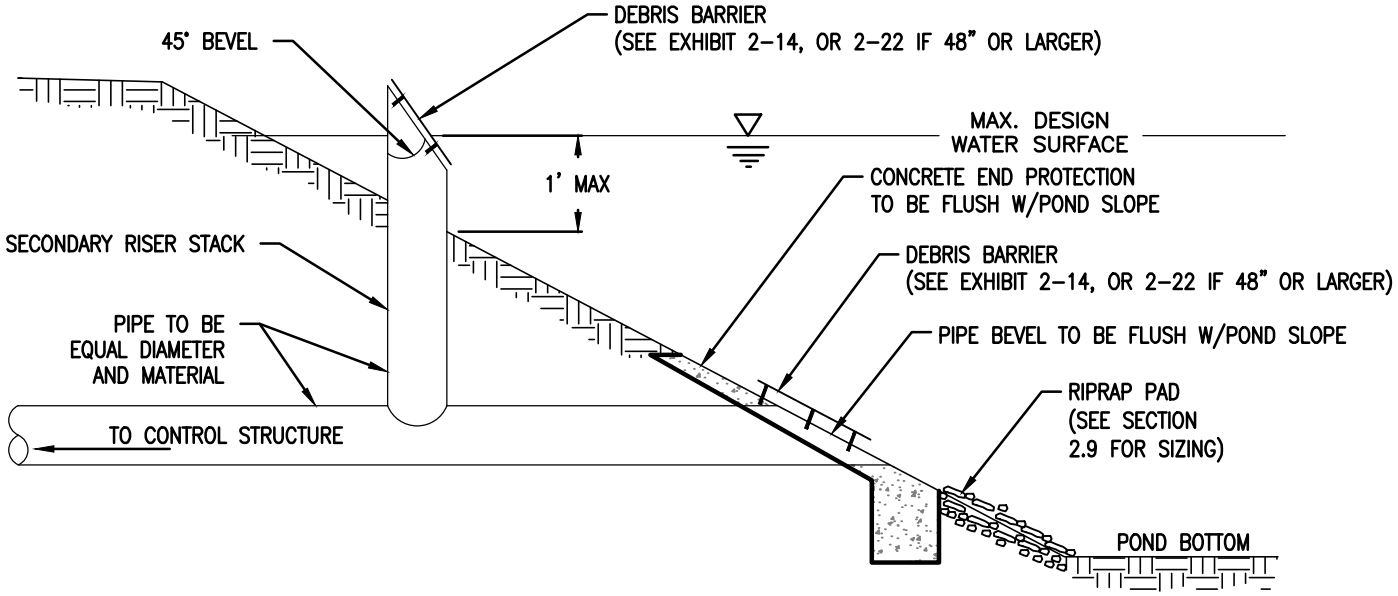
Pond

Setback Details

Bureau of Environmental Services

NUMBER

SW- 230



– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Performance Approach –

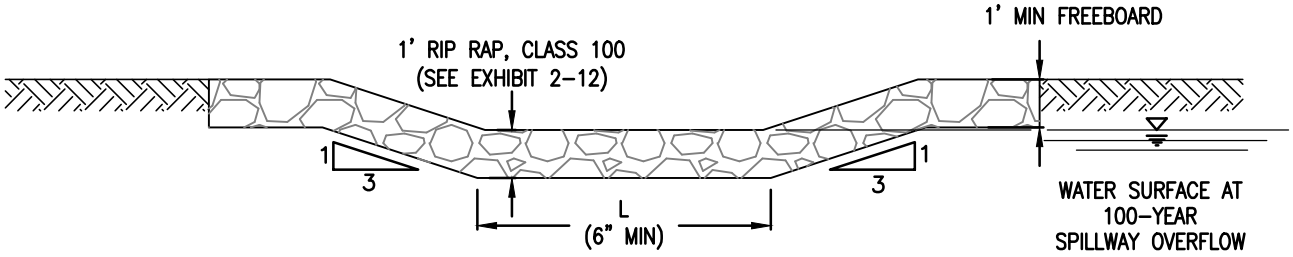
Pond

Secondary Riser Stack

Bureau of Environmental Services

NUMBER

SW– 231



- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Performance Approach -

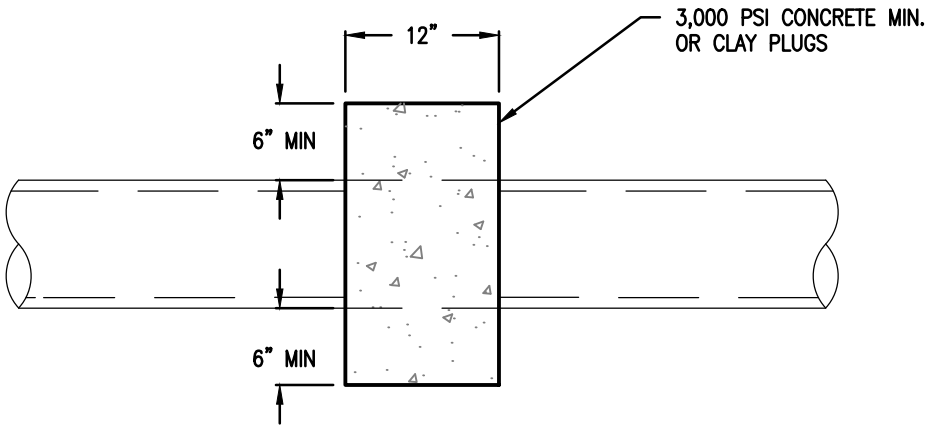
Pond

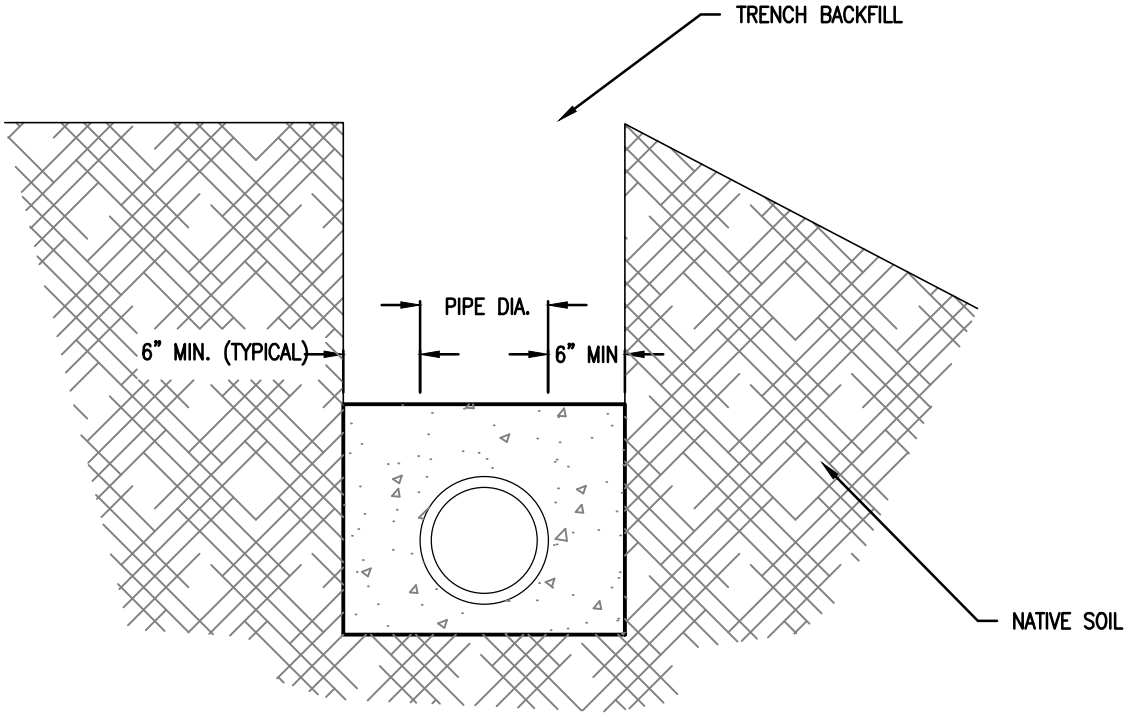
