

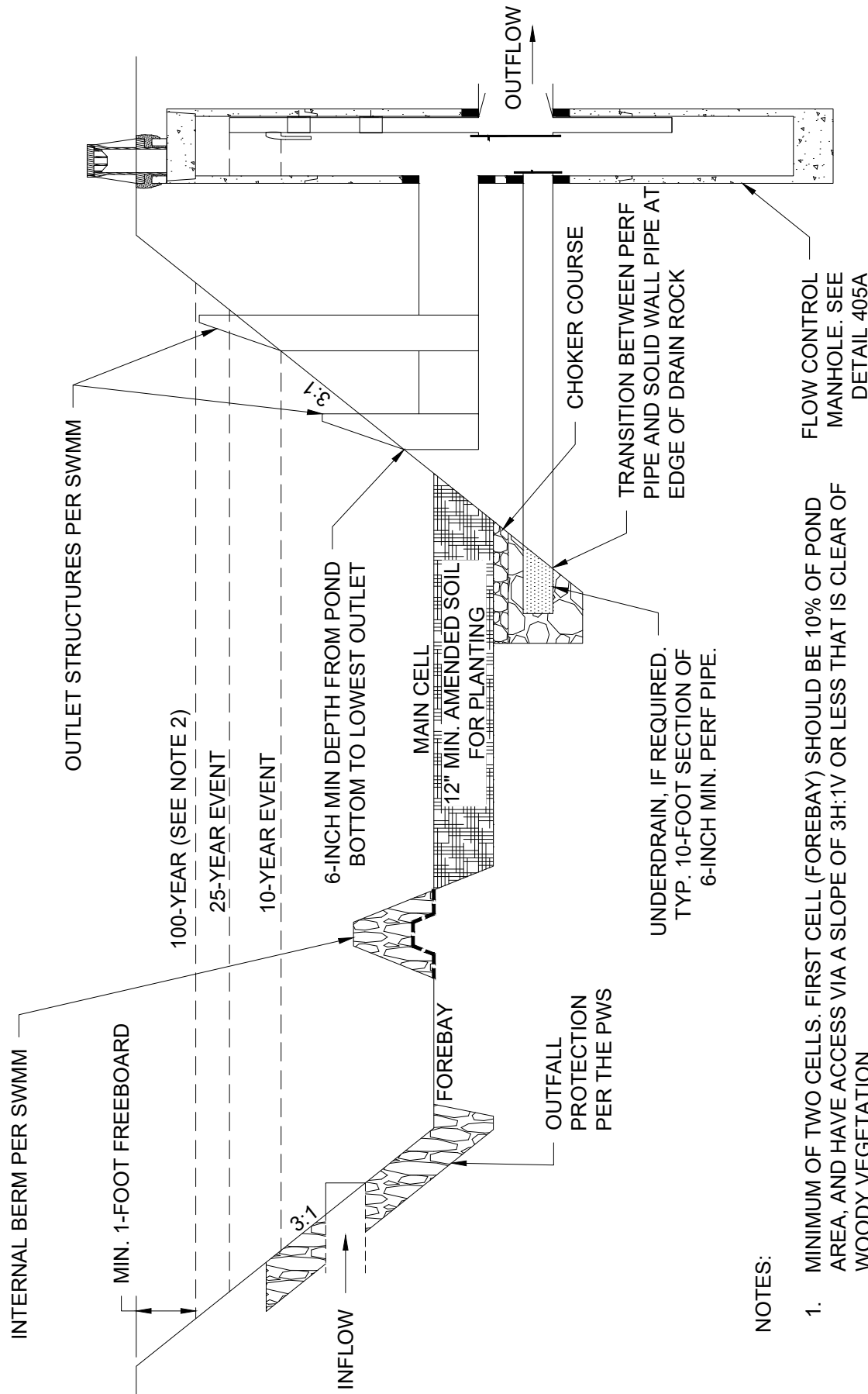
N.T.S.

CITY OF GRESHAM

DRY POND PLAN VIEW

PUBLISHED: SWMM 2025

DRAWN	KRB
REV. DATE	DEC 2024
APPR.	
DETAIL NO.	415



NOTES:

1. MINIMUM OF TWO CELLS. FIRST CELL (FOREBAY) SHOULD BE 10% OF POND AREA, AND HAVE ACCESS VIA A SLOPE OF 3H:1V OR LESS THAT IS CLEAR OF WOODY VEGETATION.
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.
3. PERF PIPE MAY BE REQUIRED FOR FACILITIES WHERE WATER QUALITY EVENT CANNOT BE STORED WITHOUT OVERFLOW AND THEN DRAW DOWN WITHIN 48 HOURS. SEE FACILITY DESIGN REQUIREMENTS IN SWMM.

FLOW CONTROL MANHOLE. SEE DETAIL 405A

TRANSITION BETWEEN PERF PIPE AND SOLID WALL PIPE AT EDGE OF DRAIN ROCK

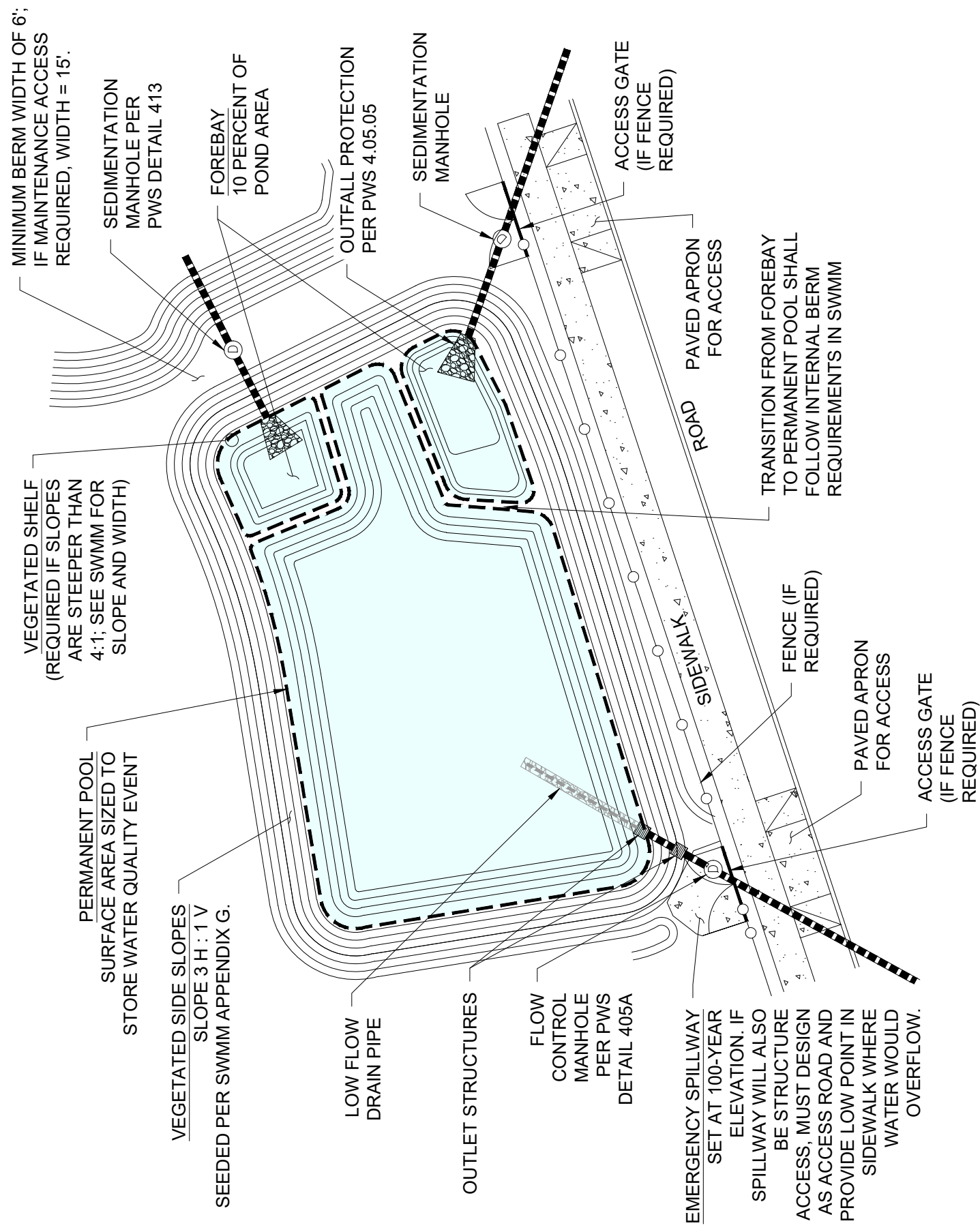
UNDERDRAIN, IF REQUIRED. TYP. 10-FOOT SECTION OF 6-INCH MIN. PERF PIPE.

