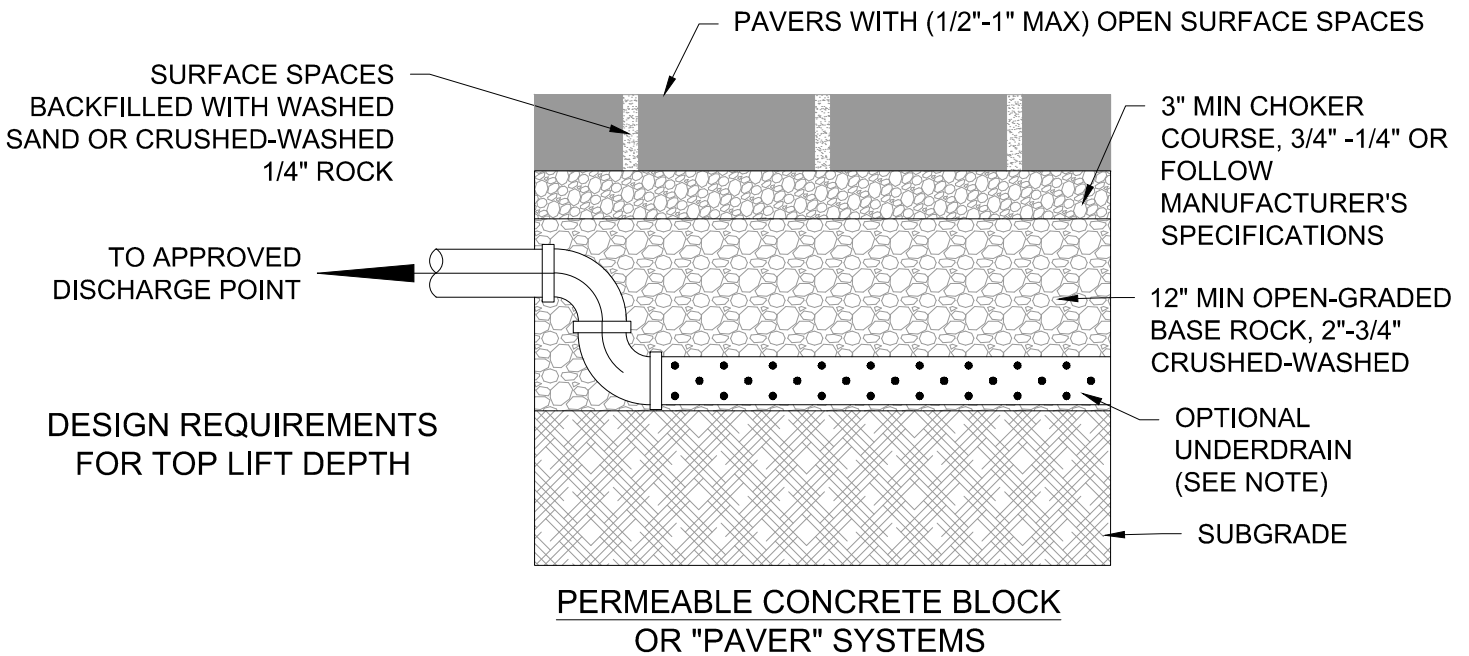


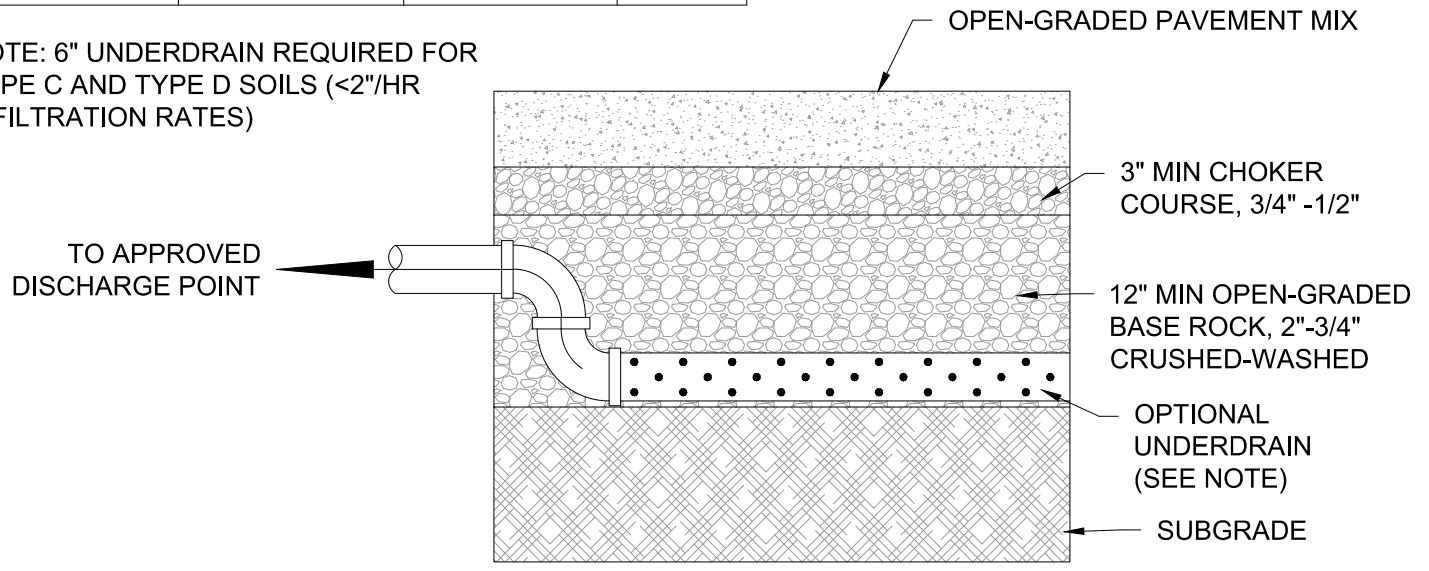
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**PERMEABLE CONCRETE BLOCK OR "PAVER" SYSTEMS**

	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 (<2"/HR INFILTRATION RATES)

