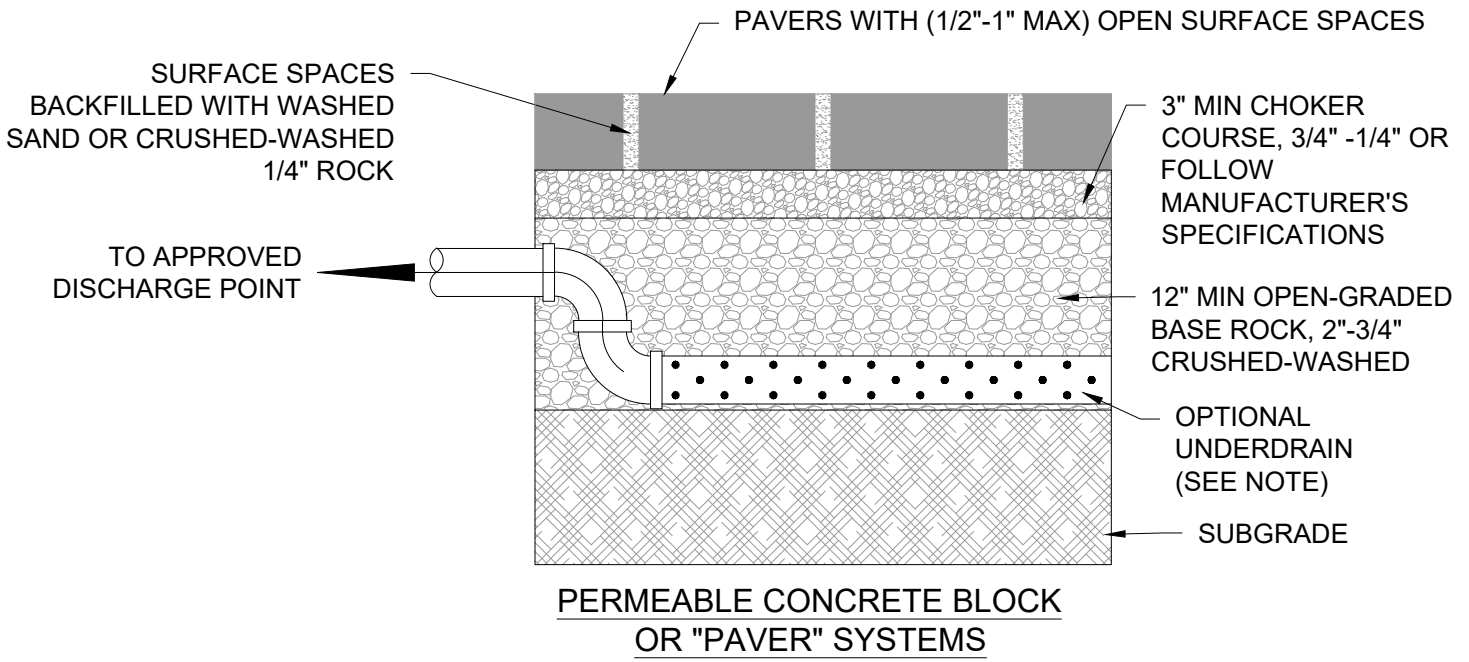


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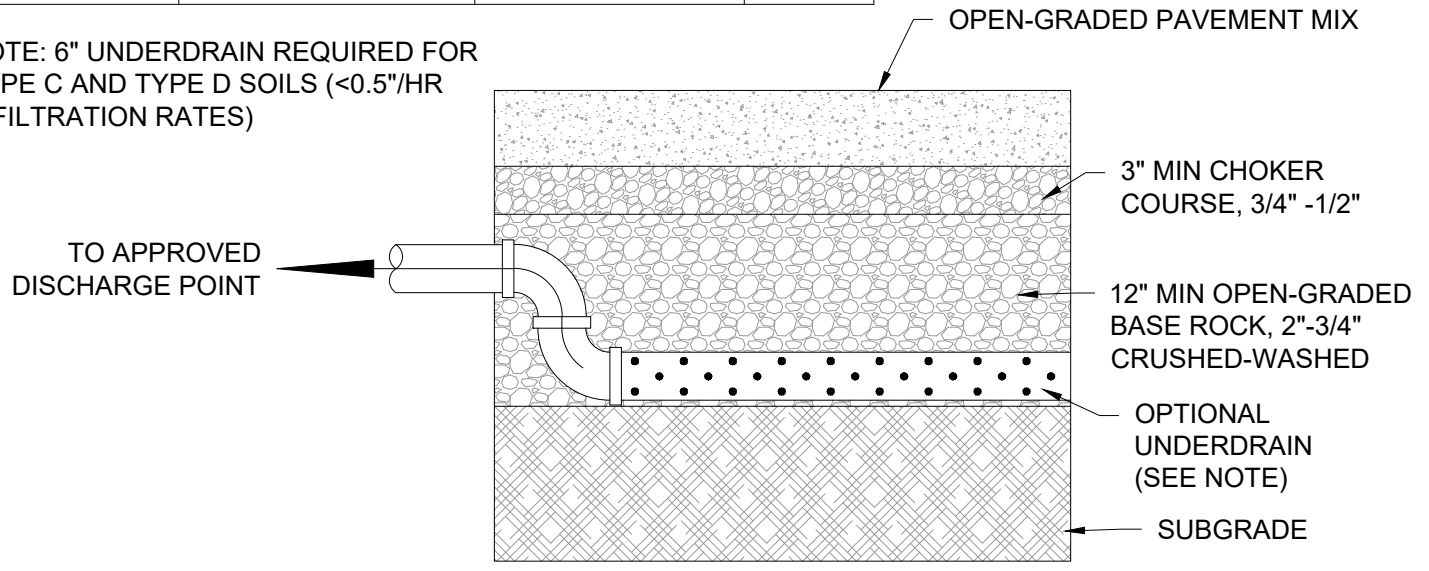


PERMEABLE CONCRETE BLOCK OR "PAVER" SYSTEMS

DESIGN REQUIREMENTS FOR TOP LIFT DEPTH

	RESIDENTIAL DRIVEWAY OR PEDESTRIAN ONLY	PRIVATE STREET, PARKING LOT, OR FIRE LANE	PUBLIC STREET
CONCRETE	4"	4"	7"
ASPHALT	2 1/2"	3"	6"
PAVERS	2 3/8"	3 1/8"	3 1/8"
ENGINEERING REQ'D	NO	YES	YES
COMPACTION REQ'D	NO	YES	95%

NOTE: 6" UNDERDRAIN REQUIRED FOR TYPE C AND TYPE D SOILS (<0.5"/HR INFILTRATION RATES)