DRY POND PROFILE VIEW

CITY OF GRESHAM

DRAWN	KRB
REV. DATE	DEC 2024
APPR.	
DETAIL NO.	416

FILENAME: y:\inter-departmental\development\engineering\projects\public works standards\2.0 pws revision copy\details\400_stormwater\storm cad\417.dwg, Plotted 12/17/2024 1:45 PM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



MINIMUM BERM WIDTH OF 6';
IF MAINTENANCE ACCESS
REQUIRED, WIDTH = 15'.

SEDIMENTATION
MANHOLE PER
PWS DETAIL 413

FOREBAY
10 PERCENT OF
POND AREA

OUTFALL PROTECTION
PER PWS 4.05.05

SEDIMENTATION
MANHOLE

ACCESS GATE
(IF FENCE
REQUIRED)

VEGETATED SHELF
(REQUIRED IF SLOPES
ARE STEEPER THAN
4:1; SEE SWMM FOR
SLOPE AND WIDTH)

PERMANENT POOL
SURFACE AREA SIZED TO
STORE WATER QUALITY EVENT

VEGETATED SIDE SLOPES
SLOPE 3 H : 1 V
SEEDED PER SWMM APPENDIX G.

LOW FLOW
DRAIN PIPE

OUTLET STRUCTURES

FLOW
CONTROL
MANHOLE
PER PWS
DETAIL 405A

EMERGENCY SPILLWAY
SET AT 100-YEAR
ELEVATION. IF
SPILLWAY WILL ALSO
BE STRUCTURE
ACCESS, MUST DESIGN
AS ACCESS ROAD AND
PROVIDE LOW POINT IN
SIDEWALK WHERE
WATER WOULD
OVERFLOW.

ROAD
PAVED APRON
FOR ACCESS

TRANSITION FROM FOREBAY
TO PERMANENT POOL SHALL
FOLLOW INTERNAL BERM
REQUIREMENTS IN SWMM

FENCE (IF
REQUIRED)

PAVED APRON
FOR ACCESS

ACCESS GATE
(IF FENCE
REQUIRED)

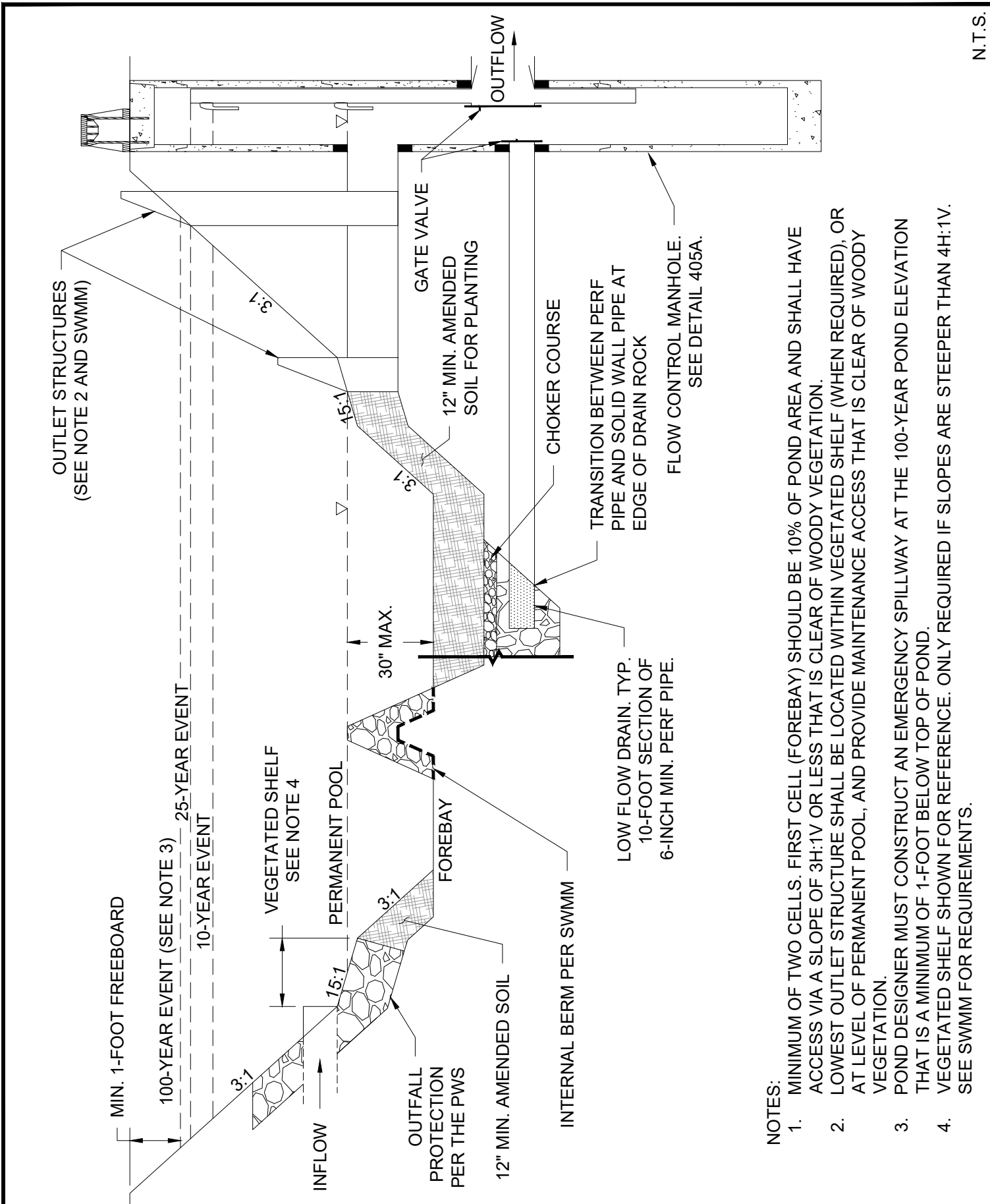
CITY OF
GRESHAM

WET POND PLAN VIEW

PUBLISHED: SWMM 2025

DRAWN	KRB
REV. DATE	DEC 2024
APPR.	
DETAIL NO.	417

N.T.S.