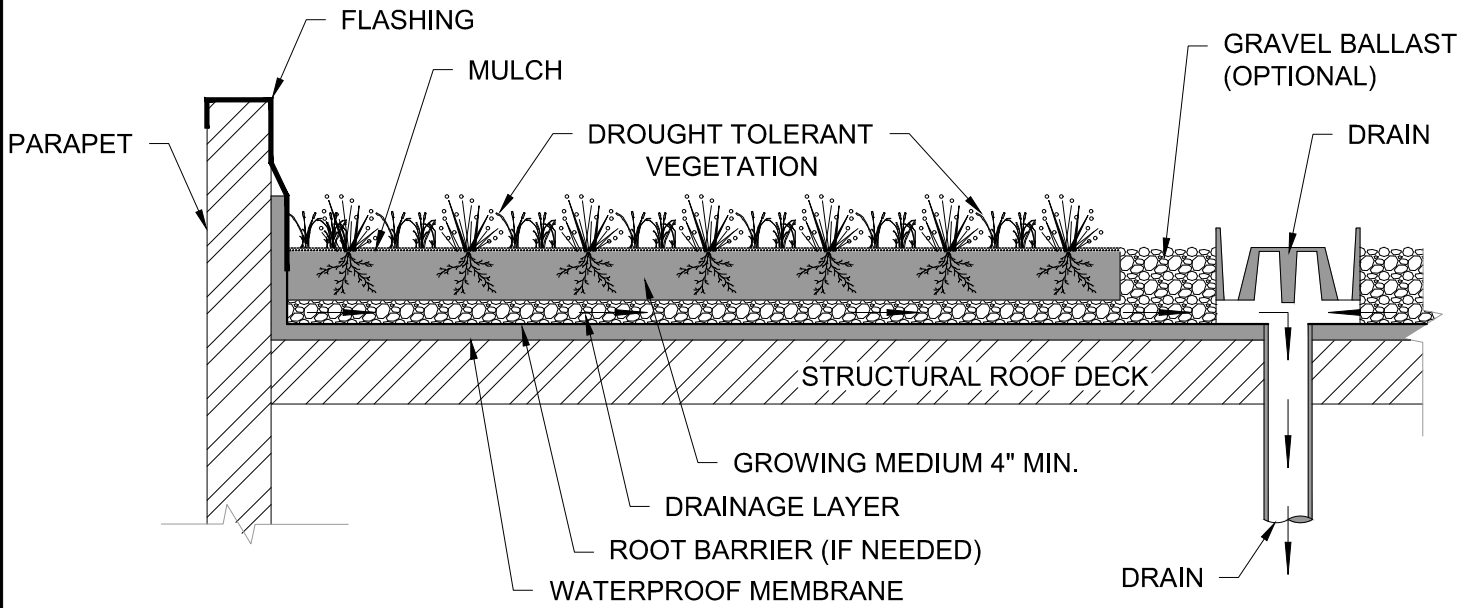


**PERVIOUS (OPEN GRADED) CONCRETE AND ASPHALT SYSTEMS**

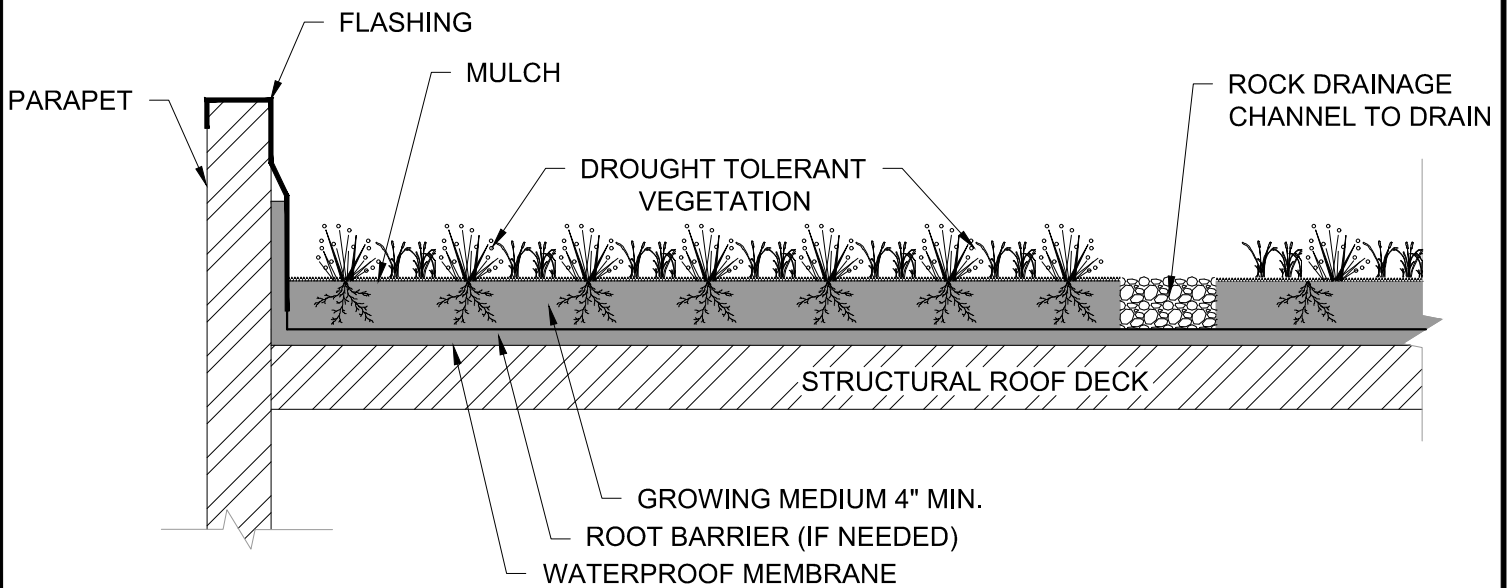
- DRAWING NOT TO SCALE -

	<p align="center"><b>POROUS PAVEMENT</b></p> <p align="center">PUBLISHED: JAN 2023</p>	DRAWN <b>RMS</b>
		REV. DATE <b>APR 2018</b>
		APPR.
		DETAIL NO. <b>ST-100</b>

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ECOROOF WITH DRAINAGE LAYER

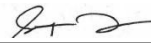


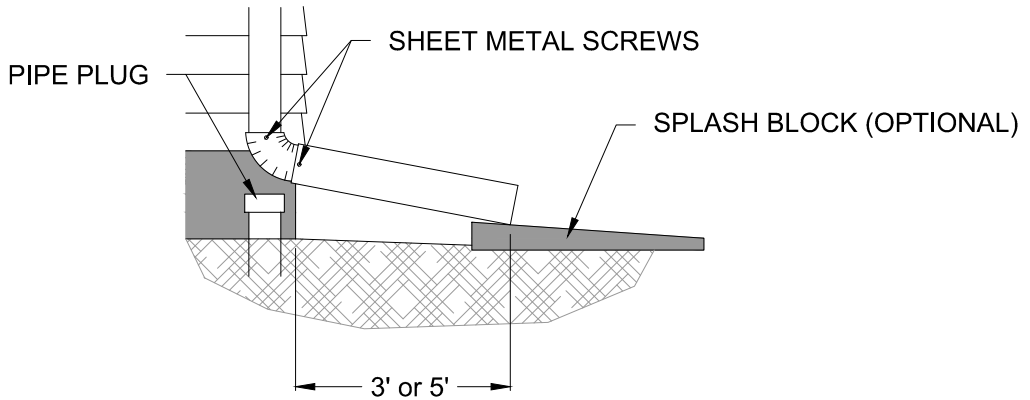
ECOROOF WITH DRAINAGE CHANNELS

**CITY OF  
GRESHAM**

**ECOROOF**

PUBLISHED: JAN 2023

DRAWN	DRO
REV. DATE	APR 2018
APPR.	
DETAIL NO.	ST-110



1. SITE SUITABILITY: DOWNSPOUT EXTENSIONS ARE SUITABLE FOR SINGLE FAMILY RESIDENTIAL SITES THAT HAVE WELL DRAINING SOILS, >2" PER HOUR, AND HAVE AN OVERALL SLOPE OF 10% OR LESS.
2. SIZING: AREA OF DISCHARGE MUST BE 10% OF THE CONTRIBUTING ROOF AREA. A MAXIMUM OF 500 SF OF ROOF AREA IS ALLOWED TO DRAIN TO EACH DOWNSPOUT.
3. DOWNSPOUTS MUST DRAIN AT LEAST 5 FEET FROM BASEMENT WALLS AND AT LEAST 3 FEET FROM CRAWL SPACES AND CONCRETE SLABS.
4. THE END OF THE DOWNSPOUT MUST BE AT LEAST 5 FEET FROM THE PROPERTY LINE, AND POSSIBLY MORE IF THE LANDSCAPE SLOPES TOWARD THE NEIGHBOR'S PROPERTY.
5. DO NOT DISCHARGE ONTO DRIVEWAYS, HARDSCAPE OR OTHER IMPERVIOUS AREAS INCLUDING PUBLIC SIDEWALKS AND STREETS.
6. USING A SPLASH BLOCK AT THE END OF THE EXTENSION IS OPTIONAL, BUT IT WILL HELP PREVENT SOIL EROSION.

**CITY OF  
GRESHAM**

## DOWNSPOUT EXTENSION

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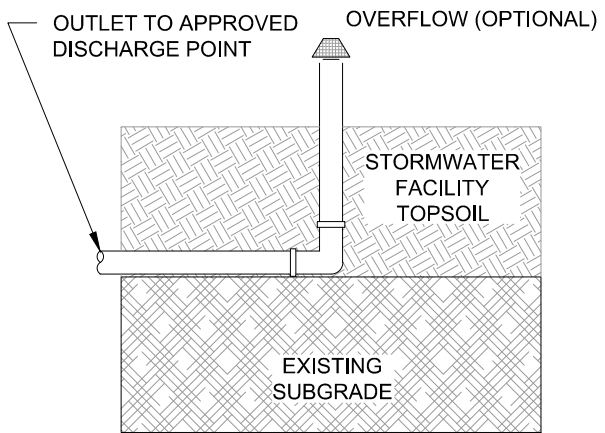
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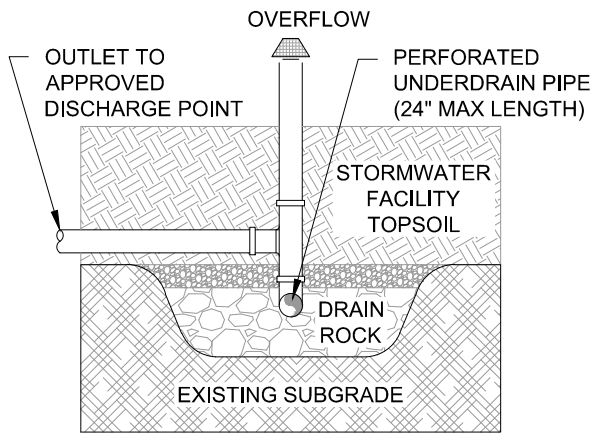
DETAIL NO. ST-120