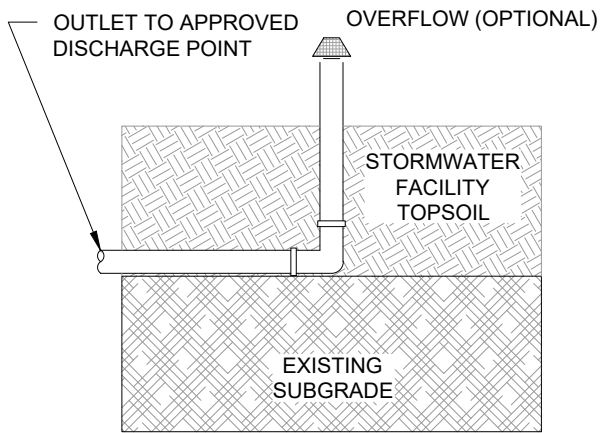


PERVIOUS (OPEN GRADED) CONCRETE AND ASPHALT SYSTEMS

- DRAWING NOT TO SCALE -

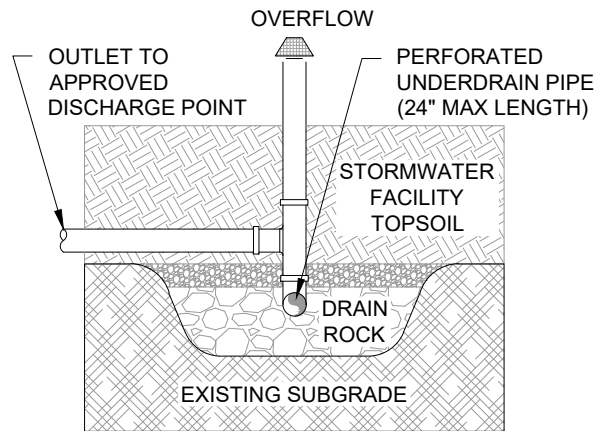
<p>CITY OF GRESHAM</p>	<p>POROUS PAVEMENT</p>	<p>DRAWN RMS</p>
		<p>REV. DATE APR 2024</p>
		<p>APPR.</p>
		<p>DETAIL NO. ST-100</p>
<p>PUBLISHED: DRAFT</p>		

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FULL INFILTRATION

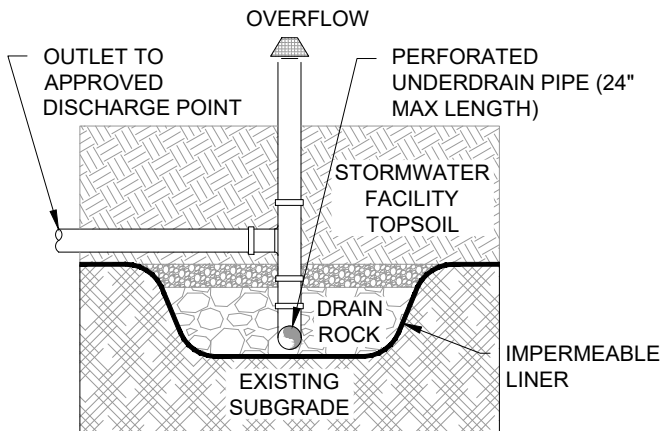
TYPE A AND B SOILS
OVERFLOW IS OPTIONAL



PARTIAL INFILTRATION

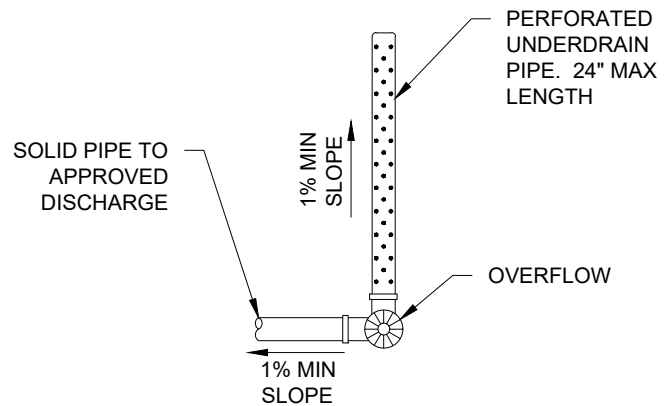
TYPE C & D SOILS

DRAIN ROCK OPTIONAL FOR TYPE C SOILS
OVERFLOW AND UNDERDRAIN REQUIRED FOR TYPE D SOILS SET UNDERDRAIN TOWARD TOP OF DRAIN ROCK



LINED/FILTRATION

STEEP SLOPES, CONTAMINATED SOILS, UNCONSOLIDATED FILL
OVERFLOW AND UNDERDRAIN REQUIRED.
SET UNDERDRAIN AT BASE OF DRAIN ROCK.



PLAN VIEW

PIPE W/ UNDERDRAIN & DISCHARGE POINT

1. DRAIN ROCK NOT REQUIRED IN TYPE A AND B SOILS. IT MAY BE USED FOR STORAGE IN TYPE C SOILS. AN OVERFLOW IS REQUIRED FOR TYPE C SOILS.
2. TYPE D SOILS REQUIRE DRAIN ROCK AND AN UNDERDRAIN LOCATED AT THE TOP OF THE ROCK. PERFORATED UNDERDRAIN PIPE SHALL BE A MAXIMUM OF 36" LONG AND LOCATED AT OPPOSITE END OF FACILITY FROM INLET.
3. SITES WITH CONTAMINATED SOILS, STEEP SLOPES (WITHIN HILLSIDE CONSTRAINT DISTRICT), OR ON UNCONSOLIDATED FILL MUST BE LINED AND HAVE DRAIN ROCK WITH AN UNDERDRAIN.
4. FACILITIES WITH AN UNDERDRAIN MAY HAVE THE OUTLET PIPE TEE INTO THE OVERFLOW STANDPIPE AT AN ELEVATION ABOVE THE TOP OF THE UNDERDRAIN.