NOTES:

1. MINIMUM OF TWO CELLS. FIRST CELL (FOREBAY) SHOULD BE 10% OF POND AREA AND SHALL HAVE ACCESS VIA A SLOPE OF 3H:1V OR LESS THAT IS CLEAR OF WOODY VEGETATION.
2. LOWEST OUTLET STRUCTURE SHALL BE LOCATED WITHIN VEGETATED SHELF (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. VEGETATED SHELF SHOWN FOR REFERENCE. ONLY REQUIRED IF SLOPES ARE STEEPER THAN 4H:1V. SEE SWMM FOR REQUIREMENTS.

N.T.S.

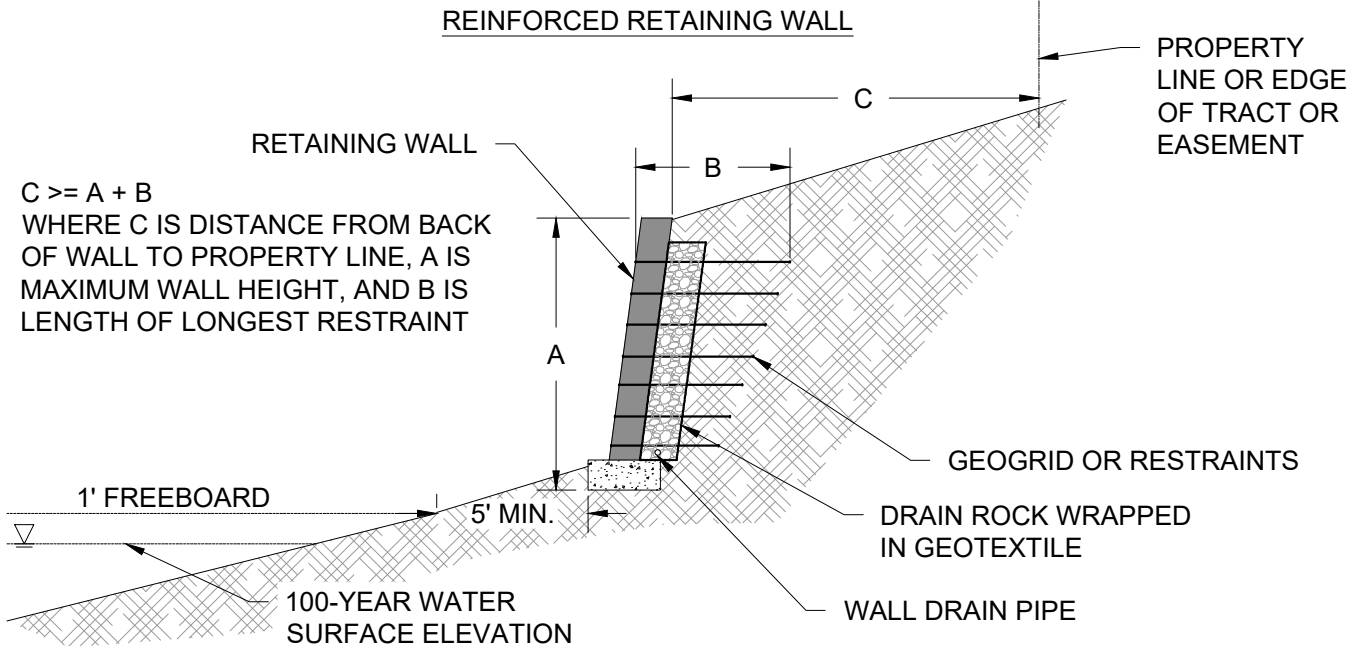
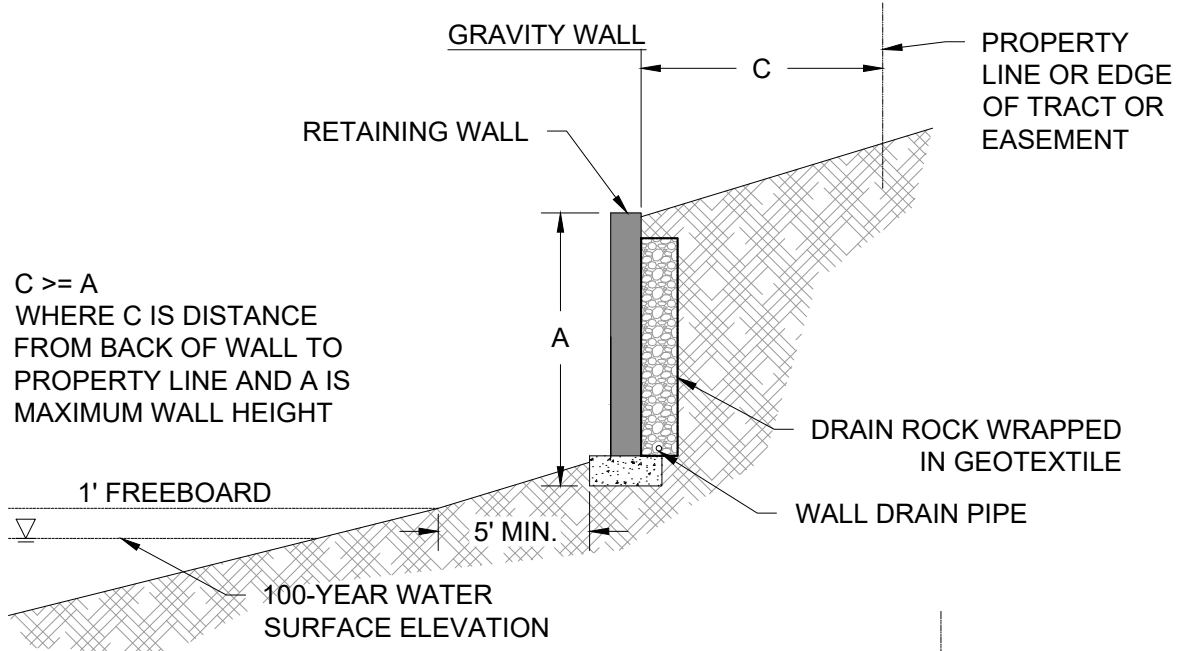
CITY OF GRESHAM

WET POND PROFILE VIEW

PUBLISHED: SWMM 2025

DRAWN	KRB
REV. DATE	DEC 2024
APPR.	
DETAIL NO.	418

FILENAME: y:\inter-departmental\development\engineering\projects\public works standards\2.0 pws revision copy\details\400_stormwater\storm cad\419.dwg, Plotted 3/28/2025 8:49 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



1. 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.
2. 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.
3. 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 WALL HEIGHT PLUS THE LENGTH OF THE LONGEST RESTRAINT.
4. DRAIN ROCK WRAPPED IN GEOTEXTILE SHALL BE INCLUDED BEHIND WALLS.
5. NO PERFORATIONS FOR PRIVATE STORM LINES SHALL PASS THROUGH RETAINING WALLS.
6. STRUCTURAL DESIGN CALCULATIONS MUST BE SUBMITTED WITH EVERY RETAINING WALL PROPOSAL.
7. WALLS SHALL NOT INHIBIT MAINTENANCE ACCESS INTO THE FACILITY, PARTICULARLY THE FOREBAYS.
8. SLOPES WITHIN CITY TRACT OR EASEMENT SHALL BE A MAXIMUM OF 3H:1V, UNLESS AN EXCEPTION IS GRANTED