Emergency Overflow Spillway Weir

Bureau of Environmental Services

NUMBER

SW- 232





– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Performance Approach –

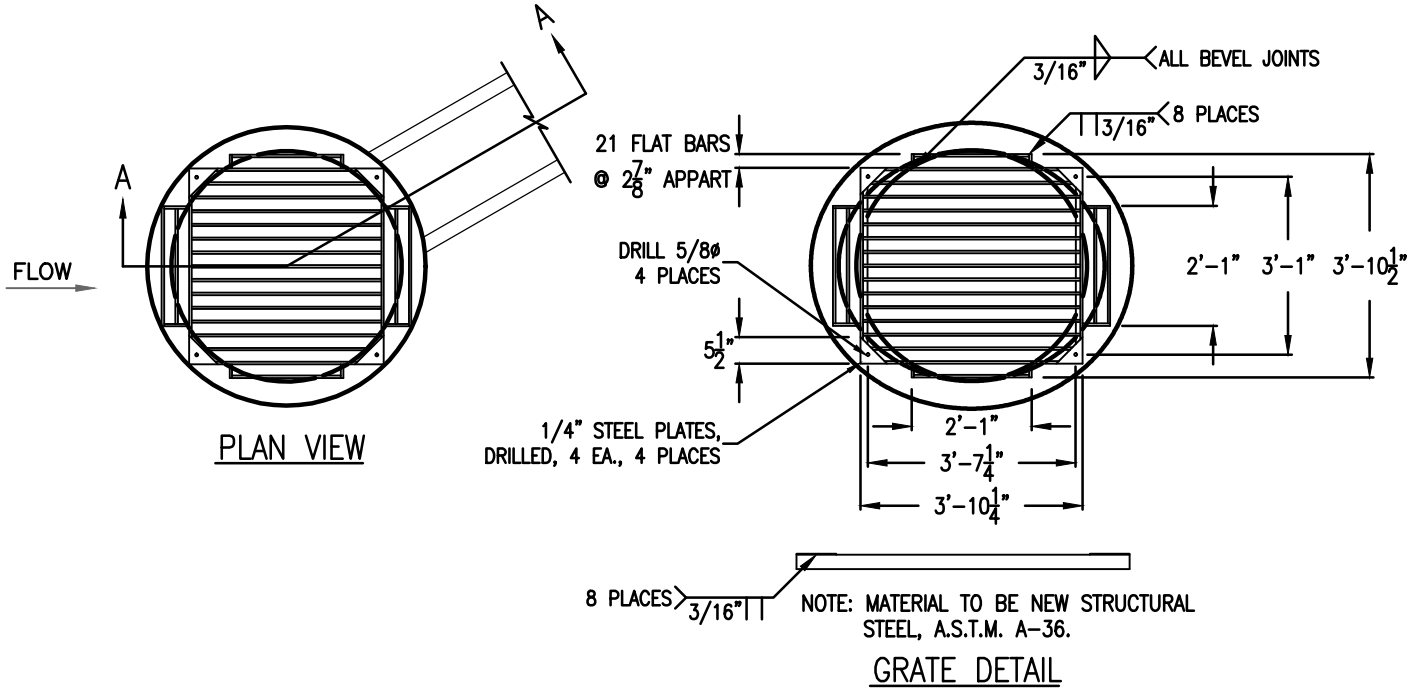
Pond

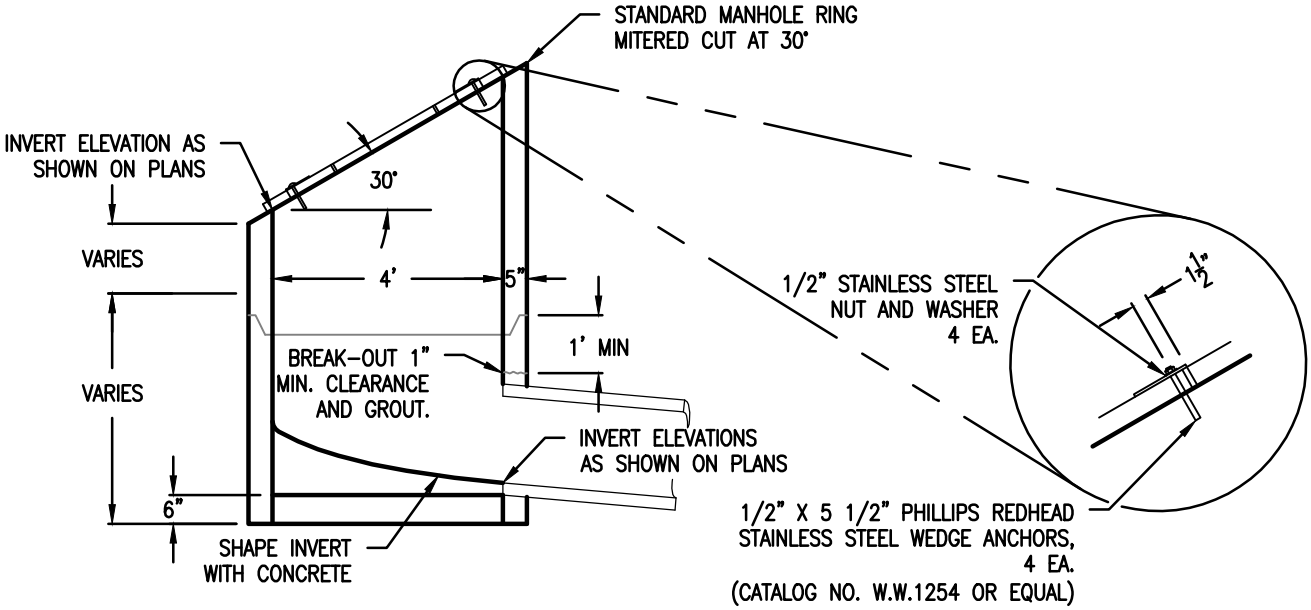
Inlet/Outlet Anti–Seepage Collar

Bureau of Environmental Services

NUMBER

SW– 233





SECTION A-A

NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF A.S.T.M. C-478.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Performance Approach -