- DRAWING NOT TO SCALE -

ORIGINAL DRAWING AND SPECIFICATIONS FROM PORTLAND BUREAU OF ENVIRONMENTAL SERVICES

CITY OF GRESHAM

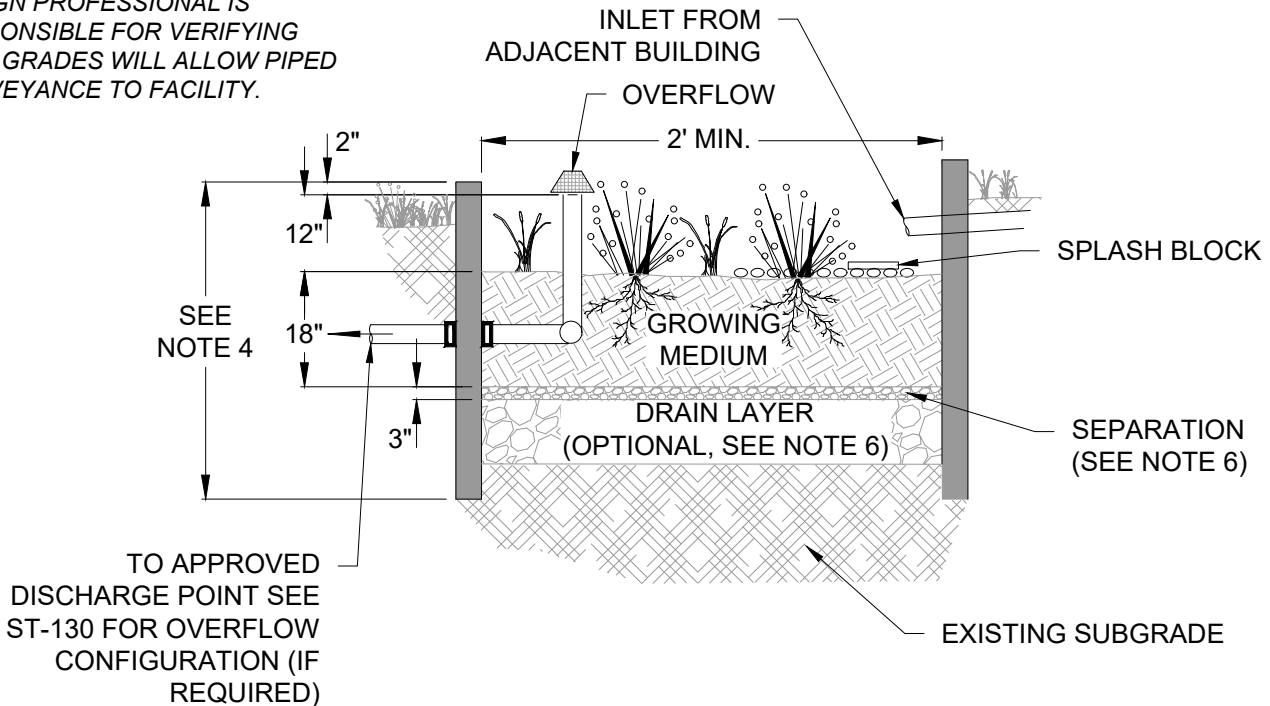
FACILITY OVERFLOW CONFIGURATION

PUBLISHED: JAN 2023

DRAWN	DRO
REV. DATE	JULY 2024
APPR.	
DETAIL NO.	ST-130

FREESTANDING

DESIGN PROFESSIONAL IS RESPONSIBLE FOR VERIFYING THAT GRADES WILL ALLOW PIPED CONVEYANCE TO FACILITY.



1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC AND EQUIPMENT STAGING IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING, AND AFTER CONSTRUCTION.
2. DIMENSIONS:
WIDTH OF PLANTER: 24" MINIMUM.
DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12".
LONGITUDINAL SLOPE OF PLANTER: 0.5% OR LESS.
3. SETBACKS:
INFILTRATION PLANTERS SHOULD BE LOCATED 5- FEET FROM PROPERTY LINE AND 10- FEET FROM BUILDING FOUNDATIONS.
4. PLANTER WALLS:
MATERIAL MUST BE CONCRETE, UNLESS OTHERWISE APPROVED. WALLS MUST BE INCLUDED ON FOUNDATION PLANS.
HEIGHT: 44" MINIMUM WITH DRAIN ROCK, 32" MINIMUM WITHOUT DRAIN ROCK.
5. PIPING MUST BE CAST IRON, ABS OR PVC. 3" PIPE REQUIRED FOR FACILITIES DRAINING UP TO 1500 S.F., OTHERWISE 4" MINIMUM PIPE. OREGON PLUMBING SPECIALTY CODE ALSO APPLIES.
6. DRAIN LAYER:
NOT ALLOWED FOR TYPE A AND B SOILS, OPTIONAL FOR TYPE C SOILS, AND REQUIRED FOR TYPE D SOILS.
3/4" - 1 1/2" WASHED.
DEPTH: 9".
SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM: 1/4" - #10 ROCK, 2 TO 3 INCHES DEEP.
7. OVERFLOW:
PLANTERS MUST CONNECT TO APPROVED DISCHARGE POINT PER DETAIL ST-130.
OVERFLOW ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM.
PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
8. GROWING MEDIUM:
18" MINIMUM DEPTH. USE SAND/LOAM/COMPOST 3-WAY MIX, OR APPROVED MIX THAT WILL SUPPORT HEALTHY PLANTS.
9. VEGETATION: REFER TO PLANT LIST IN APPENDIX G. MINIMUM CONTAINER SIZE IS #1. # OF PLANTINGS PER 100SF OF FACILITY AREA:
80 HERBACEOUS PLANTS OR;
72 HERBACEOUS PLANTS AND 4 SMALL SHRUBS.
10. SPLASH BLOCK: INSTALL 4-6" WASHED RIVER ROCK OR SPLASH PAD FOR EROSION CONTROL AT INLETS AND DOWNSPOUT.
11. PERFORATED PIPE TO BE ADDED FOR FACILITIES IN POORLY INFILTRATING SOILS (TYPE D) PER ST-130.
12. LINED/FILTRATION PLANTER TO BE USED ON STEEP SLOPES OR WITHIN 10' OF BUILDINGS OR 5' OF PROPERTY LINES.
13. THIS DRAWING IS INTENDED FOR PRIVATE FACILITIES TREATING ROOF RUNOFF. FOR PLANTERS TREATING PRIVATE ROADWAYS, SEE THE GREEN STREETS DETAILS IN GRESHAM PUBLIC WORKS STANDARDS. FOR PRIVATE FACILITIES THE BEEHIVE OVERFLOW (GS-108) MAY BE REPLACED BY OTHER STRUCTURES THAT MEET OREGON PLUMBING SPECIALTY CODE.