CITY OF GRESHAM

RETAINING WALLS ADJACENT TO PONDS

PUBLISHED: SWMM 2025

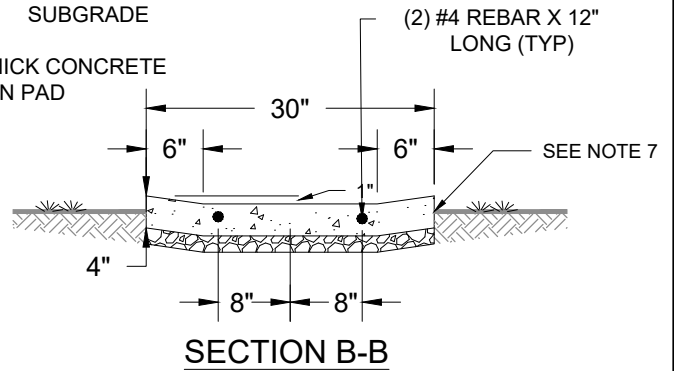
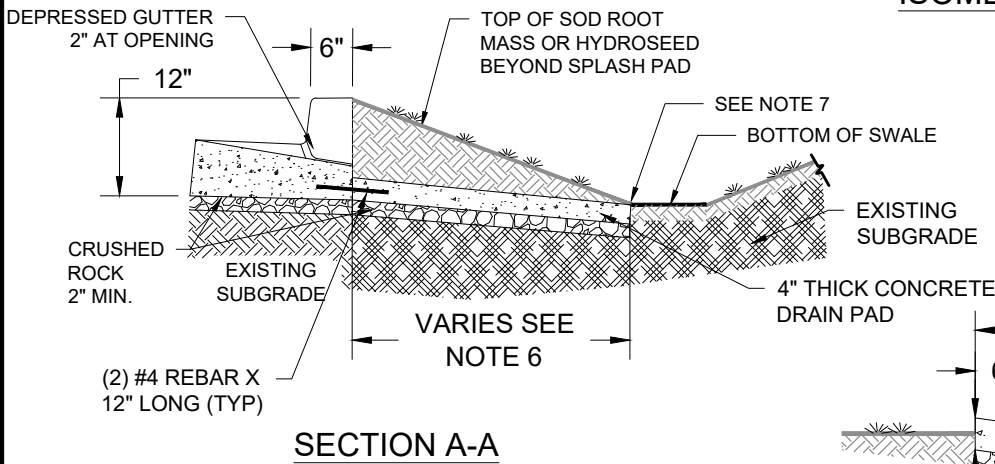
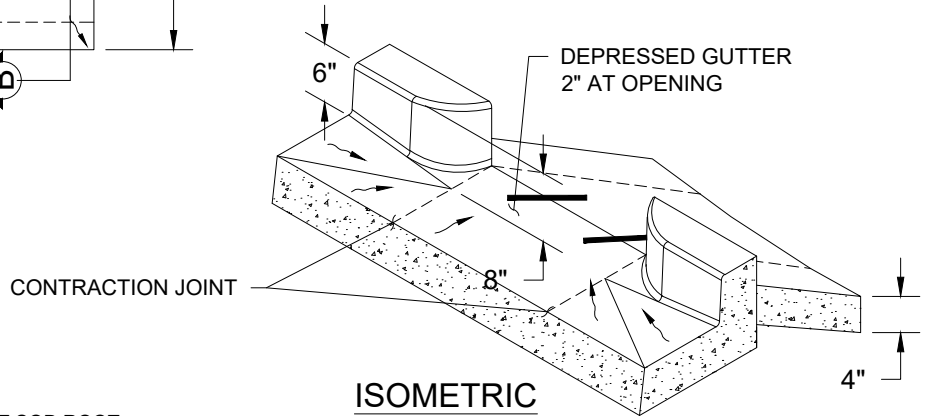
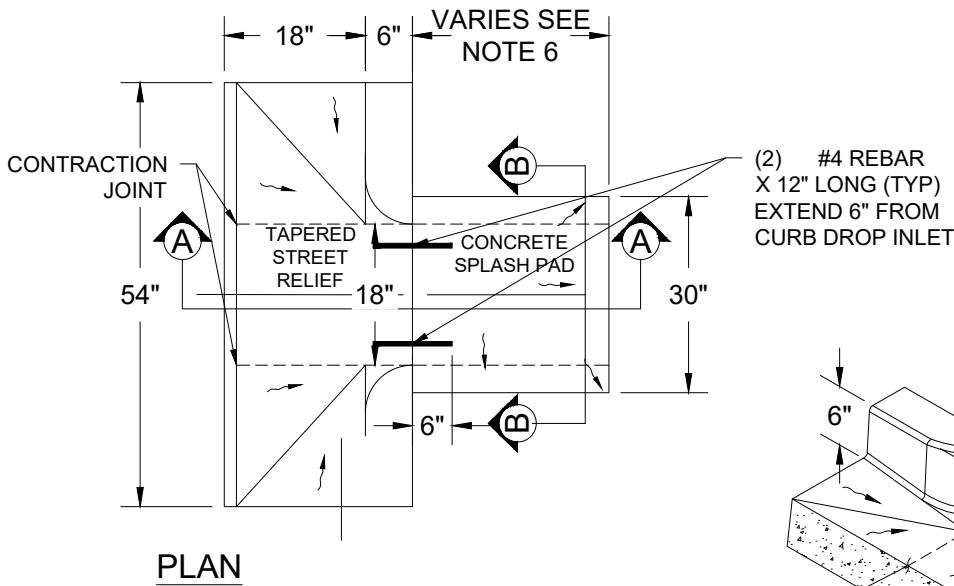
DRAWN TFH

REV. DATE NOV 2024

APPR.

DETAIL NO. 419

FILENAME: y:\inter-departmental\development\engineering\projects\public\works\standards\2.0\pws\revision\copy\details\gs-104b - swmm update 2025.dwg, Plotted 5/13/2025 1:07 PM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



NOTES:

1. IF PRESENT, MATCH GUTTER PAN WIDTH OF ADJACENT CURB AND GUTTER.
2. GUTTER AND DRAIN PAD SHALL TIED TOGETHER WITH #4 REBAR, 8" ON CENTER.
3. SEE CHECK DAM DETAIL GS-105 FOR DISTANCE TO TOP OF SPLASH PAD.
4. MAXIMUM DISTANCE BETWEEN INLETS SHALL BE 25 FEET.
5. INTENDED FOR USE WITH STORMWATER SWALES. SEE GS-114.
6. SWALE DRAIN PAD TO EXTEND TO BOTTOM OF SWALE.
7. MAINTAIN 2" EXPOSURE BETWEEN TOP OF SOD ROOT MASS OR HYDROSEED & TOP OF SWALE DRAIN PAD.