FILENAME: y:\des\stormwater\stormwater management manual\current\swmm\apph\standard details\private storm details complete 20221107.dwg, Plotted 11/15/2022 9:07 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



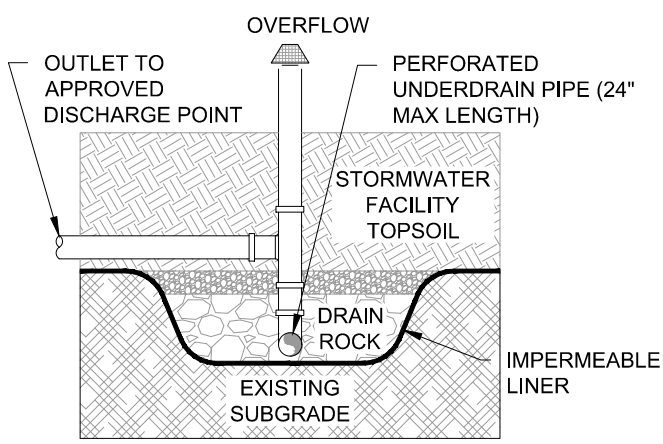
**FULL INFILTRATION**

TYPE A AND B SOILS  
OVERFLOW IS OPTIONAL



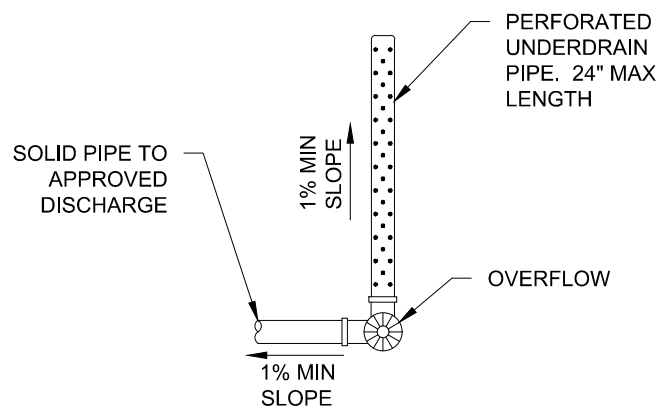
**PARTIAL INFILTRATION**

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**

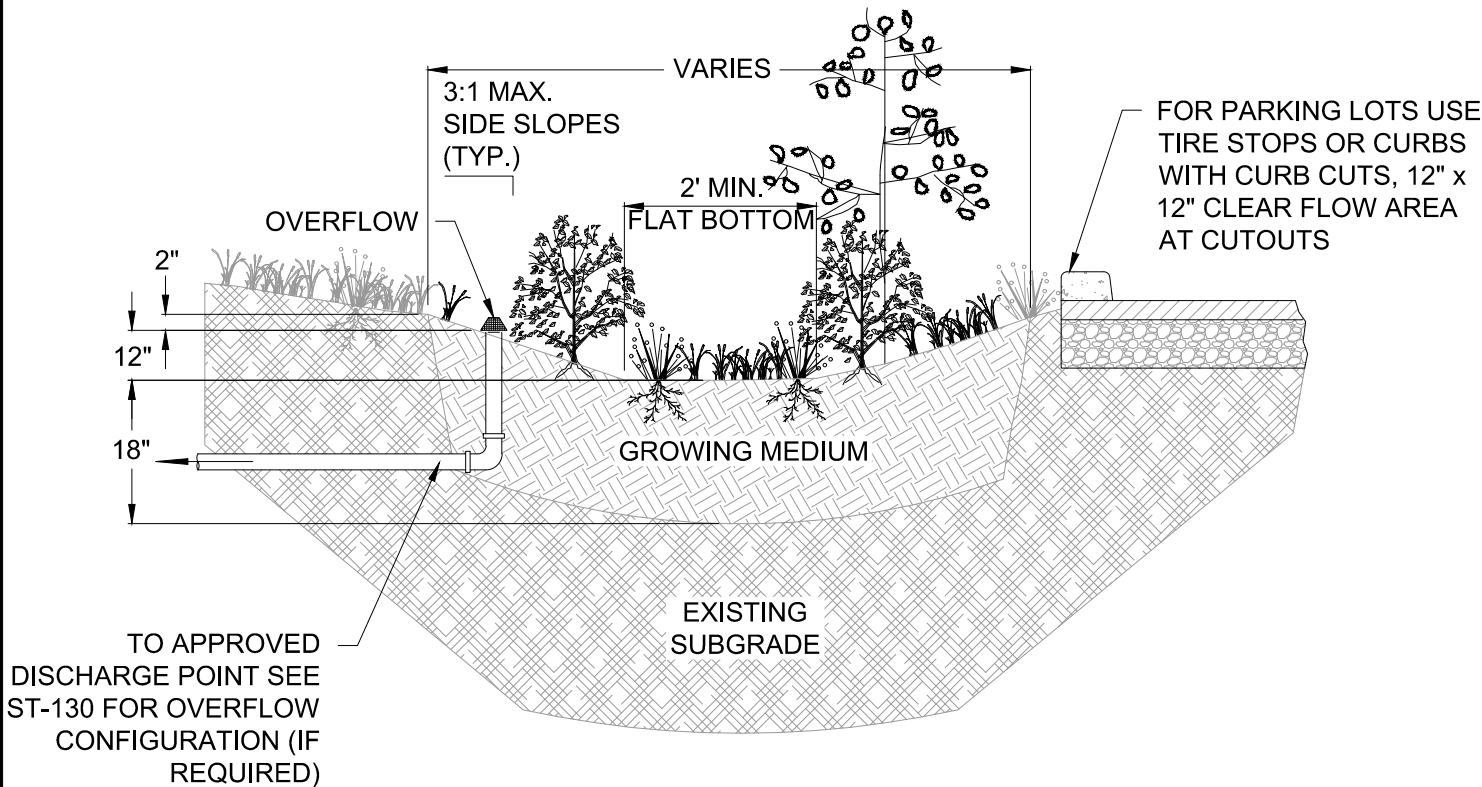
PIPE W/ UNDERDRAIN & DISCHARGE POINT

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 24" 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

<p><b>CITY OF GRESHAM</b></p>	<p><b>FACILITY OVERFLOW CONFIGURATION</b></p>	<p>DRAWN <b>DRO</b></p>
		<p>REV. DATE <b>OCT 2019</b></p>
		<p>APPR. </p>
		<p>DETAIL NO. <b>ST-130</b></p>
<p>PUBLISHED: JAN 2023</p>		