- DRAWING NOT TO SCALE -
ORIGINAL DRAWING AND SPECIFICATIONS FROM PORTLAND BUREAU OF ENVIRONMENTAL SERVICES

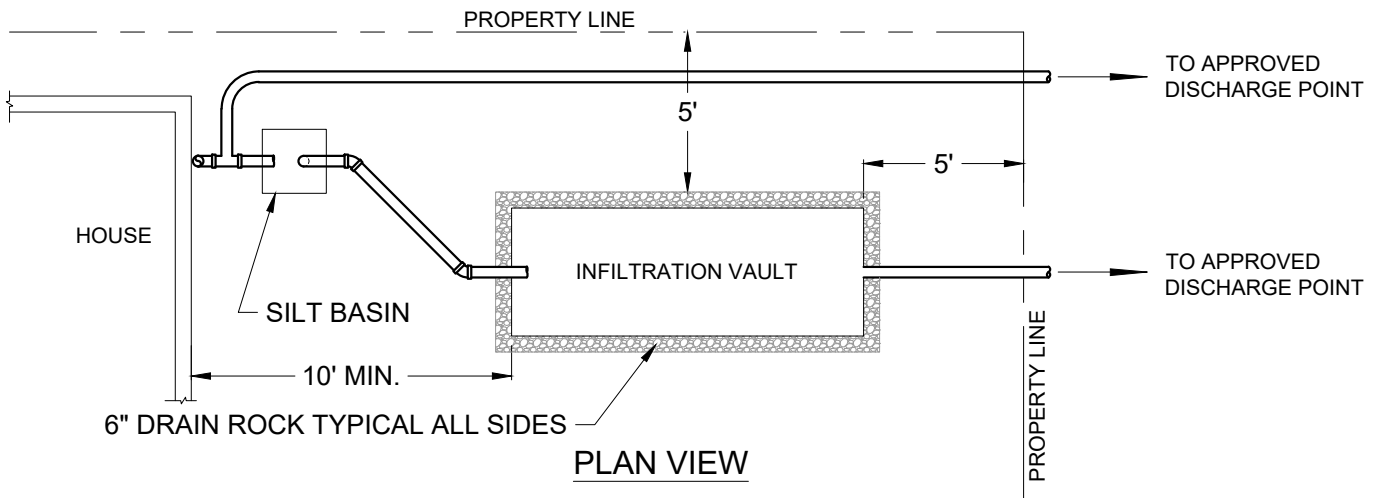
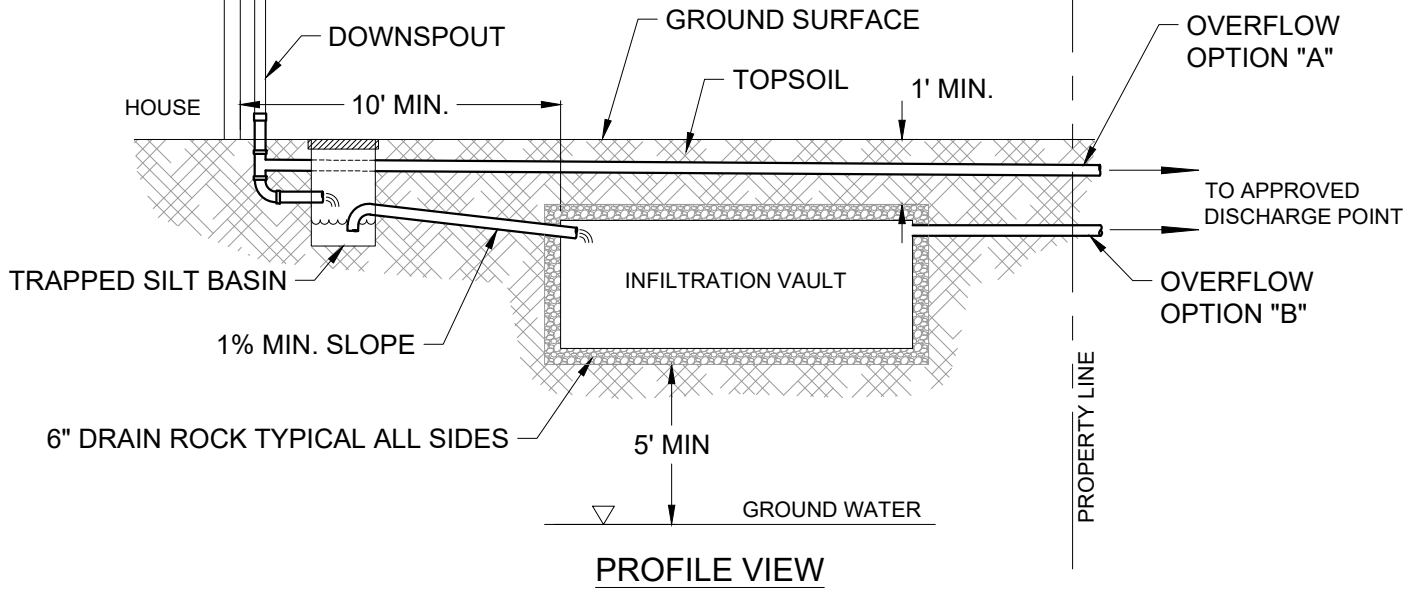
**CITY OF
GRESHAM**

INFILTRATION PLANTER

PUBLISHED: JAN 2023

DRAWN	DRO
REV. DATE	JULY 2024
APPR.	
DETAIL NO.	ST-150

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1. SILT BASIN: SHALL BE INCLUDED AS PRE-TREATMENT FOR RESIDENTIAL ROOFS. SILT BASIN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS FOR CATCH BASIN STANDARDS PER OREGON PLUMBING SPECIALITY CODE 1101.11.1-1101.11.5. MATERIAL MAY BE PLASTIC OR METAL. LID MUST BE SOLID.
2. INFILTRATION VAULTS RECEIVING FLOW FROM ANYTHING OTHER THAN SINGLE-FAMILY RESIDENTIAL ROOFS MUST BE REGISTERED WITH DEQ AS AN UNDERGROUND INJECTION CONTROL DEVICE.
3. OVERFLOW: NOT REQUIRED FOR SITES WITH SOIL INFILTRATION RATES ≥ 2 "/HOUR. FOR AREAS WITH INFILTRATION RATES < 2 "/HOUR, INSTALL OVERFLOW PIPE TO APPROVED DISCHARGE POINT. FOR FLATTER SITES, USE OVERFLOW OPTION "A", WHERE OVERFLOW IS SET 2"-6" HIGHER THAN INLET TO SILT BASIN. FOR SLOPED SITES, USE OPTION "B".
4. SETBACKS: 5' FROM PROPERTY LINES AND 10' FROM FOUNDATIONS.
5. IF USING PROPRIETARY VAULT, FOLLOW SIZING AND INSTALLATION GUIDELINES FROM VAULT MANUFACTURER.