NTS

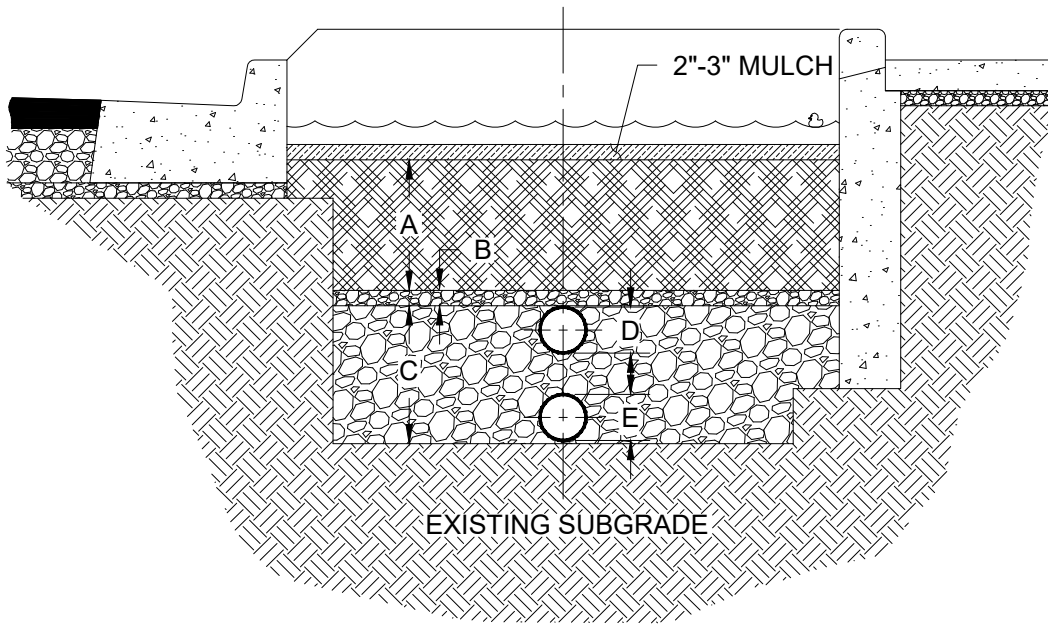
CITY OF GRESHAM

SWALE CONCRETE DRAIN PAD

PWS VERSION: SWMM 2025

DRAWN	AAD
REV. DATE	APRIL 2025
APPR.	
DETAIL NO.	GS-104B

FILENAME: y:\inter-departmental\development engineering projects\public works standard\2.0 pws revision copy\details\gs_green streets\green street cad\gs-107 - swmm update 2025.dwg, Plotted 11/21/2024 9:30 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



CONDITION	A	B	C	D	E
GOOD INFILTRATING SOILS (>2"/hr)	12" (MIN) TOPSOIL	0"	0"	NA	NA
LOW INFILTRATING SOILS (0.5 to 2"/hr)	18" (MIN) TOPSOIL	0"	0"	NA	NA
POOR INFILTRATING SOILS (<0.5"/hr)	24" (MIN) TOPSOIL	3" OF 1/4"-NO. 10 OPEN GRADED AGGREGATE	18" MIN. 1 1/2"-3/4" OPEN GRADED AGGREGATE	6" PERF PIPE	NA
LINED FACILITIES	24" (MIN) TOPSOIL	3" OF 1/4"-NO. 10 OPEN GRADED AGGREGATE	18" MIN. 1 1/2"-3/4" OPEN GRADED AGGREGATE	NA	6" PERF PIPE

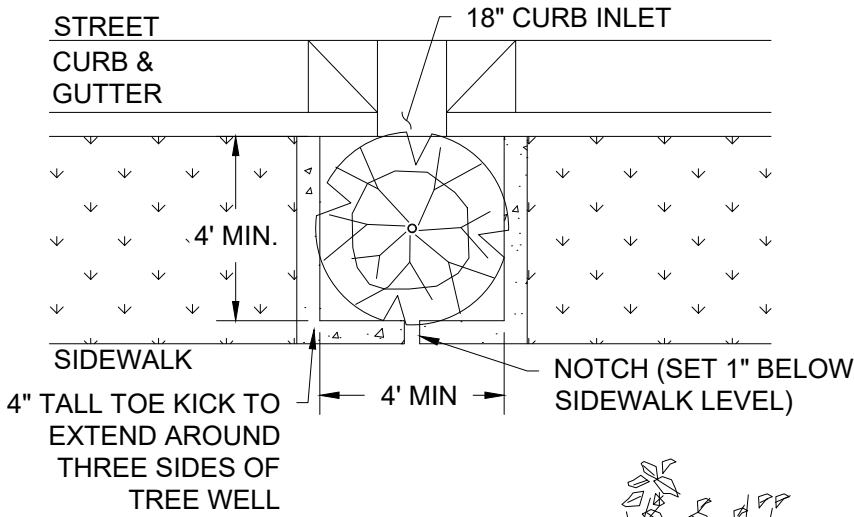
NOTES:

1. SEE STORMWATER MANAGEMENT MANUAL FOR DETAILS ON STORMWATER FACILITY TOPSOIL SPECIFICATIONS.
2. MINIMUM DEPTH FOR A IS 12 INCHES. SEE GS-105 TO DETERMINE DEPTHS FOR SLOPED FACILITIES.
3. LINED FACILITIES ONLY ALLOWED FOR STEEP SLOPES (>20%), UNCONSOLIDATED FILL (WITH SLOPES OR LOW INFILTRATION SOILS) OR IN CONTAMINATED SOILS, SEE GS-106 FOR DETAILS ON LINED FACILITIES.
4. TREES INCLUDED IN PLANTERS MUST FOLLOW GS-112. TREES ARE NOT ALLOWED IN LINED FACILITIES OR TO HAVE ROCK OR UNDERDRAIN UNDER PORTIONS OF THE FACILITY WHERE TREES WILL BE PLANTED.
5. MAXIMUM LENGTH OF PERFORATED PIPE IS 36 INCHES.

NTS

	<p align="center">UNDERDRAIN AND ROCK REQUIREMENTS</p> <p>PWS VERSION: SWMM 2025</p>	DRAWN DRO
		REV. DATE NOV 2024
		APPR.
		DETAIL NO. GS-107

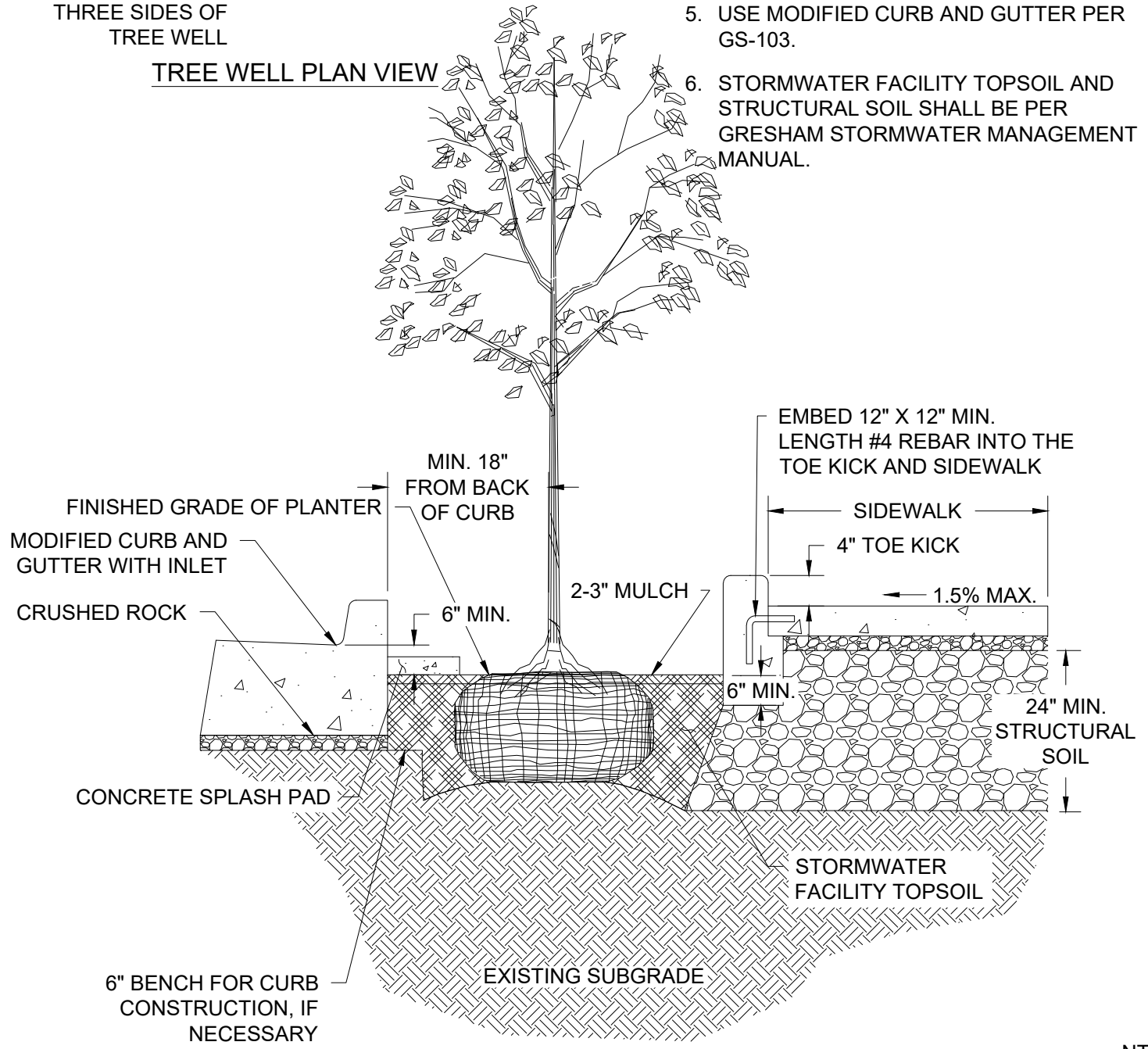
FILENAME: y:\inter-departmental\development engineering projects\public works standard\2.0 pws revision copy\details\gs_green_streets\green_street_cad\gs-111 - swmm update 2025.dwg, Plotted 2/25/2025 10:52 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