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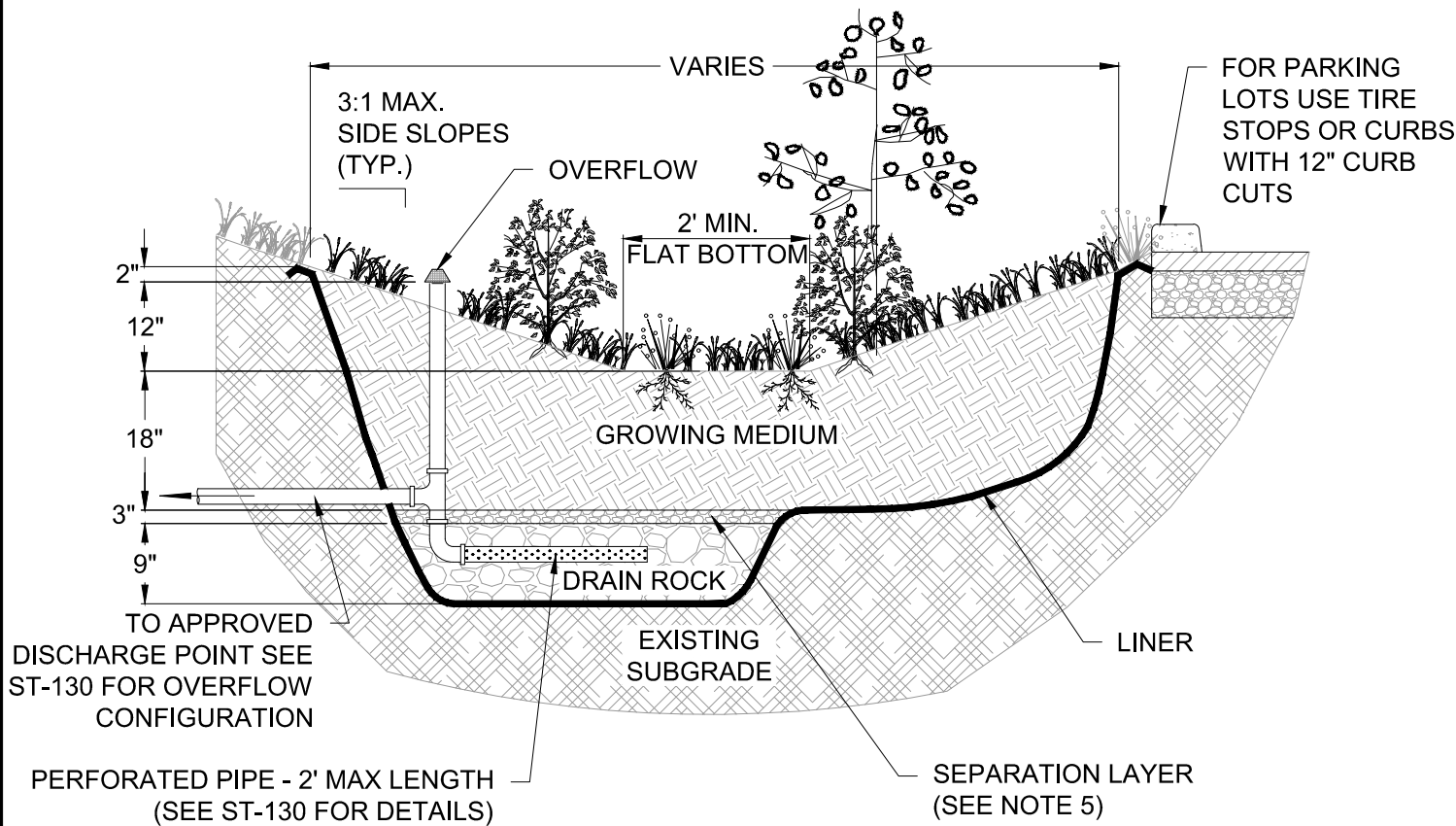


1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC AND EQUIPMENT STAGING IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING, AND AFTER CONSTRUCTION.
2. DIMENSIONS:  
WIDTH AND LENGTH VARY. DIMENSIONS TO BE SPECIFIED ON PLANS BASED ON SIZING FORM. DEPTH (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12".  
FLAT BOTTOM WIDTH: 2' MINIMUM.  
SIDE SLOPES: 3:1 MAXIMUM.
3. SETBACKS:  
FACILITY SHOULD BE 10' AWAY FROM FOUNDATIONS AND 5' AWAY FROM PROPERTY LINES.
4. OVERFLOW:  
FACILITY 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.
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. GROWING MEDIUM:  
18" MINIMUM DEPTH. USE SAND/LOAM/COMPOST 3-WAY MIX, OR APPROVED MIX THAT WILL SUPPORT HEALTHY PLANTS.
7. VEGETATION: FOLLOW LANDSCAPE PLANS OTHERWISE REFER TO PLANT LIST IN APPENDIX G. MINIMUM CONTAINER SIZE IS #1. # OF PLANTINGS PER 100SF OF FACILITY AREA:  
ZONE A (WET): 80 HERBACEOUS PLANTS OR 72 HERBACEOUS PLANTS AND 4 SMALL SHRUBS.  
ZONE B (MODERATE TO DRY): 7 LARGE OR SMALL SHRUBS AND 70 GROUNDCOVER PLANTS.  
THE DELINEATION BETWEEN ZONE A AND B MUST BE EITHER AT THE OUTLET ELEVATION OR THE CHECK DAM ELEVATION, WHICHEVER IS LOWEST. IF FACILITY AREA IS OVER 200SF CONSIDER ADDING A TREE.
8. SPLASH BLOCK: INSTALL 4-6" WASHED RIVER ROCK OR SPLASH PAD FOR EROSION CONTROL AT INLETS AND DOWNSPOUT.
9. RAIN GARDEN CAN BE ELONGATED TO CREATE A SWALE FOR LARGER DEVELOPMENTS. SLOPE SHOULD BE 6% OR LESS.

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

	<h2 style="margin: 0;">INFILTRATION RAIN GARDEN/SWALE</h2> <p style="margin: 0;">PUBLISHED: JAN 2023</p>	DRAWN <b>DRO</b>
		REV. DATE <b>OCT 2019</b>
		APPR.
		DETAIL NO. <b>ST-140</b>

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PERFORATED PIPE - 2' MAX LENGTH (SEE ST-130 FOR DETAILS)

SEPARATION LAYER (SEE NOTE 5)

1. DIMENSIONS:  
WIDTH AND LENGTH VARY. DIMENSIONS TO BE SPECIFIED ON PLANS BASED ON SIZING FORM.  
DEPTH (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12".  
FLAT BOTTOM WIDTH: 2' RECOMMENDED.  
SIDE SLOPES OF SWALE: 3:1 MAXIMUM.
2. SETBACKS: NONE REQUIRED FOR LINED FACILITIES. PARTIAL INFILTRATION FACILITIES SHOULD BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES.
3. OVERFLOW:  
FACILITY 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.  
OVERFLOW MUST HAVE A 6"-12" UPTURN PRIOR TO DISCHARGE.
4. 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.
5. DRAIN LAYER:  
NOT ALLOWED FOR TYPE A AND B SOILS (UNLESS LINED FACILITY). OPTIONAL FOR TYPE C SOILS, AND REQUIRED FOR TYPE D SOILS.  
3/4"-1 1/2" WASHED ROUND ROCK. DEPTH: 9".  
SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM:  
1/4" - #10 ROCK, 2 TO 3 INCHES DEEP.
6. GROWING MEDIUM:  
18" MINIMUM DEPTH. USE SAND/LOAM/COMPOST 3-WAY MIX, OR APPROVED MIX THAT WILL SUPPORT HEALTHY PLANTS.
7. VEGETATION: FOLLOW LANDSCAPE PLANS OTHERWISE REFER TO PLANT LIST IN APPENDIX G. MINIMUM CONTAINER SIZE IS #1. # OF PLANTINGS PER 100SF OF FACILITY AREA:  
ZONE A (WET): 80 HERBACEOUS PLANTS OR 72 HERBACEOUS PLANTS AND 4 SMALL SHRUBS.  
ZONE B (MODERATE TO DRY): 7 LARGE OR SMALL SHRUBS AND 70 GROUND COVER PLANTS.  
THE DELINEATION BETWEEN ZONE A AND B MUST BE EITHER AT THE OUTLET ELEVATION OR THE CHECK DAM ELEVATION, WHICHEVER IS LOWEST.  
IF FACILITY AREA IS OVER 200SF CONSIDER ADDING A TREE.
8. WATERPROOF LINER: 30 MIL EPDM, HDPE OR APPROVED EQUIVALENT REQUIRED FOR LINED/FILTRATION FACILITIES PER SWMM SECTION 1.2.2.
9. SPLASH BLOCK: INSTALL 4-6" WASHED RIVER ROCK OR SPLASH PAD FOR EROSION CONTROL AT INLETS AND DOWNSPOUT.
10. RAIN GARDEN CAN BE ELONGATED TO CREATE A SWALE FOR LARGER DEVELOPMENTS. SLOPE SHOULD BE 6% OR LESS.