- DRAWING NOT TO SCALE -

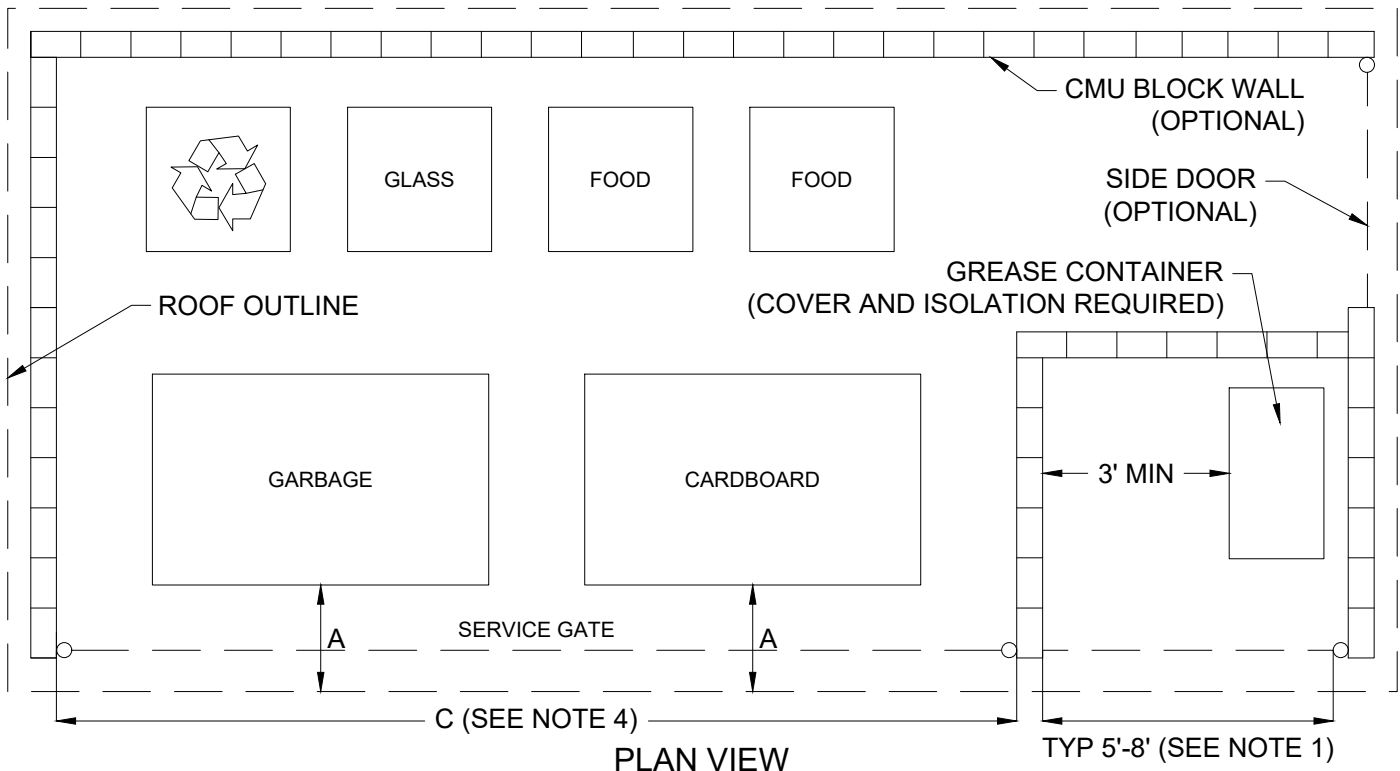
CITY OF
GRESHAM

INFILTRATION VAULT

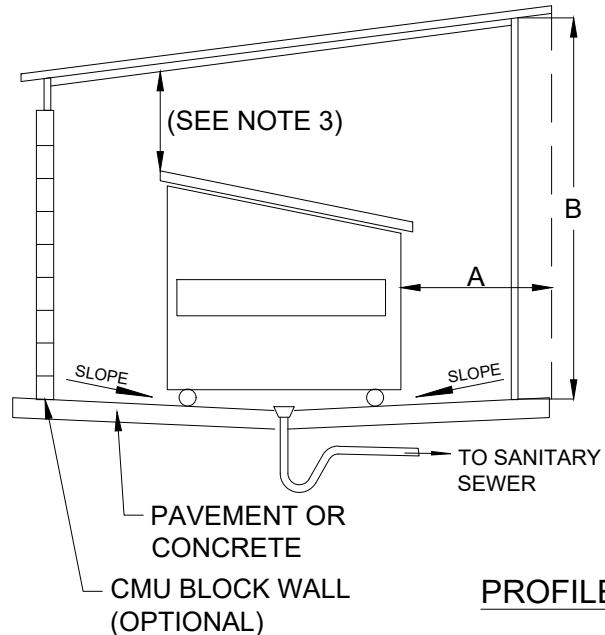
PUBLISHED: JAN 2023

DRAWN	KRB
REV. DATE	JULY 2024
APPR.	
DETAIL NO.	ST-190

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PLAN VIEW



PROFILE VIEW

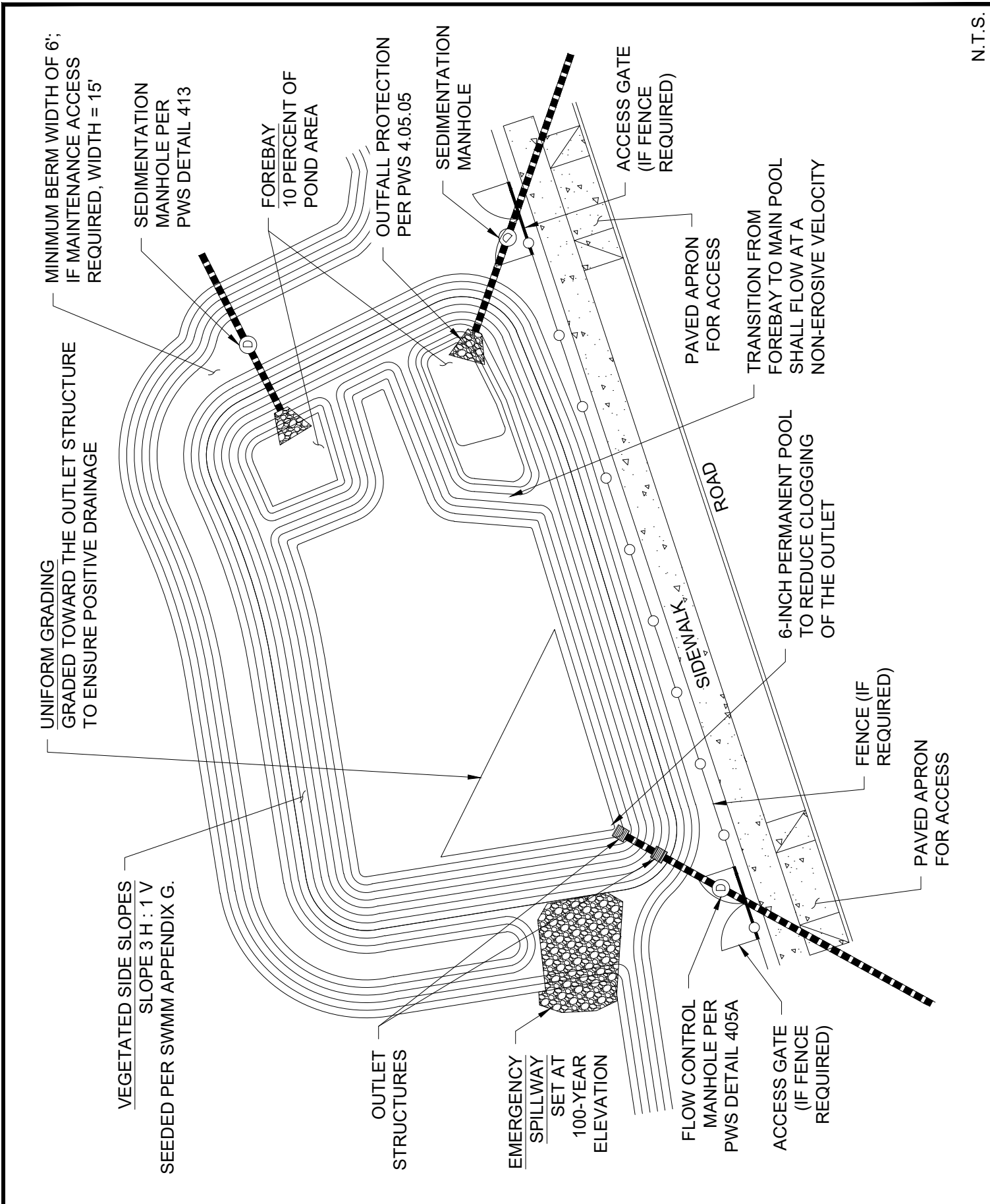
WASTE CONTAINER MINIMUM REQUIREMENTS		
DISTANCE FROM FRONT OF CONTAINER TO EXTERIOR ENTRANCE OR OVERHANG (A)	REQUIRED OPENING HEIGHT (B)	MINIMUM OPENING WIDTH (C)
0-1'	9'	12'
1-3'	12'	12'
4'-6'	15.5'	13.5'
7'+	15.5'	13.5'

NOTES

1. FOOD INDUSTRY SITES MUST HAVE A SEPARATE AREA FOR OIL/GREASE COLLECTION. THIS CONTAINER MUST HAVE A COVER AND BE HYDRAULICALLY ISOLATED AND PLUMBED TO SANITARY.
2. ROOFING MATERIALS AND ENCLOSURE DIMENSIONS ARE SHOWN FOR REFERENCE ONLY. WALLS ARE OPTIONAL.
3. INTERNAL LID OPENING FOR 4-YARD GARBAGE CONTAINER IS 10'-6". 6-YARD RECYCLING CONTAINER REQUIRES 11'-6".
4. OPENING WIDTH FOR EXAMPLE PLAN VIEW SHOWN IS 20' WHICH ASSUMES A 7' WIDE GARBAGE, 7' WIDE CARDBOARD, AND 2' SPACING.