TREE WELL PLAN VIEW

NOTES:

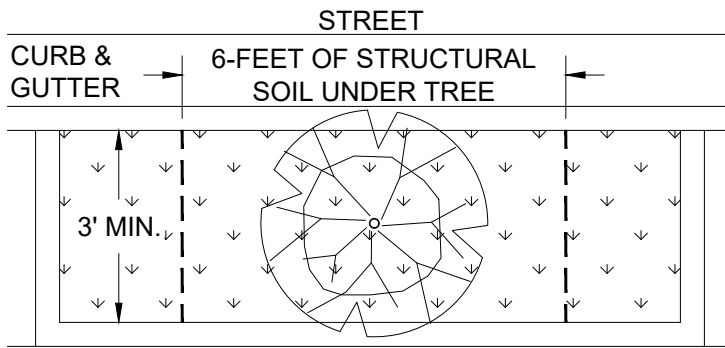
1. REMOVE WIRE AND BURLAP FROM ROOT BALL PRIOR TO BACKFILLING.
2. PLANT TREE ON PEDESTAL OF NATIVE SOIL. ADJUST HEIGHT AS NEEDED TO SET TOP OF ROOT BALL A MINIMUM OF 1"-2" ABOVE TOPSOIL SURFACE.
3. SET ONE "DRAINS TO RIVER" BUTTON INTO CURB BEFORE CONCRETE HAS DRIED.
4. SEE GS-104 FOR CURB INLET DETAILS.
5. USE MODIFIED CURB AND GUTTER PER GS-103.
6. STORMWATER FACILITY TOPSOIL AND STRUCTURAL SOIL SHALL BE PER GRESHAM STORMWATER MANAGEMENT MANUAL.



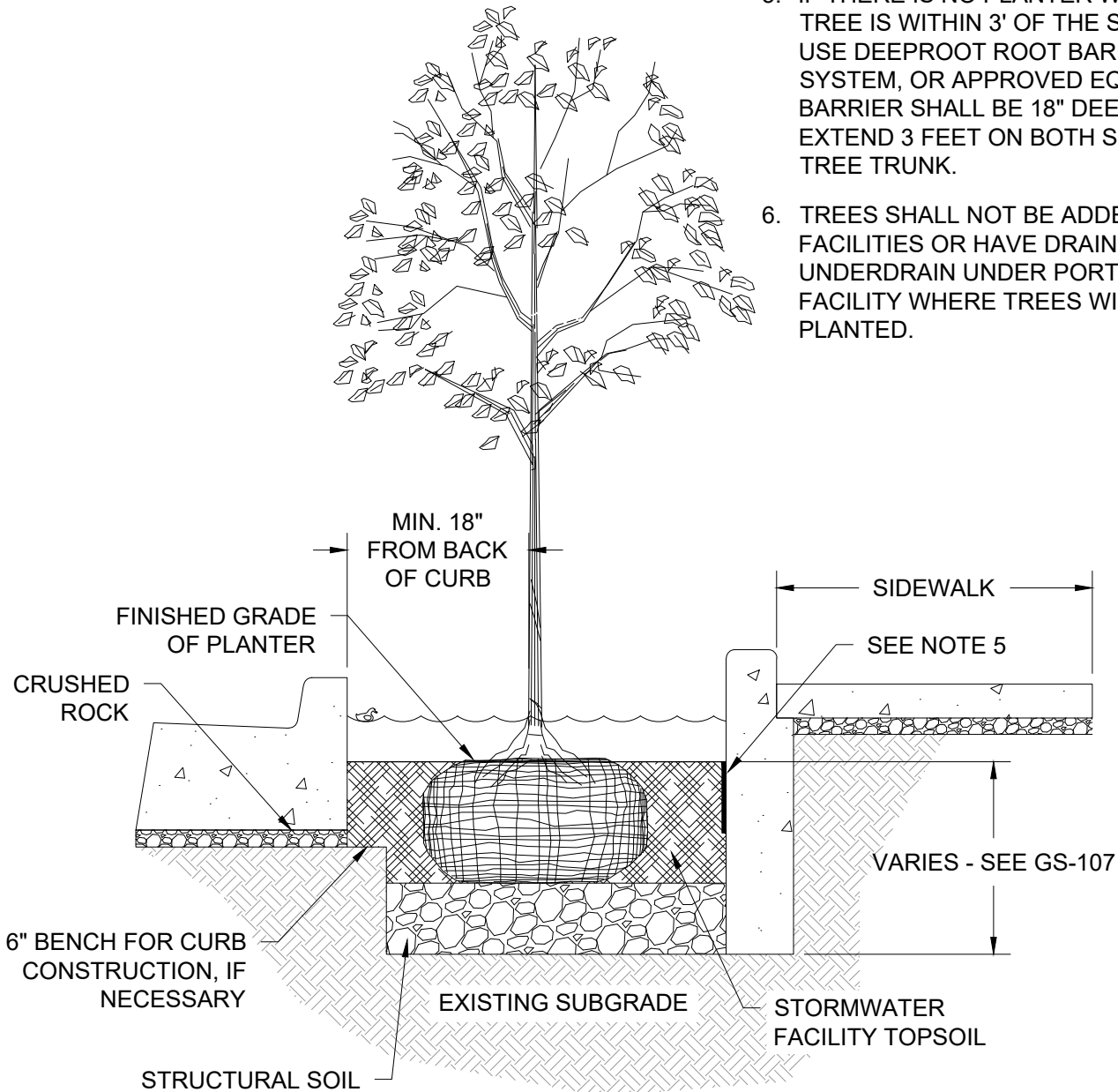
NTS

	<p>STORMWATER TREE WELL WITH STRUCTURAL SOIL</p>	<p>DRAWN AAD</p>
	<p>PWS VERSION: SWMM 2025</p>	<p>REV. DATE FEB 2025</p>
		<p>APPR.</p>
		<p>DETAIL NO. GS-111</p>