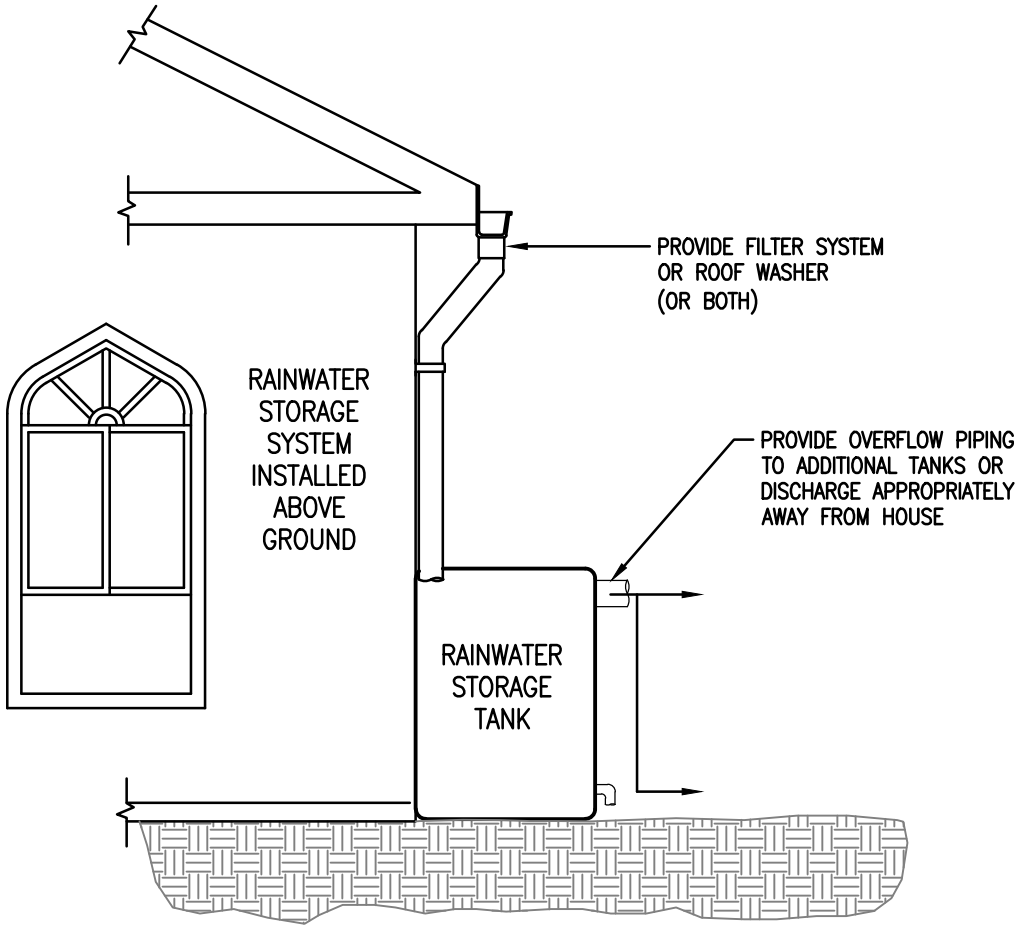
Pond

Inflow Riser Manhole w/ Grate Cover

Bureau of Environmental Services

NUMBER

SW- 234



- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

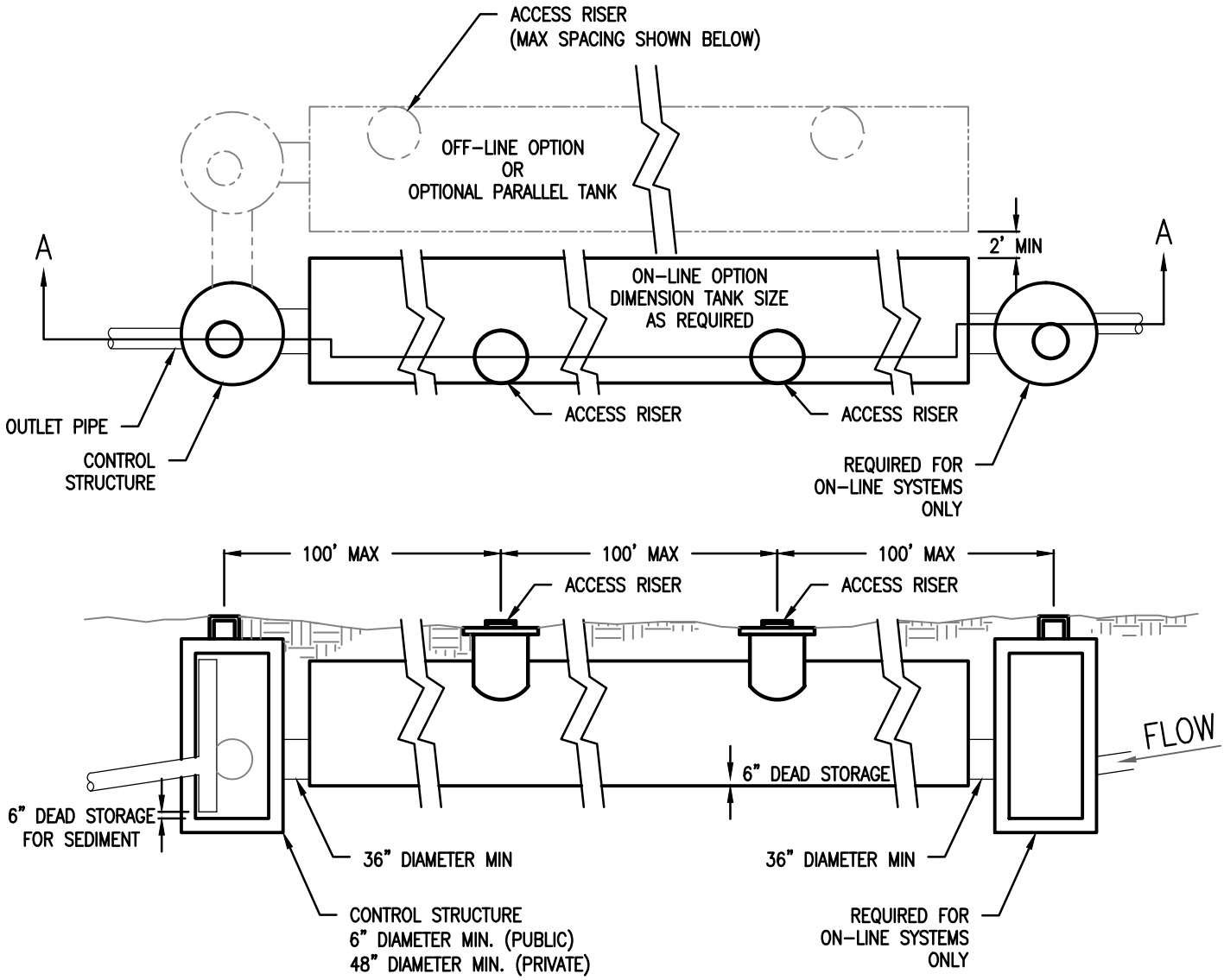
– Performance Design Approach –