- DRAWING NOT TO SCALE -
ORIGINAL DRAWING AND SPECIFICATIONS FROM PORTLAND BUREAU OF ENVIRONMENTAL SERVICES

<p>CITY OF GRESHAM</p>	<p>WASTE CONTAINER ENCLOSURE</p>	<p>DRAWN DRO</p>
		<p>REV. DATE JULY 2024</p>
		<p>APPR.</p>
		<p>DETAIL NO. ST-210</p>
<p>PUBLISHED: JAN 2023</p>		

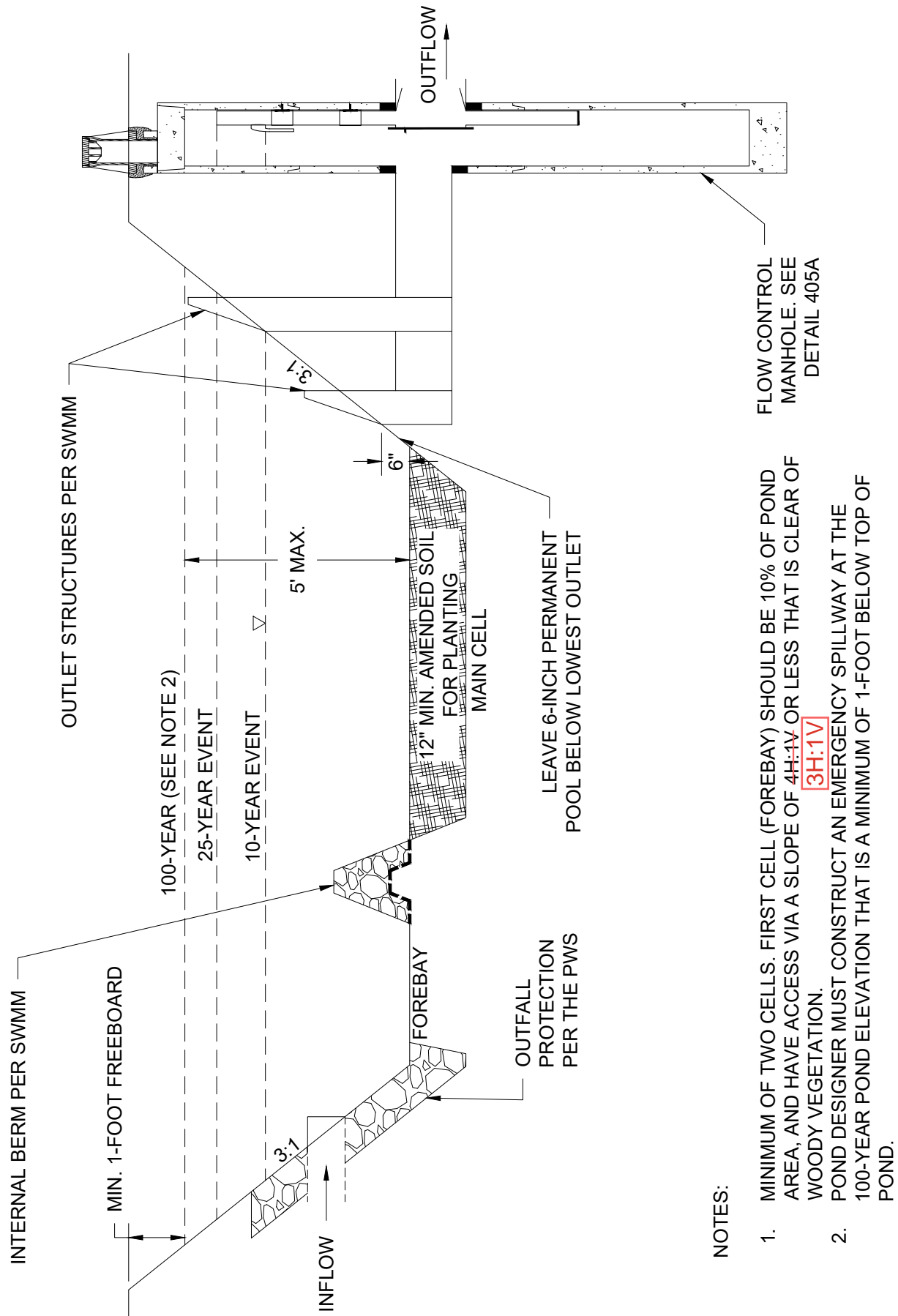


CITY OF GRESHAM

DRY POND PLAN VIEW

PUBLISHED: DRAFT

DRAWN	KRB
REV. DATE	AUG 2024
APPR.	
DETAIL NO.	ST-220



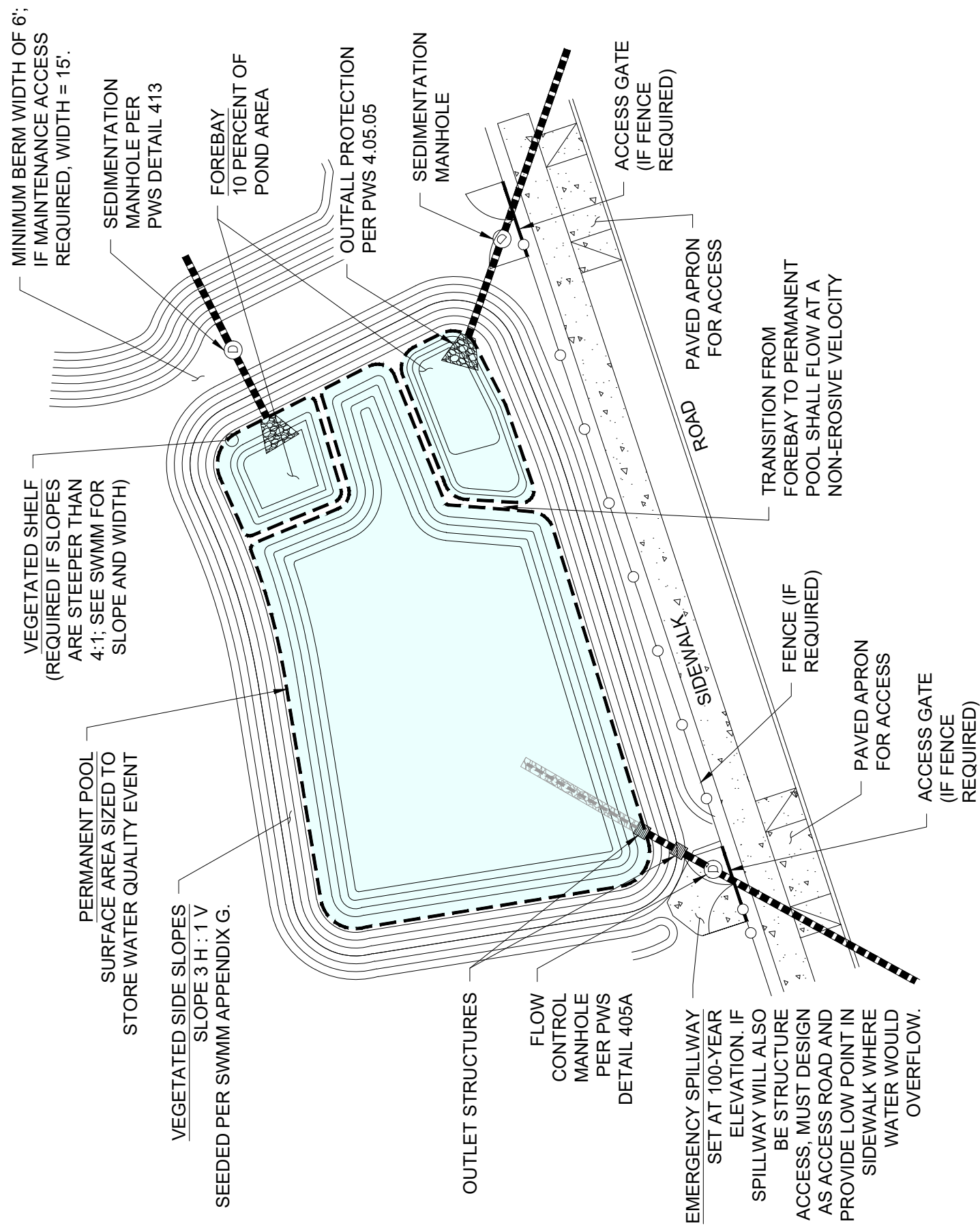
- NOTES:
1. MINIMUM OF TWO CELLS. FIRST CELL (FOREBAY) SHOULD BE 10% OF POND AREA, AND HAVE ACCESS VIA A SLOPE OF 4H:1V OR LESS THAT IS CLEAR OF WOODY VEGETATION. **3H:1V**
 2. POND DESIGNER MUST CONSTRUCT AN EMERGENCY SPILLWAY AT THE 100-YEAR POND ELEVATION THAT IS A MINIMUM OF 1-FOOT BELOW TOP OF POND.