FILENAME: y:\inter-departmental\development engineering projects\public works standard\2.0 pws revision copy\details\gs_green_streets\green_street_cad\gs-112 - swmm update 2025.dwg, Plotted 11/25/2024 10:09 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



**SIDEWALK
STORMWATER PLANTER PLAN VIEW**



NTS

NOTES:

1. TREES MUST BE SELECTED FROM LIST OF APPROVED STORMWATER TREES, UNLESS APPROVED BY THE CITY.
2. REMOVE WIRE AND BURLAP FROM ROOT BALL PRIOR TO BACKFILLING.
3. SET TOP OF ROOT BALL A MINIMUM OF 1"-2" ABOVE TOPSOIL SURFACE.
4. 3FT MINIMUM WIDTH FOR PLANTERS WITH TREES.
5. IF THERE IS NO PLANTER WALL AND THE TREE IS WITHIN 3' OF THE SIDEWALK, USE DEEPROOT ROOT BARRIER SYSTEM, OR APPROVED EQUAL. ROOT BARRIER SHALL BE 18" DEEP AND EXTEND 3 FEET ON BOTH SIDES OF THE TREE TRUNK.
6. TREES SHALL NOT BE ADDED TO LINED FACILITIES OR HAVE DRAIN ROCK OR UNDERDRAIN UNDER PORTIONS OF THE FACILITY WHERE TREES WILL BE PLANTED.

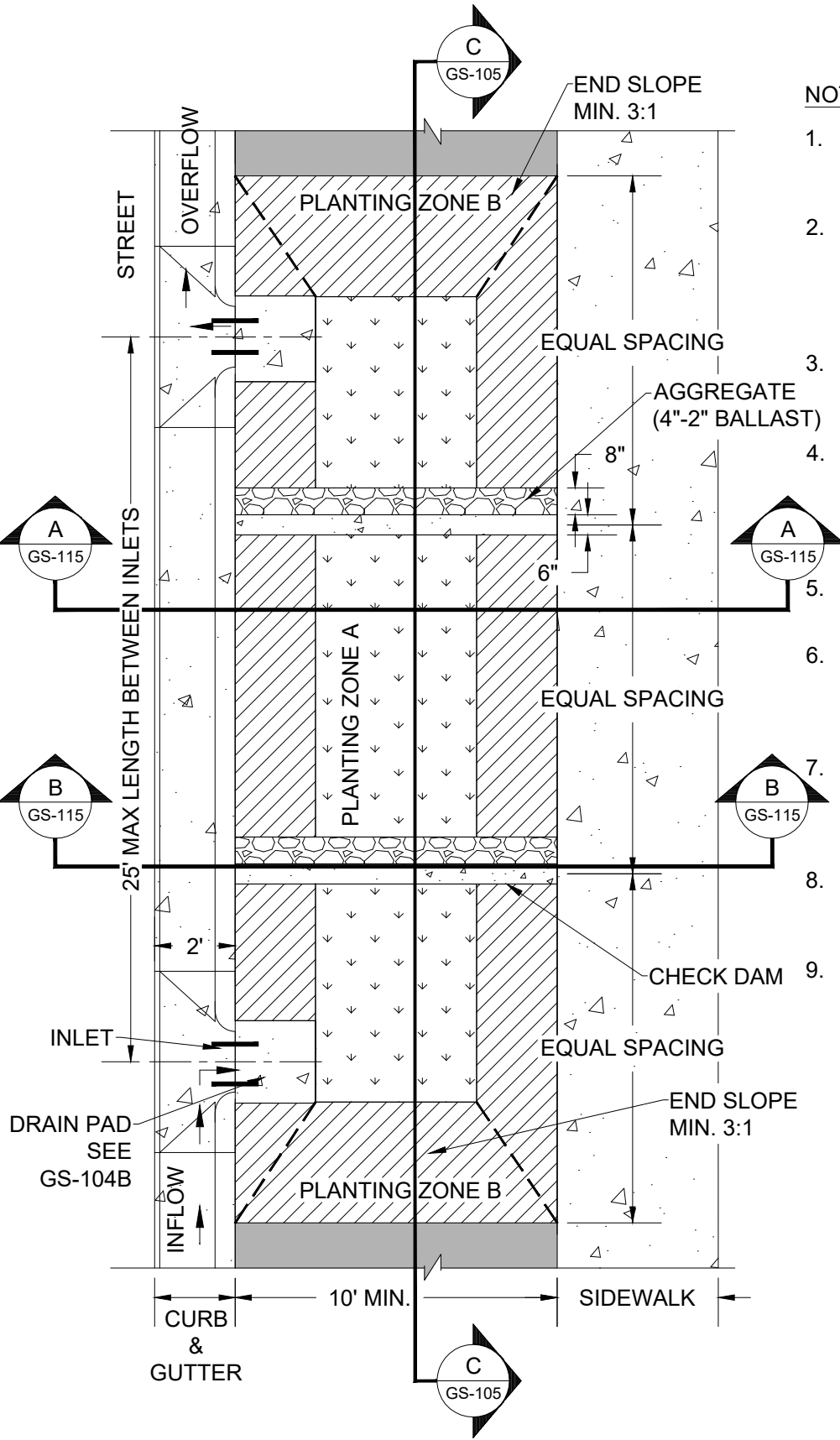
**CITY OF
GRESHAM**

**STREET TREE PLANTING WITHIN
STORMWATER PLANTER**

PWS VERSION: SWMM 2025

DRAWN	KRB
REV. DATE	NOV 2024
APPR.	
DETAIL NO.	GS-112

FILENAME: y:\inter-departmental\development engineering projects\public works standard\2.0 pws revision copy\details\gs_green_streets\green_street_cad\gs-114 - swmm update 2025.dwg, Plotted 4/29/2025 8:47 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



NOTES:

1. SPECIFIC FACILITY DIMENSIONS MUST BE SHOWN ON STORMWATER UTILITY PLAN.
2. LONGITUDINAL SLOPE OF SWALE SHALL MATCH ROAD, UNLESS CHECK DAMS ARE USED, SEE GS-105 FOR CHECK DAM REQUIREMENTS.
3. PROVIDE STATIONS AND ELEVATIONS AT EVERY INLET, OUTLET, AND CHECK DAM.
4. SIDEWALK ELEVATION MUST BE SET ABOVE INLET AND OUTLET ELEVATIONS TO ALLOW OVERFLOW TO DRAIN TO STREET BEFORE SIDEWALK.
5. SEE SHEET GS-104B FOR INLET DETAILS.
6. SPECIAL REQUIREMENTS FOR WATER LINES, METERS, AND FIRE HYDRANTS, SEE SHEET GS-109 FOR DETAILS.
7. SEE GRESHAM STORMWATER MANAGEMENT MANUAL FOR STORMWATER FACILITY TOPSOIL REQUIREMENTS.
8. SEE GRESHAM STORMWATER MANAGEMENT MANUAL FOR PLANTING GUIDANCE.
9. IF STREET LIGHTS ARE PLACED IN FACILITY, PGE APPROVED FOUNDATION WITH 1' CONCRETE SURROUND MUST BE USED.