Rainwater Harvesting

Bureau of Environmental Services

NUMBER

SW– 250



SECTION A-A

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

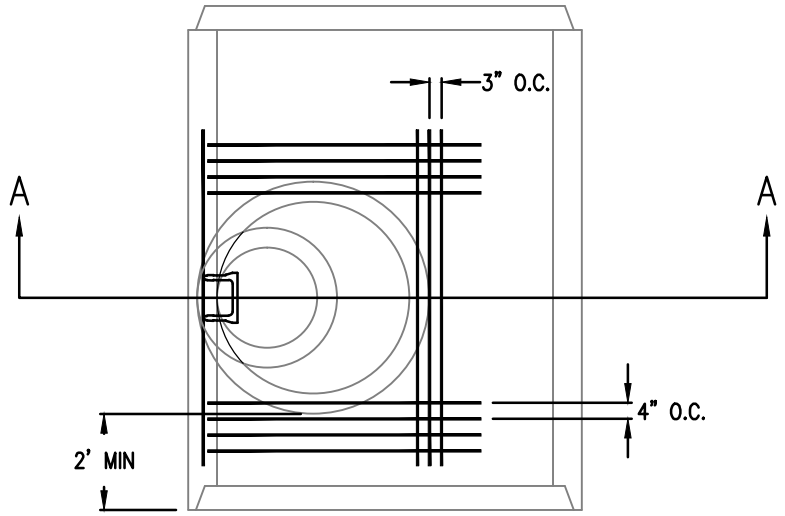
- Performance Approach -

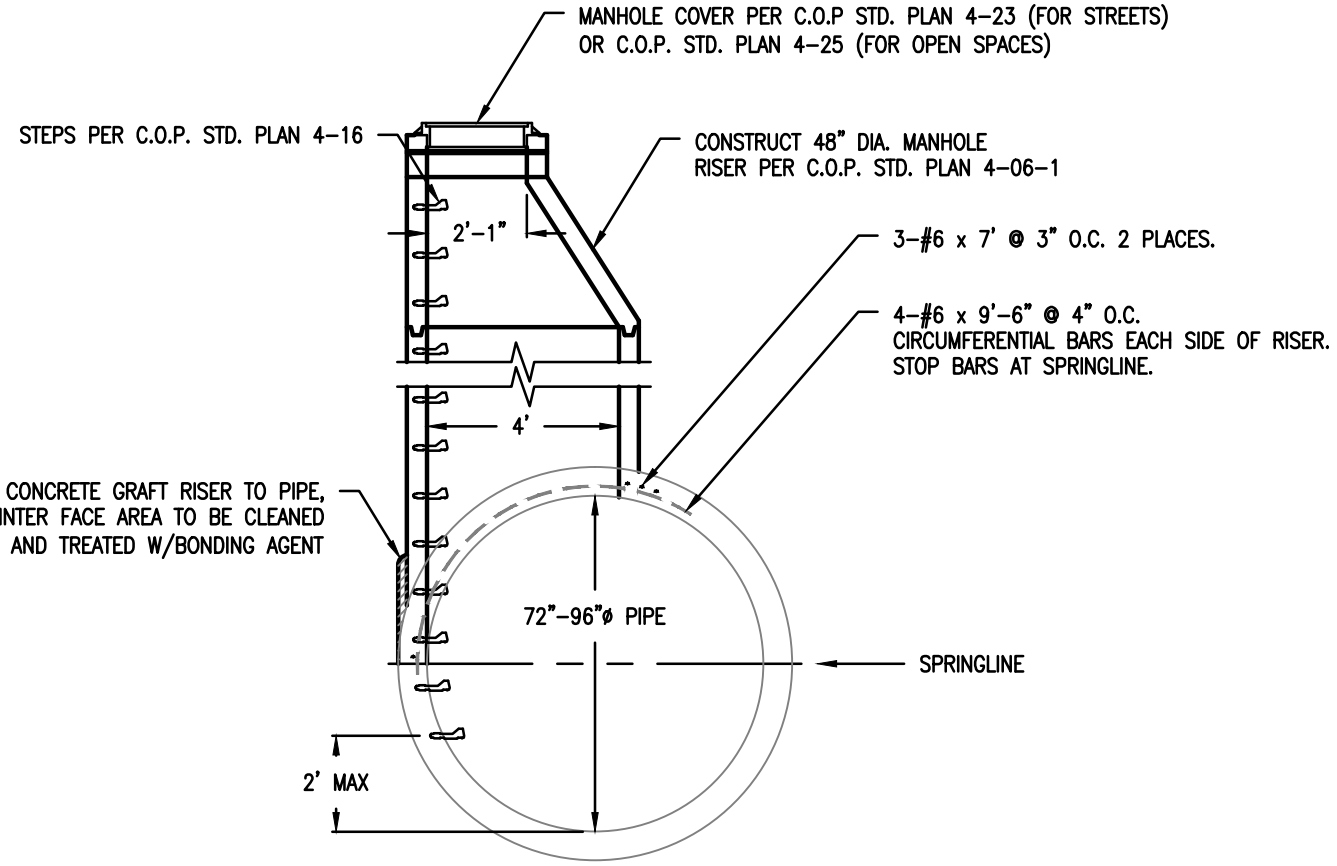