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

CITY OF  
GRESHAM

PARTIAL INFILTRATION - LINED/FILTRATION  
RAIN GARDEN/SWALE

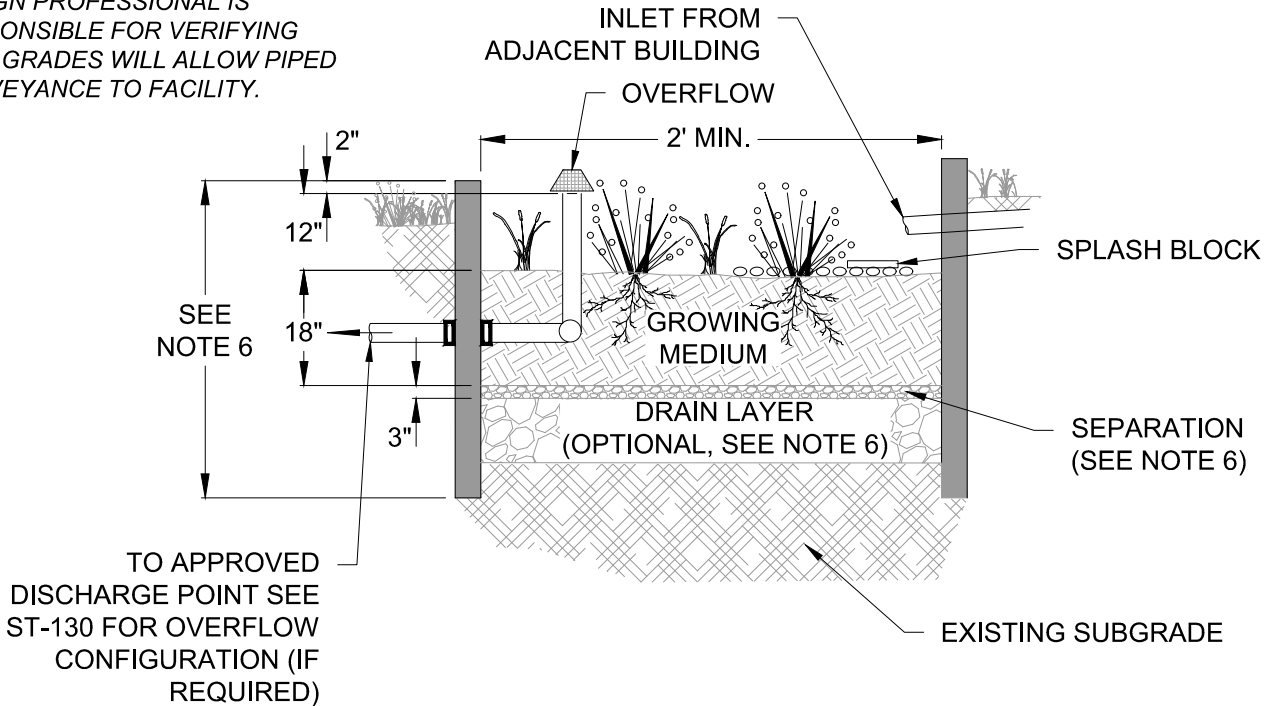
PUBLISHED: JAN 2023

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REV. DATE	OCT 2019
APPR.	
DETAIL NO.	ST-141

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## 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:  
PLANTERS SHOULD BE 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.

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

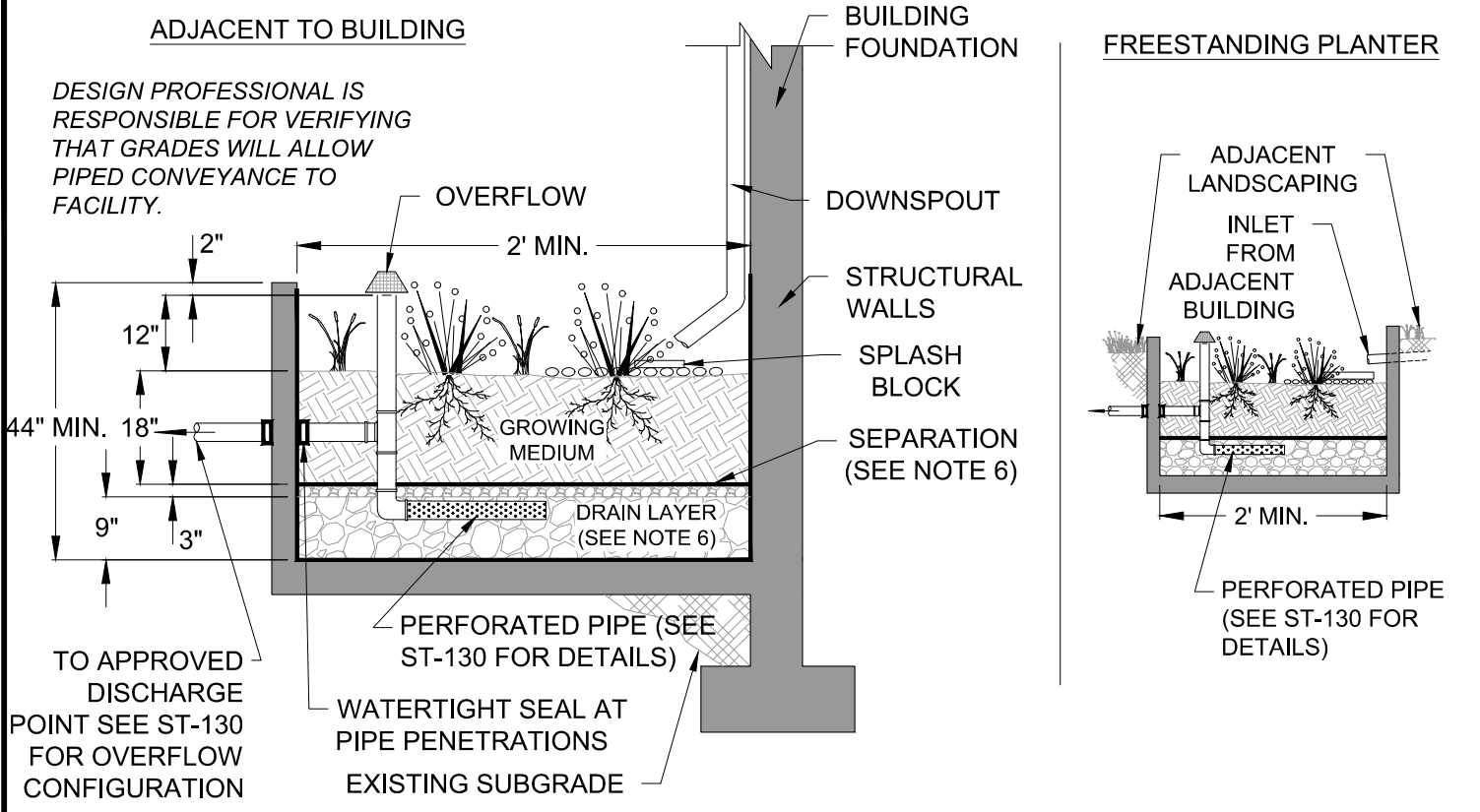
**CITY OF  
GRESHAM**

## INFILTRATION PLANTER

PUBLISHED: JAN 2023

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REV. DATE	OCT 2019
APPR.	
DETAIL NO.	ST-150