SCALE: 1"=4'-0"

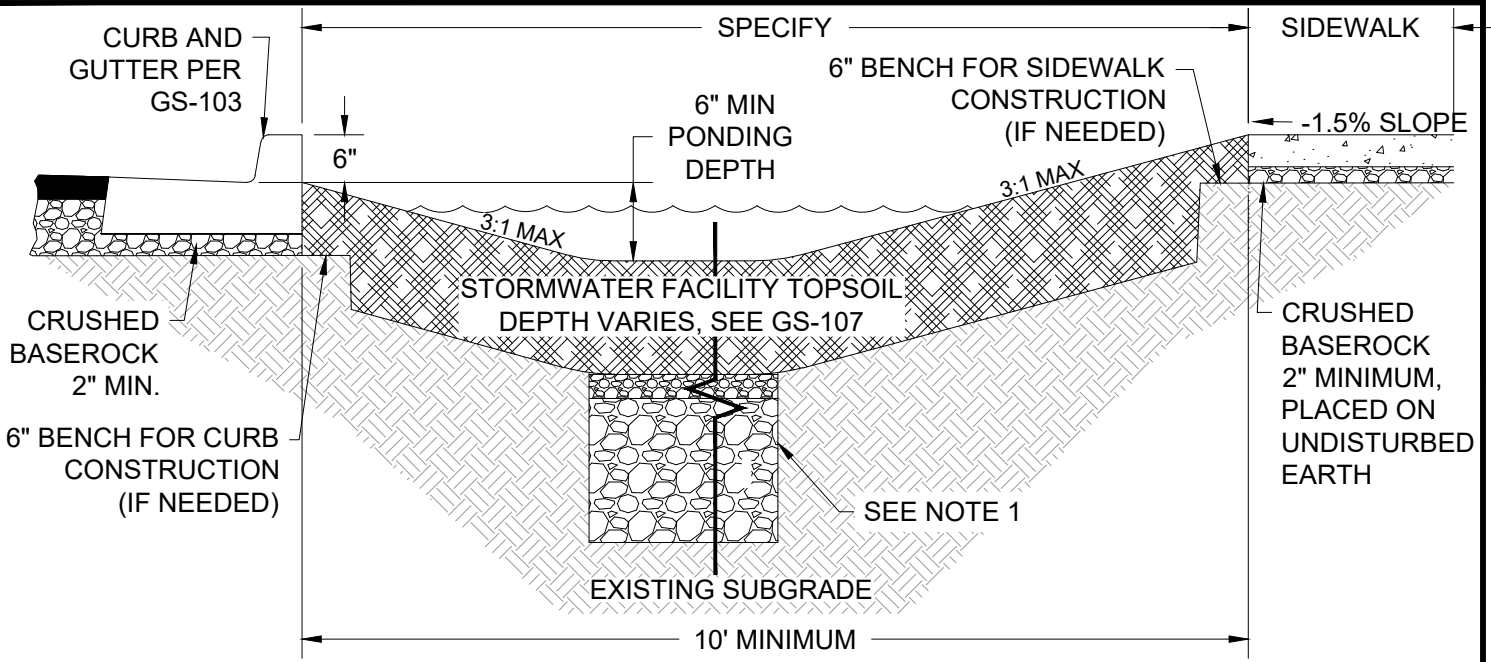
CITY OF GRESHAM

SWALE PLAN VIEW

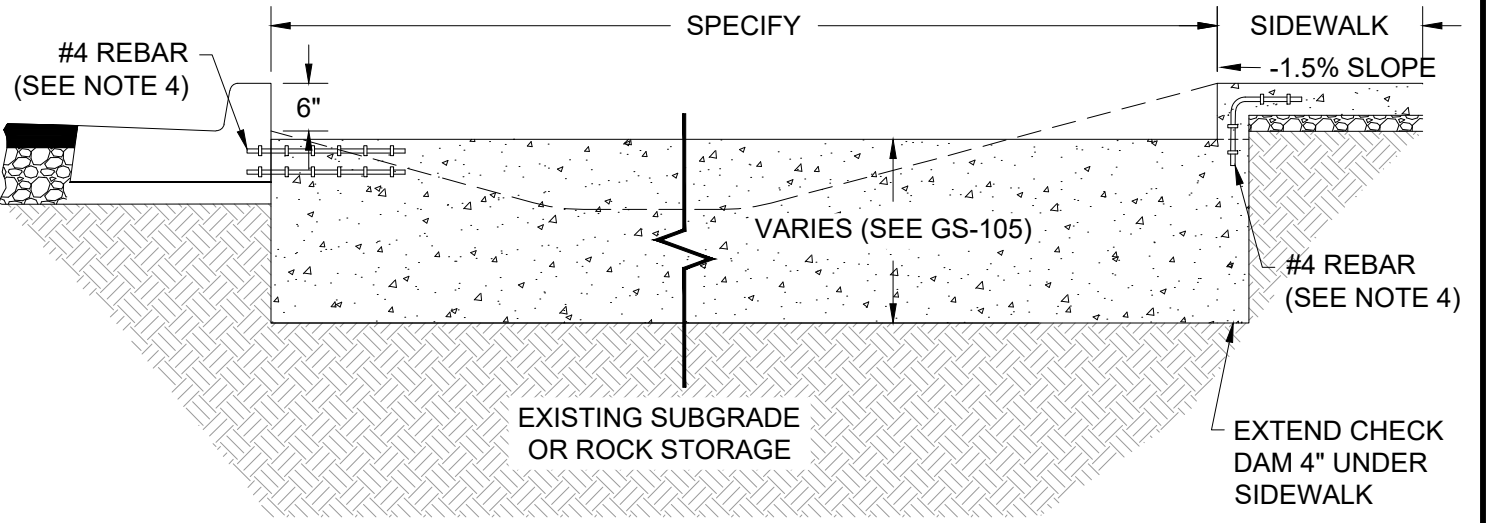
PWS VERSION: SWMM 2025

DRAWN	AAD
REV. DATE	APRIL 2025
APPR.	
DETAIL NO.	GS-114

FILENAME: y:\inter-departmental\development engineering projects\public works standard\2.0 pws revision copy\details\gs_green streets\green street cad\gs-115 - swmm update 2025.dwg, Plotted 3/28/2025 10:31 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



SECTION A-A



SECTION B-B

FOR PLAN VIEW
REFER TO GS-114

NOTES:

1. SEE GS-107 TO DETERMINE WHEN AGGREGATE AND UNDERDRAINS ARE REQUIRED. WHEN REQUIRED, AGGREGATE ONLY NEEDS TO BE IN THE MIDDLE PORTION OF THE SWALE.
2. FRACTURE AND LOOSEN THE NATIVE SOIL FOLLOWING INITIAL EXCAVATION AND BEFORE INSTALLING TOPSOIL OR ROCK.
3. STORMWATER FACILITY TOPSOIL SHALL BE PER THE CITY'S STORMWATER MANAGEMENT MANUAL.
4. EMBED OR EPOXY SET A 12" MIN. LENGTH #4 REBAR BETWEEN CHECK DAM AND CURB AND/OR SIDEWALK.
5. TREES PLANTED IN SWALE SHALL BE CENTERED BETWEEN CURB AND SIDEWALK. PLACE ROOT BALL ON NATIVE SOIL AND ENSURE TOP OF ROOT BALL IS 1-2" ABOVE FINAL TOPSOIL ELEVATION.

NTS

**CITY OF
GRESHAM**

SWALE SECTION VIEW

PWS VERSION: SWMM 2025

DRAWN	AAD
REV. DATE	MARCH 2025
APPR.	
DETAIL NO.	GS-115