Detention Tank

Bureau of Environmental Services

NUMBER

SW- 260





– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Performance Approach –

Access Riser

NUMBER

SW– 261

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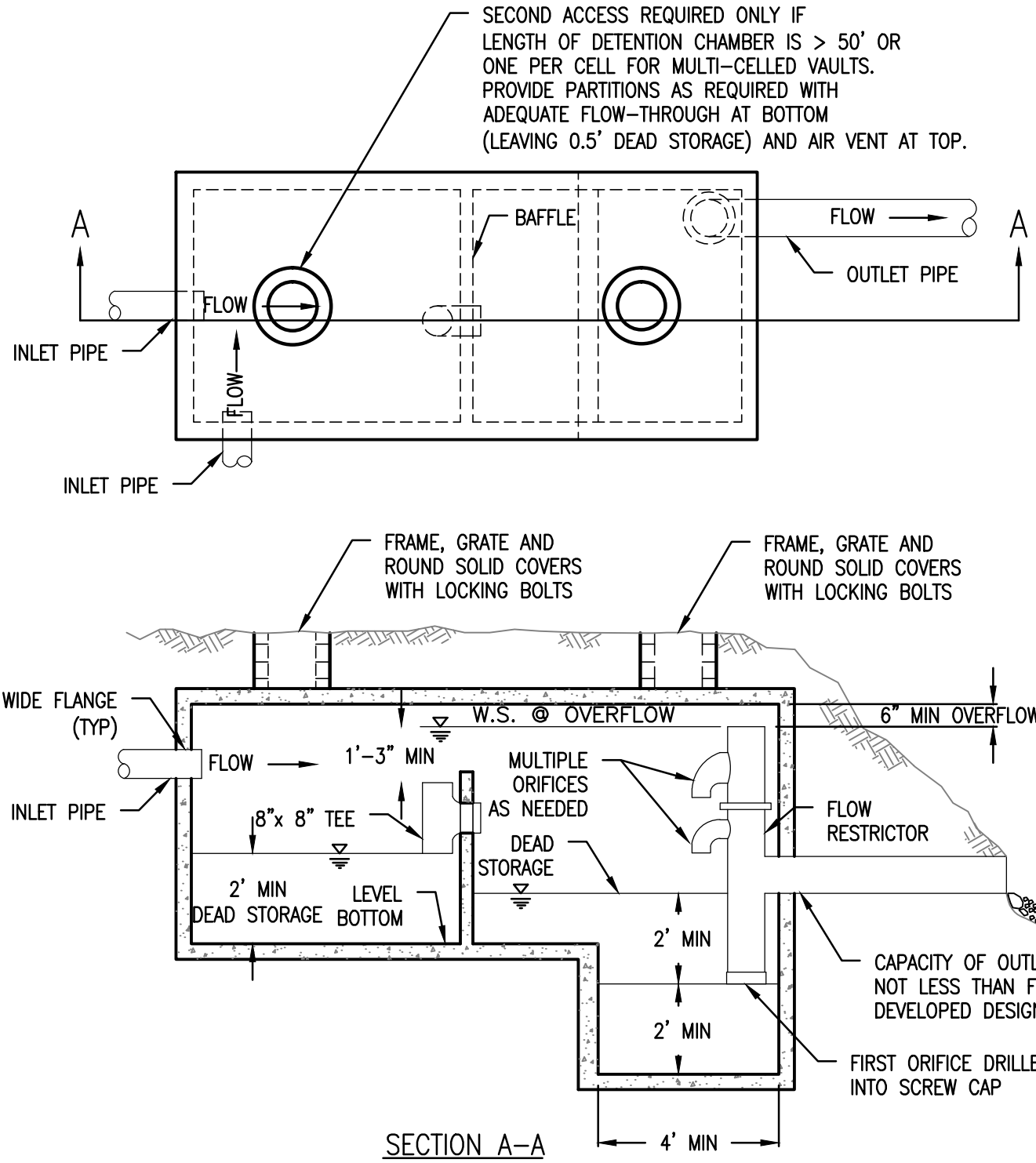