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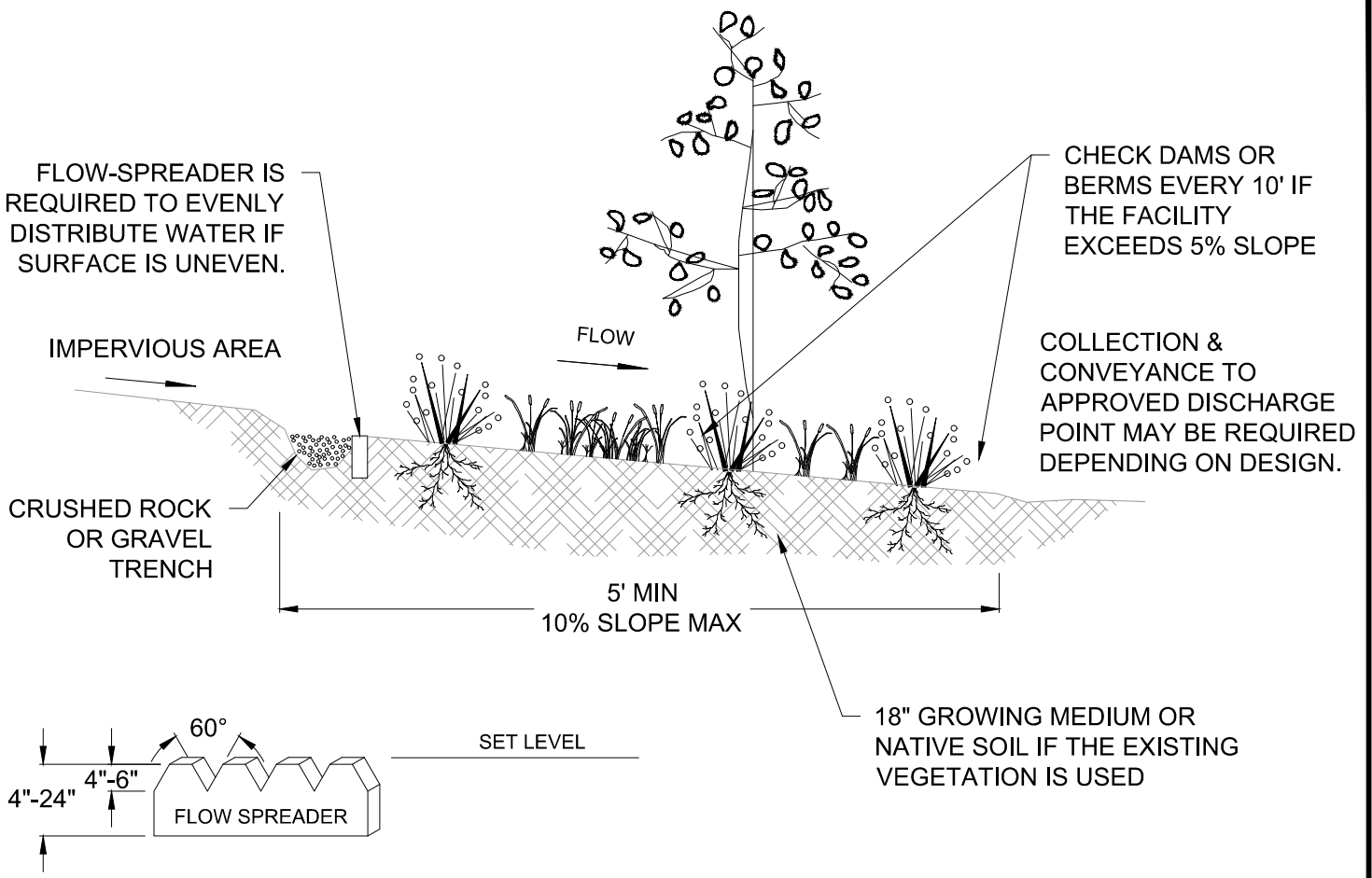
1. DIMENSIONS:  
WIDTH OF PLANTER: 24" MINIMUM.  
DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12".  
LONGITUDINAL SLOPE OF PLANTER: 0.5% OR LESS.
2. SETBACKS:  
PLANTERS MUST BE LESS THAN 30" IN HEIGHT ABOVE FINISH GRADE IF WITHIN 5-FEET OF PROPERTY LINE.
3. PLANTER WALLS:  
MATERIAL MUST BE MONOLITHICALLY POURED CONCRETE. WALLS MUST BE INCLUDED ON FOUNDATION PLANS.
4. WATERPROOFING:  
MONOLITHICALLY POURED PLANTER, WITHOUT JOINTS IS REQUIRED. CHECK STATE STRUCTURAL REQUIREMENTS FOR FOUNDATIONS.
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:  
3/4" - 1 1/2" WASHED ROUND ROCK.  
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.

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

	<h2>FILTRATION PLANTER</h2>		DRAWN <b>DRO</b>
	PUBLISHED: JAN 2023		REV. DATE <b>OCT 2019</b>
	APPROVED:		APPR.
	DETAIL NO. <b>ST-151</b>		DETAIL NO. <b>ST-151</b>



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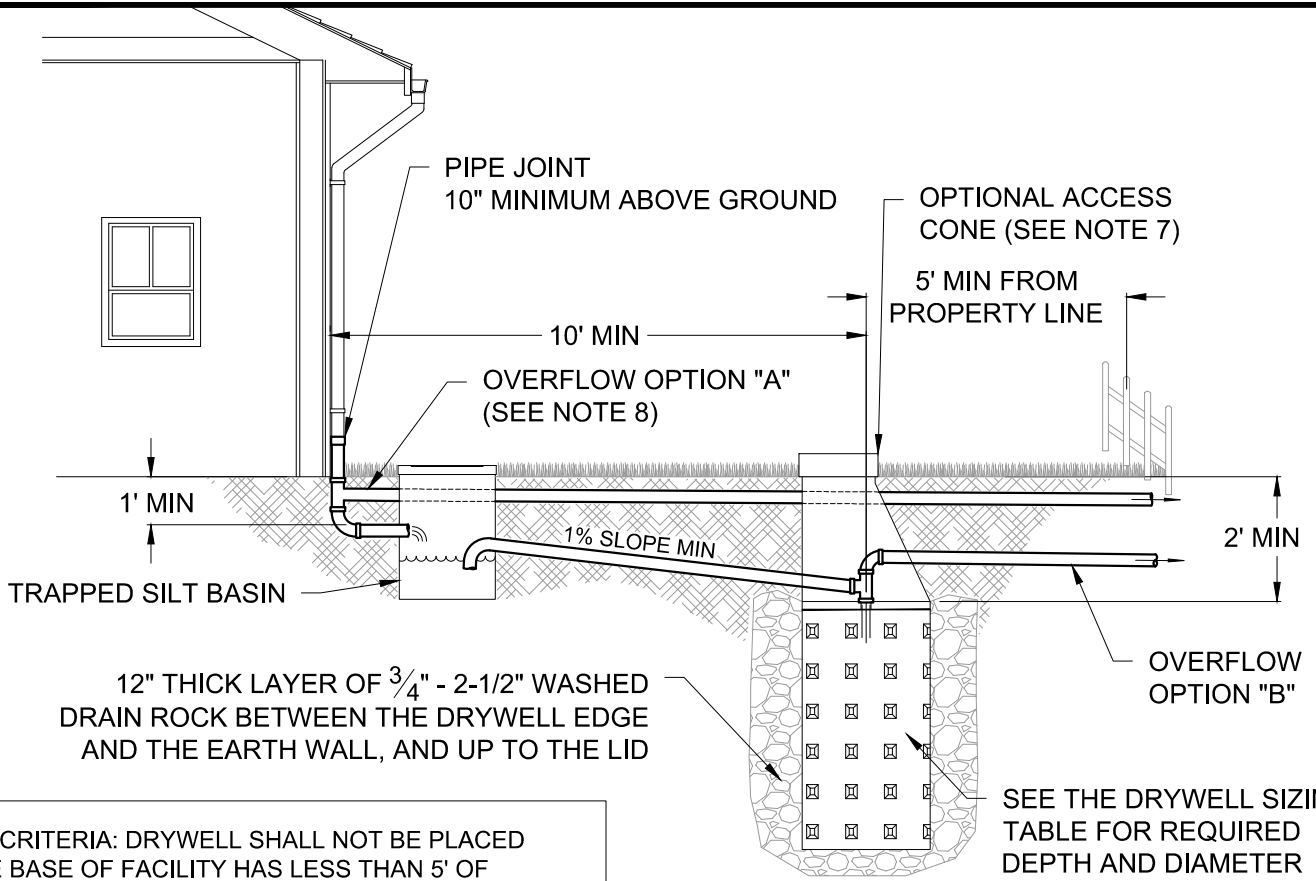