CITY OF GRESHAM

DRY POND PROFILE VIEW

PUBLISHED: DRAFT

DRAWN	KRB
REV. DATE	AUG 2024
APPR.	
DETAIL NO.	ST-230



N.T.S.

CITY OF GRESHAM

WET POND PLAN VIEW

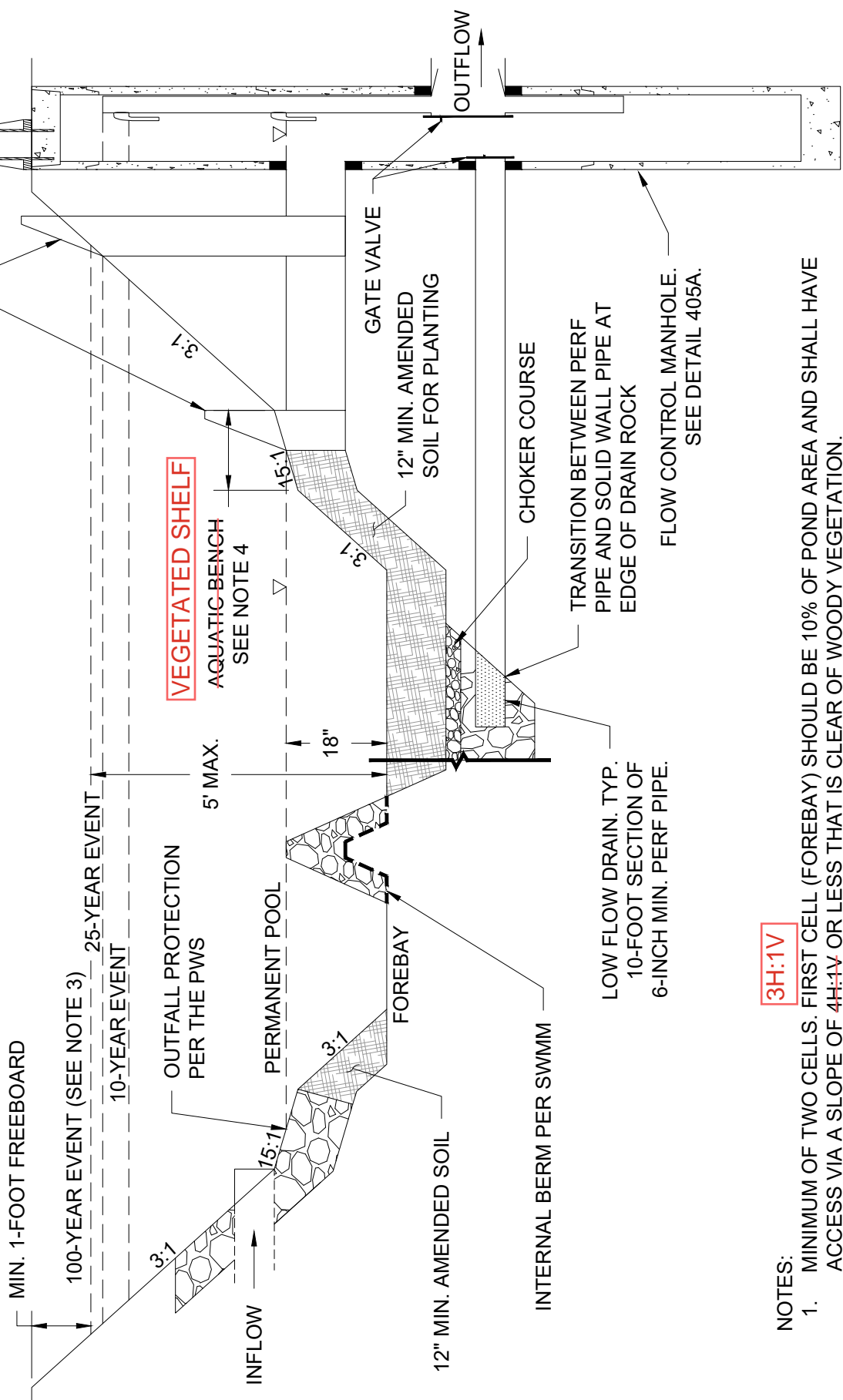
PUBLISHED: DRAFT

DRAWN	KRB
REV. DATE	AUG 2024
APPR.	
DETAIL NO.	ST-240

WET POND PROFILE VIEW

PUBLISHED: DRAFT

OUTLET STRUCTURES
(SEE NOTE 2 AND SWMM)