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Performance Approach -

Detention Vault

NUMBER

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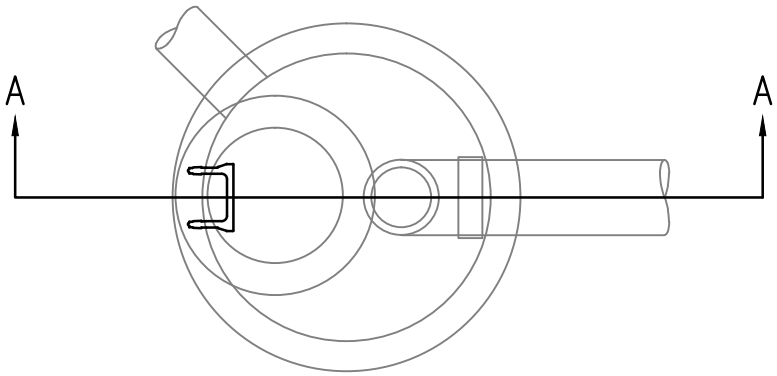
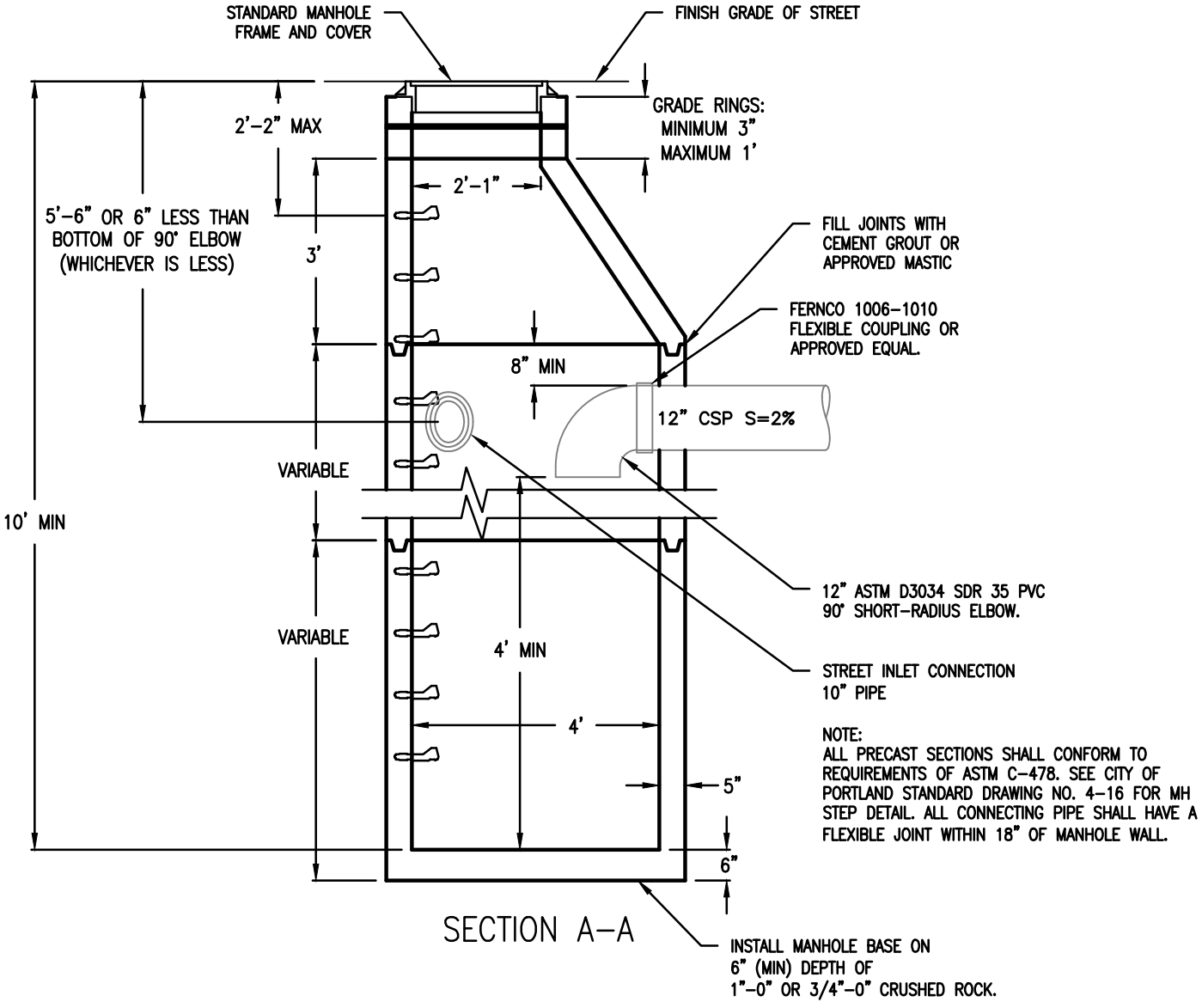