1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC AND EQUIPMENT STAGING FOR PROPOSED INFILTRATION AREAS PRIOR TO AND DURING CONSTRUCTION.
2. DIMENSIONS:
  - a. FLOW LINE LENGTH: 5' MINIMUM.
  - b. SLOPES: 0.5 - 10%
3. SETBACKS (FROM BEGINNING OF FACILITY):
  - a. 5' FROM PROPERTY LINE
  - b. 10FT FROM BUILDINGS
  - c. 50FT FROM WETLANDS, RIVERS, STREAMS, AND CREEKS WHERE REQUIRED.
4. OVERFLOW: COLLECTION FROM FILTER STRIP SHALL BE SPECIFIED ON PLANS TO APPROVED DISCHARGE POINT.
5. GROWING MEDIUM: UNLESS EXISTING VEGETATED AREAS ARE USED FOR THE FILTER STRIP, GROWING MEDIUM SHALL BE USED WITHIN THE TOP 18" (USE SAND/LOAM/COMPOST 3-WAY MIX OR APPROVED MIX THAT WILL SUPPORT HEALTHY PLANTS).
6. VEGETATION: THE ENTIRE FILTER STRIP MUST HAVE 100% COVERAGE BY NATIVE GRASSES, NATIVE WILDFLOWER BLENDS, NATIVE GROUND COVERS, OR ANY COMBINATION THEREOF.
7. FLOW SPREADERS: A GRADE BOARD OR SAND/GRAVEL TRENCH MAY BE REQUIRED TO DISPERSE THE RUNOFF EVENLY ACROSS THE FILTER STRIP TO PREVENT A POINT OF DISCHARGE. THE TOP OF THE LEVEL SPREADER MUST BE HORIZONTAL AND AT AN APPROPRIATE HEIGHT TO PROVIDE SHEETFLOW DIRECTLY TO THE SOIL WITHOUT SCOUR. LEVEL SPREADERS SHALL NOT HOLD A PERMANENT VOLUME OF RUNOFF. GRADE BOARDS CAN BE MADE OF ANY MATERIAL THAT WILL WITHSTAND WEATHER AND SOLAR DEGRADATION. TRENCHES USED AS LEVEL SPREADERS CAN BE FILLED WITH WASHED CRUSHED ROCK, PEA GRAVEL, OR SAND
8. CHECK DAMS: SHALL BE PLACED ACCORDING TO FACILITY DESIGN OTHERWISE:
  - a. 12" IN LENGTH
  - b. EQUAL TO THE WIDTH OF THE FILTER
  - c. 3 TO 5" IN HEIGHT
  - d. EVERY 10' WHERE SLOPE EXCEEDS 5%.

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

	<h2 style="margin: 0;">FILTER STRIP</h2>	DRAWN <b>DRO</b>
		REV. DATE <b>APR 2018</b>
		APPR.
		DETAIL NO. <b>ST-160</b>
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1. SITING CRITERIA: DRYWELL SHALL NOT BE PLACED WHERE BASE OF FACILITY HAS LESS THAN 5' OF SEPARATION TO THE SEASONAL HIGH WATER TABLE.
2. SIZING: USE DRYWELL SIZING TABLE TO SIZE THE DRYWELL(S) BASED ON IMPERVIOUS AREA.
3. THE TOP OF THE PERFORATED DRYWELL SECTIONS MUST BE BELOW THE FOUNDATION OR BASEMENT LEVEL OF THE PROPERTY AND THOSE OF NEIGHBORING PROPERTIES.
4. SETBACKS: MEASURED FROM THE CENTER OF DRYWELL, MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES, EXCEPT NEXT TO THE RIGHT-OF-WAY WHERE NO SETBACK IS REQUIRED BETWEEN THE EDGE OF THE DRYWELL DRAIN ROCK AND THE PROPERTY LINE.
5. PIPING MUST BE CAST IRON, ABS OR PVC. 3" PIPE REQUIRED FOR FACILITIES DRAINING UP TO 1500 SF, OTHERWISE 4" MINIMUM PIPE. OREGON PLUMBING SPECIALTY CODE ALSO APPLIES.
6. 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 SPECIALTY CODE 1101.11.1-1101.11.5. MATERIAL MAY BE PLASTIC OR METAL. LID MUST BE SOLID.
7. ADD MAINTENANCE ACCESS MANHOLE AND CONE FOR DRYWELL INSTALLED IN NON-RESIDENTIAL SETTINGS.

8. OVERFLOW: NOT REQUIRED FOR SITES WITH INFILTRATION RATES  $\geq 2$ "/HOUR. FOR AREAS WITH INFILTRATION RATES  $< 2$ "/HOUR, INSTALL OVERFLOW PIPE TO APPROVED DISCHARGE POINT. FOR FLATTER SITES, OPTION "A" MAY BE USED, WHERE OVERFLOW IS SET 2"-6" HIGHER THAN INLET TO SILT BASIN. FOR SLOPED SITES, USE OVERFLOW OPTION "B" FROM TOP OF DRYWELL. OPTION "B" OVERFLOW PIPE SHOULD BE 4"-6" HIGHER THAN PIPE TO DRYWELL.
9. DRYWELLS RECEIVING FLOW FROM ANYTHING OTHER THAN SINGLE-FAMILY RESIDENTIAL ROOFS MUST BE REGISTERED WITH DEQ AS AN UNDERGROUND INJECTION CONTROL (UIC).


DRYWELL DEPTH	MAXIMUM CATCHMENT AREA MANAGED BY A SINGLE DRYWELL (SF)	
	28" DIAMETER	48" DIAMETER
5 FT	1000	2500
10 FT	2500	4500
15 FT	3500	5000

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

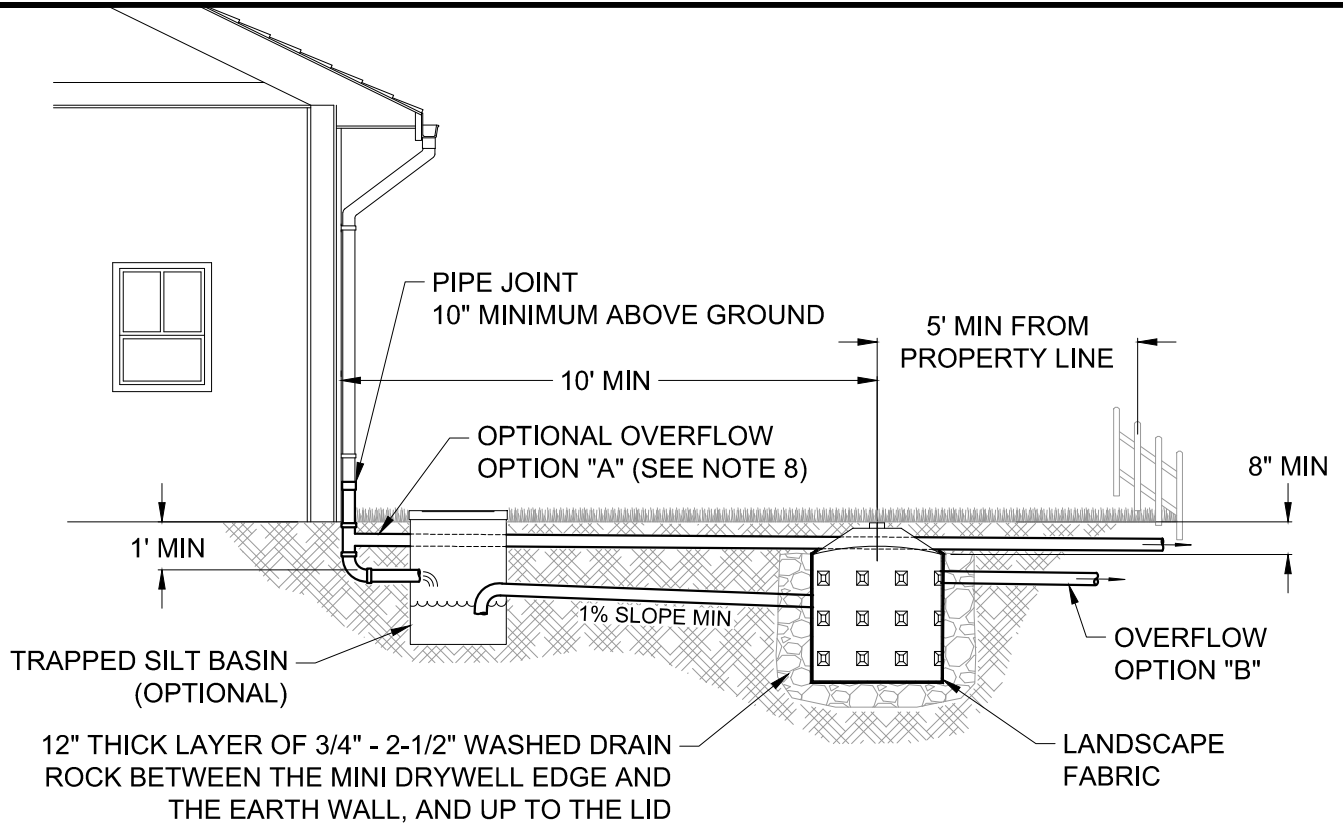
**CITY OF  
GRESHAM**

**DRYWELL**

PUBLISHED: JAN 2023

DRAWN	KRB
REV. DATE	NOV 2022
APPR.	
DETAIL NO.	ST-170

FILENAME: y:\des\stormwater\stormwater management manual\current\swmm\apph\_standard\_details\private storm details complete 20221128.dwg, Plotted 11/28/2022 10:01 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)