3H:1V

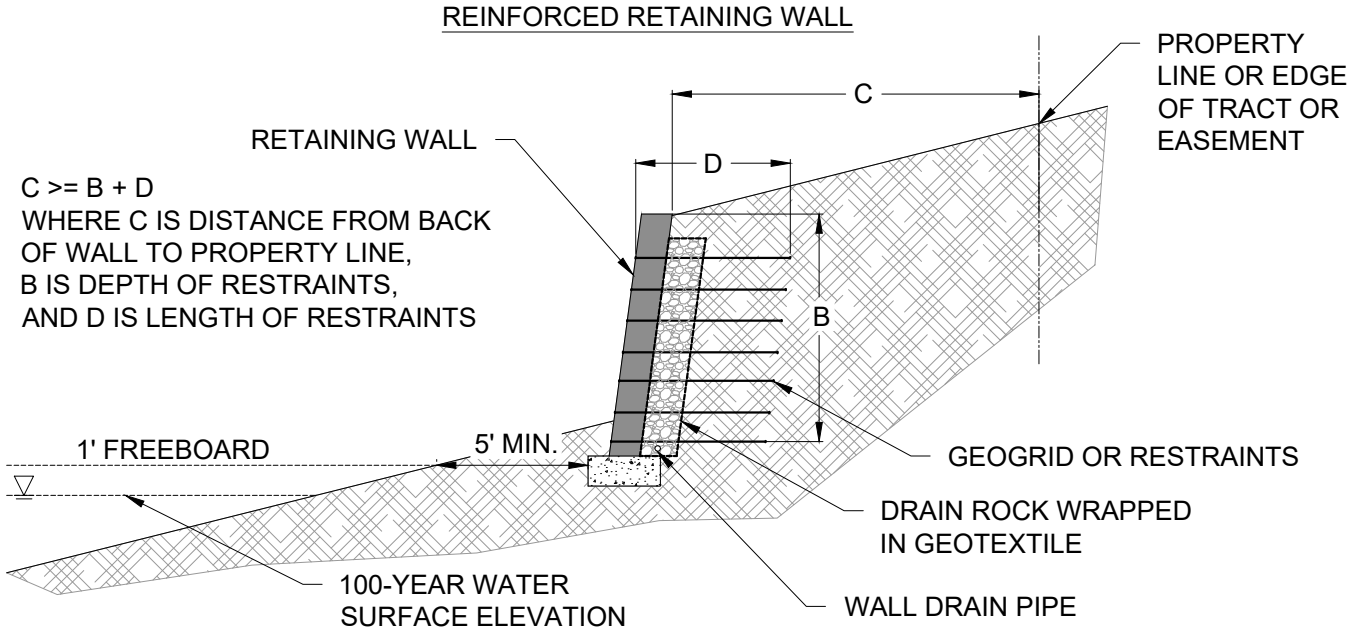
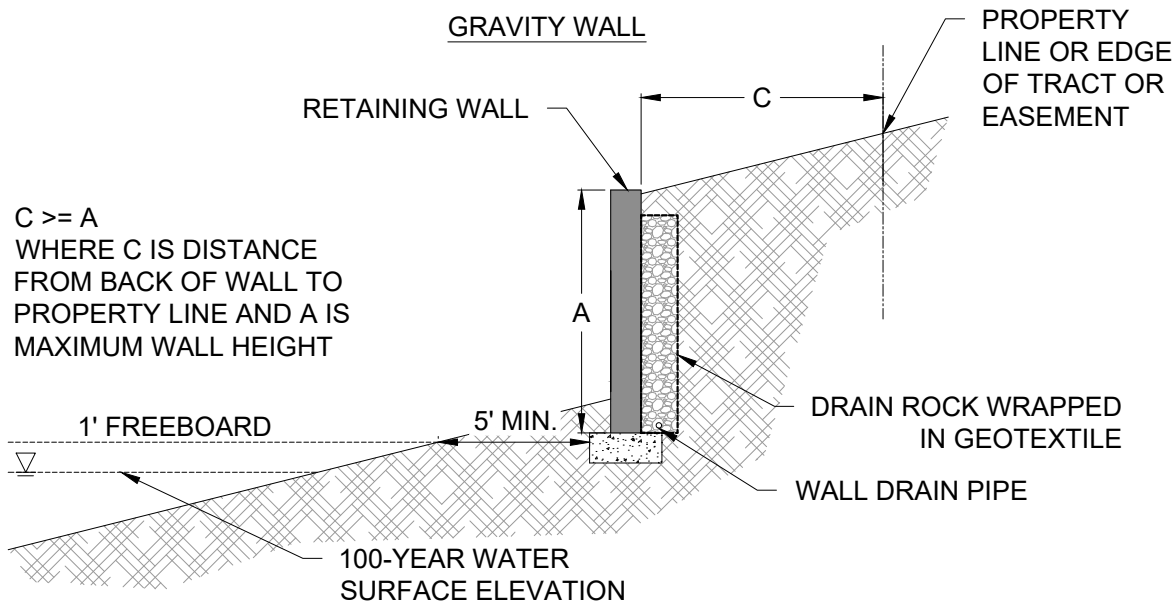
NOTES:

1. MINIMUM OF TWO CELLS. FIRST CELL (FOREBAY) SHOULD BE 10% OF POND AREA AND SHALL HAVE ACCESS VIA A SLOPE OF **4H:1V** OR LESS THAT IS CLEAR OF WOODY VEGETATION.
2. LOWEST OUTLET STRUCTURE SHALL BE LOCATED WITHIN AQUATIC BENCH (WHEN REQUIRED), OR AT LEVEL OF PERMANENT POOL, AND PROVIDE MAINTENANCE ACCESS THAT IS CLEAR OF WOODY VEGETATION.
3. POND DESIGNER MUST CONSTRUCT AN EMERGENCY SPILLWAY AT THE 100-YEAR POND ELEVATION THAT IS A MINIMUM OF 1-FOOT BELOW TOP OF POND.
4. AQUATIC-BENCH SHOWN FOR REFERENCE. SEE SWMM FOR REQUIREMENTS.

VEGETATED SHELF

REQUIRED IF SLOPES ARE STEEPER THAN 4

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- DRAWING NOT TO SCALE -

- RETAINING WALLS ARE NOT ALLOWED WITHIN THE ACTIVE POND AREA. ALL PARTS OF THE WALL MUST BE A MINIMUM DISTANCE OF 5 FEET AWAY FROM THE BOUNDARY DEFINED BY THE FREEBOARD ELEVATION.
- GRAVITY WALLS SHALL BE SET BACK FROM THE NEAREST PROPERTY LINE OR EDGE OF TRACT OR EASEMENT BY AT LEAST THE DISTANCE EQUAL TO THE WALL HEIGHT.
- REINFORCED RETAINING WALLS SHALL BE SET BACK FROM THE NEAREST PROPERTY LINE OR EDGE OF TRACT OR EASEMENT BY AT LEAST THE DISTANCE EQUAL TO THE MAXIMUM DEPTH OF THE RESTRAINTS OR GEOGRIDS PLUS THE LENGTH OF THE RESTRAINTS.
- DRAIN ROCK WRAPPED IN GEOTEXTILE SHALL BE INCLUDED BEHIND WALLS.
- WALLS SHALL BE CONSTRUCTED FROM 2' X 6' X 2' CONCRETE KEYED ECOLOGY BLOCKS, OR EQUIVALENT.
- NO PERFORATIONS FOR PRIVATE STORM LINES SHALL PASS THROUGH RETAINING WALLS.
- STRUCTURAL DESIGN CALCULATIONS MUST BE SUBMITTED WITH EVERY RETAINING WALL PROPOSAL.
- WALLS SHALL NOT INHIBIT MAINTENANCE ACCESS INTO THE FACILITY, PARTICULARLY THE FOREBAYS.

CITY OF GRESHAM

RETAINING WALLS ADJACENT TO PONDS

PUBLISHED: AUG 2024

DRAWN	TFH
REV. DATE	AUG 2024
APPR.	
DETAIL NO.	ST-260