SECTION A-A

NOTE:
ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF ASTM C-478. SEE CITY OF PORTLAND STANDARD DRAWING NO. 4-16 FOR MH STEP DETAIL. ALL CONNECTING PIPE SHALL HAVE A FLEXIBLE JOINT WITHIN 18" OF MANHOLE WALL.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Performance Approach -

Orifice Location Tee Riser

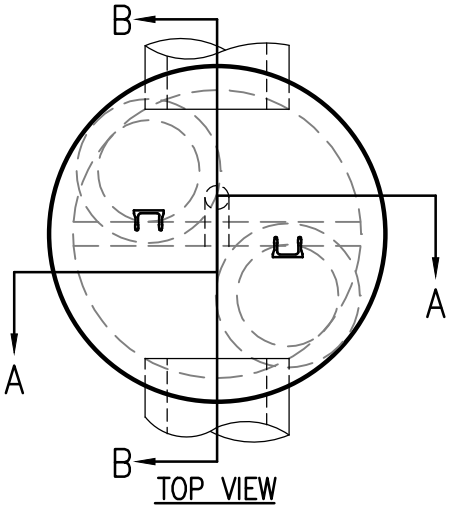
NUMBER

SW- 263

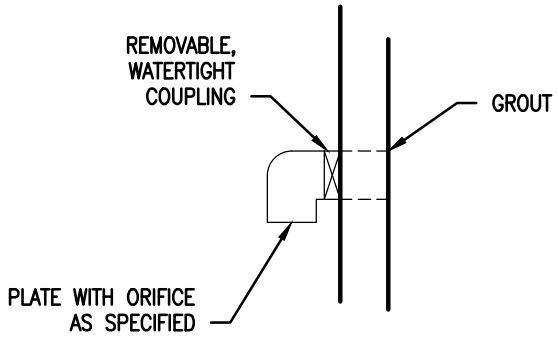
Bureau of Environmental Services

NOTES:

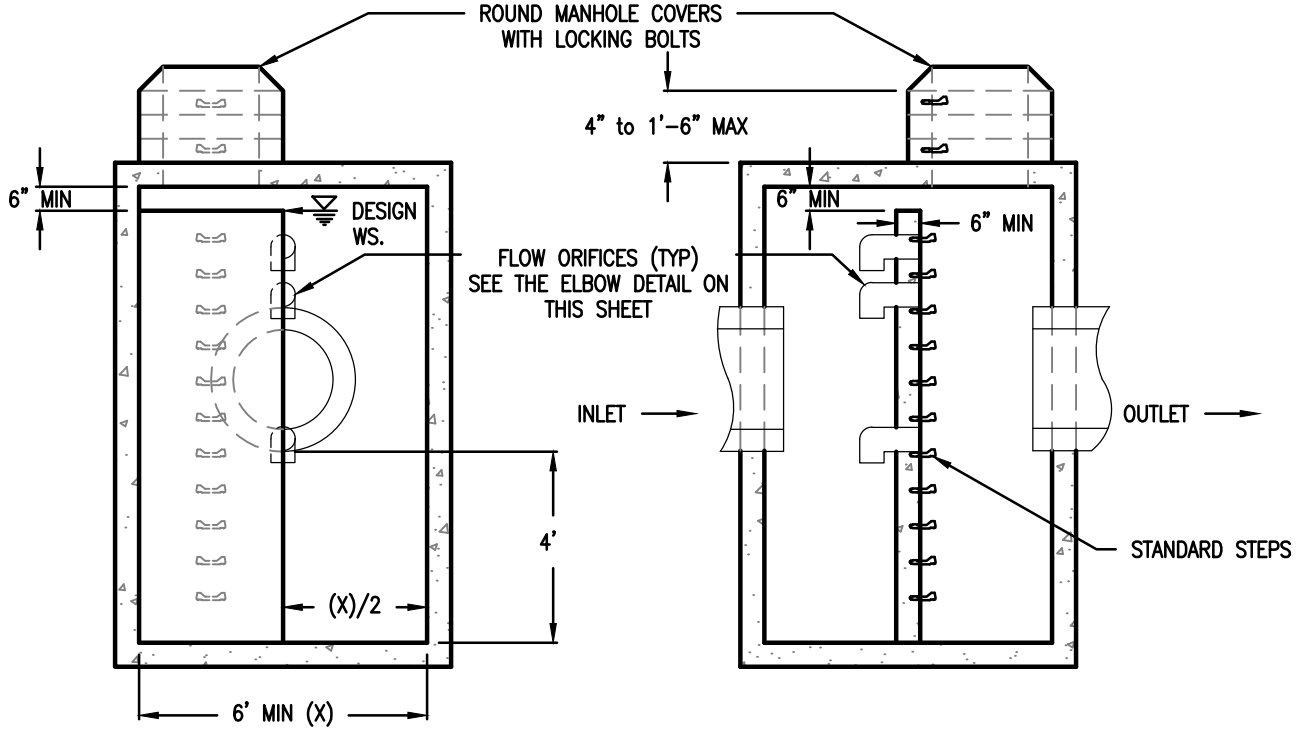
1. EXCEPT AS SHOWN OR NOTED, UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR LARGE PRE CAST CONCRETE MANHOLES. SEE C.O.P. STANDARD PLAN No. 4–08–1. 72", 84" & 96" DIAMETER.
2. FOR DETAILS SHOWING GRADE RINGS, STEPS, AND TOP SLABS, ALSO SEE STANDARD PLAN No. 4–08–1.
3. SEE PROJECT PLANS FOR SIZE AND LOCATION OF ORIFICES.
4. PIPE SIZES, SLOPES AND ALL ELEVATIONS AS SHOWN IN THE PLANS.
5. BAFFLE WALL SHALL HAVE #4 BAR AT 12" SPACING EACH WAY.
6. PRE–CAST BAFFLE WALL SHALL BE KEYED AND GROUTED IN PLACE.
7. ORIFICE PLATES TO BE 1/4" THICK MIN. HDPE OR APPROVED EQUAL AND ATTACHED WITH 1/2" STAINLESS STEEL BOLTS.



TOP VIEW



ELBOW DETAIL



SECTION A–A

SECTION B–B

– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

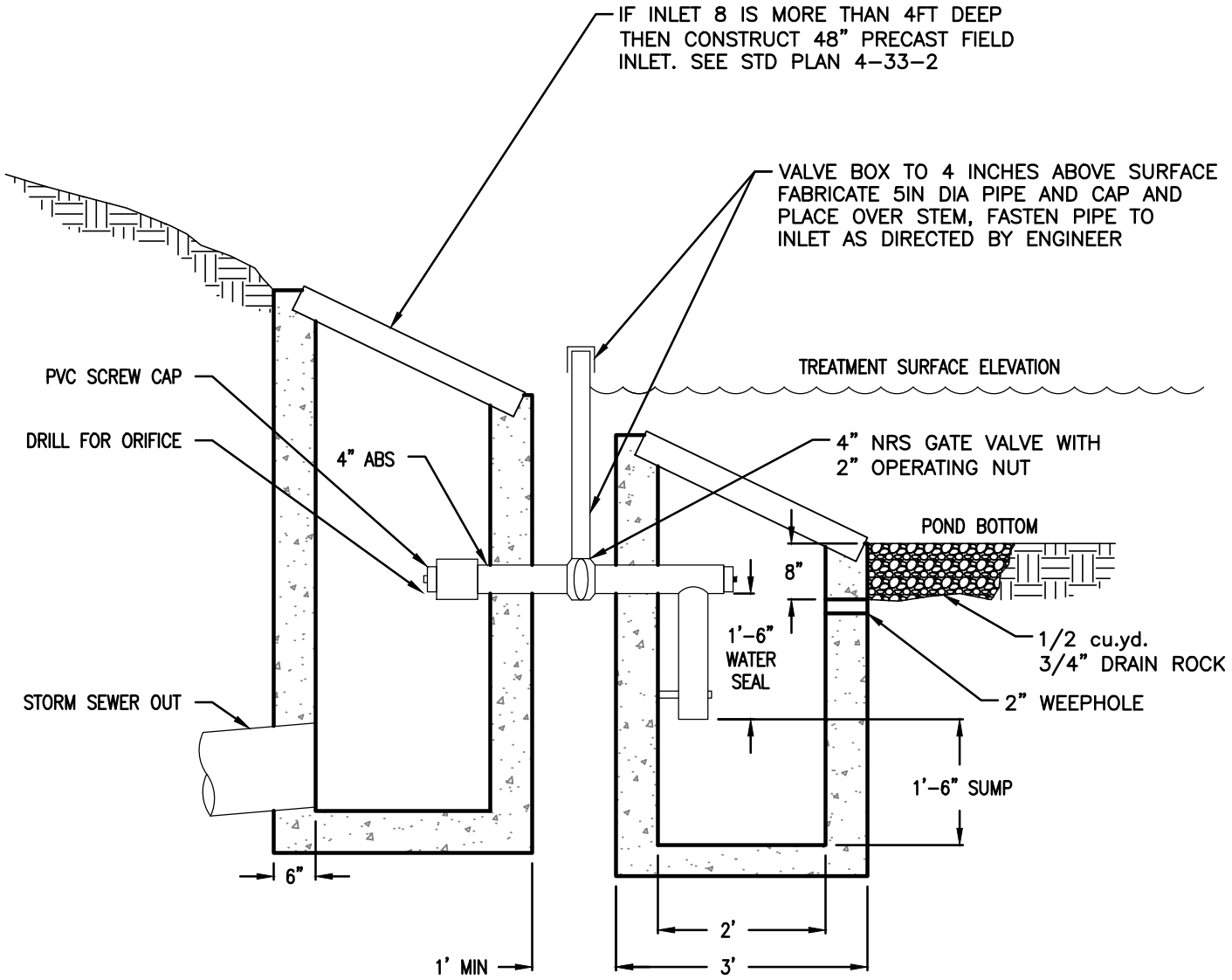
– Performance Approach –

Orifice Location Baffle Riser

NUMBER

SW– 264

Bureau of Environmental Services



– DRAWING NOT TO SCALE –

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Performance Approach –

Orifice Structure

NUMBER

SW– 265

Bureau of Environmental Services