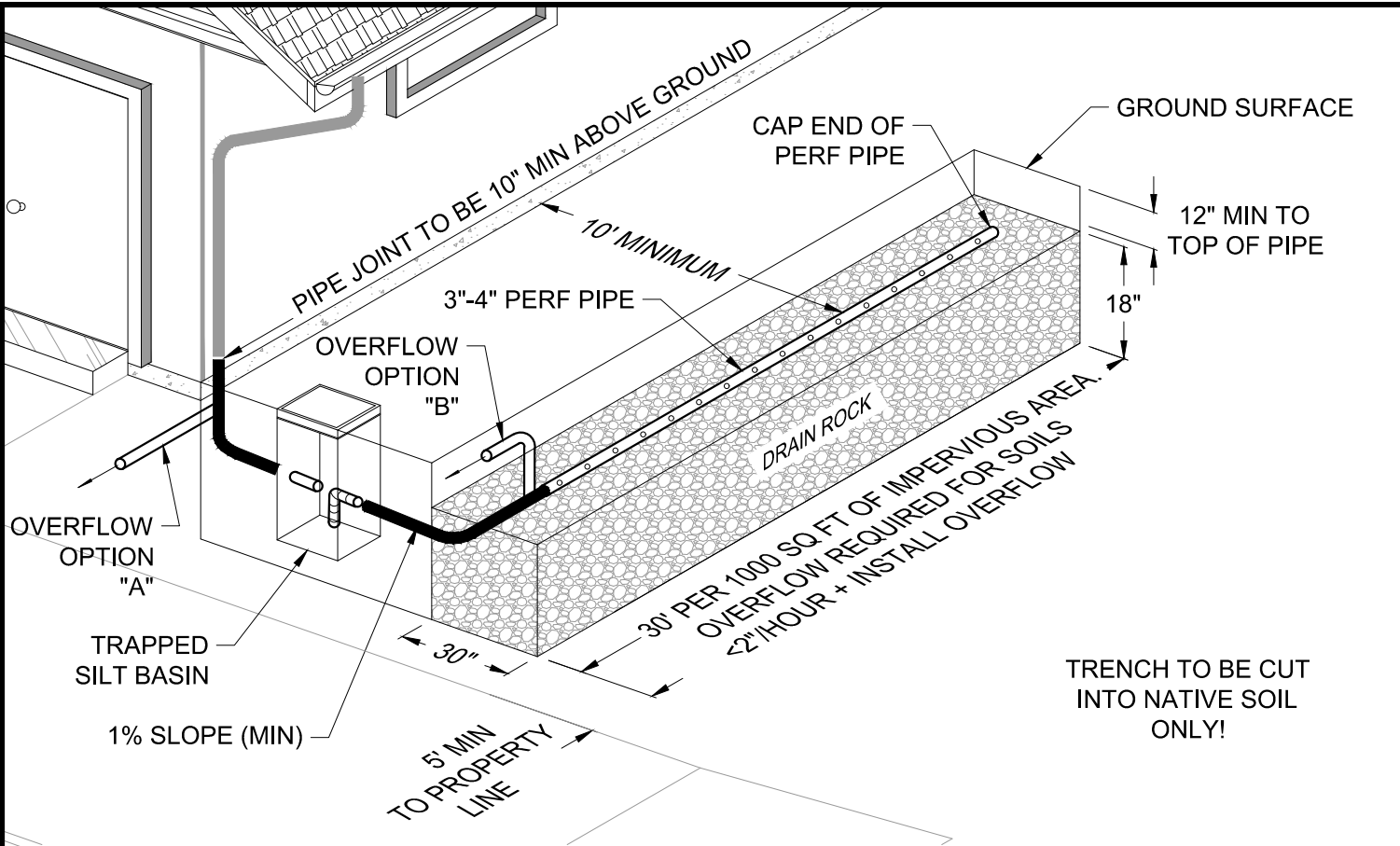


1. SITING CRITERIA: MINI DRYWELL SHALL NOT BE PLACED WHERE BASE OF FACILITY HAS LESS THAN 5' OF SEPARATION TO THE SEASONAL HIGH WATER TABLE.
2. SIZING: ONLY 500 SF OF SINGLE FAMILY RESIDENTIAL ROOF AREA MAY BE CONNECTED TO EACH MINI DRYWELL.
3. THE TOP OF THE PERFORATED DRYWELL SECTIONS MUST BE BELOW THE FOUNDATION OR BASEMENT LEVEL OF THE PROPERTY AND THOSE OF NEIGHBORING PROPERTIES.
4. WRAP MINI DRYWELL WITH LANDSCAPE FABRIC PRIOR TO BACKFILLING WITH DRAIN ROCK.
5. SETBACKS: MEASURED FROM THE CENTER OF DRYWELL, MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES, EXCEPT NEXT TO THE RIGHT-OF-WAY WHERE NO SETBACK IS REQUIRED BETWEEN THE EDGE OF THE DRYWELL DRAIN ROCK AND THE PROPERTY LINE.
6. PIPING MUST BE 3"CAST IRON, ABS OR PVC. OREGON PLUMBING SPECIALTY CODE ALSO APPLIES.
7. SILT BASIN (OPTIONAL): MAY BE INCLUDED AS PRE-TREATMENT FOR RESIDENTIAL ROOFS. SILT BASIN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS FOR CATCH BASIN STANDARDS PER OREGON PLUMBING SPECIALTY CODE 1101.11.1-1101.11.5. MATERIAL MAY BE PLASTIC OR METAL. LID MUST BE SOLID.
8. OVERFLOW: NOT REQUIRED FOR SITES WITH INFILTRATION RATES  $\geq 2$ "/HOUR. FOR AREAS WITH INFILTRATION RATES  $< 2$ "/HOUR, INSTALL OVERFLOW PIPE TO APPROVED DISCHARGE POINT. FOR FLATTER SITES, OPTION "A" MAY BE USED, WHERE OVERFLOW IS SET 2"-6" HIGHER THAN INLET TO SILT BASIN. FOR SLOPED SITES, USE OVERFLOW OPTION "B" FROM TOP OF MINI DRYWELL. OPTION "B" OVERFLOW PIPE SHOULD BE 4"-6" HIGHER THAN PIPE TO MINI DRYWELL.
9. MINI DRYWELLS FOR SINGLE-FAMILY RESIDENTIAL ROOFS DO NOT NEED TO BE REGISTERED WITH DEQ AS AN UNDERGROUND INJECTION CONTROL (UIC).

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

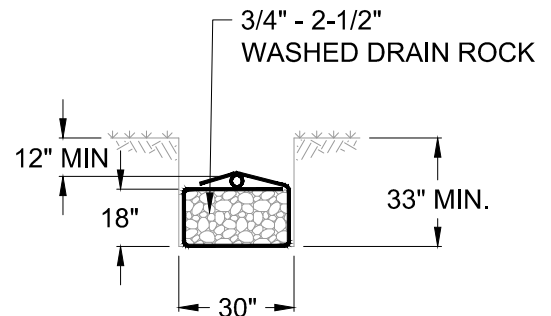
	<h2>MINI DRYWELL</h2>	DRAWN <b>KRB</b>
		REV. DATE <b>NOV 2022</b>
		APPR.
		DETAIL NO. <b>ST-171</b>
PUBLISHED: JAN 2023		

FILENAME: y:\des\stormwater\stormwater management manual\current details\private storm details complete 20221107.dwg, Plotted 11/15/2022 9:09 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC AND EQUIPMENT STAGING IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. SITING CRITERIA: SOAKAGE TRENCH SHALL NOT BE PLACED WHERE BASE OF FACILITY HAS LESS THAN 5' OF SEPARATION TO THE SEASONAL HIGH WATER TABLE.
3. SIZING: 30" WIDE X 18" TALL X 30' LONG PER 1000 SQUARE FEET OF IMPERVIOUS SURFACE.
4. SETBACKS: SOAKAGE TRENCH MUST BE 10' FROM FOUNDATIONS, 5' FROM PROPERTY LINES, AND 20' FROM CESSPOOLS.
5. PIPING MUST BE CAST IRON, ABS OR PVC. 3" PIPE REQUIRED FOR FACILITIES DRAINING UP TO 1500 SF, OTHERWISE 4" MINIMUM PIPE. OREGON PLUMBING SPECIALTY CODE ALSO APPLIES.
6. 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 SPECIALTY CODE 1101.11.1-1101.11.5. MATERIAL MAY BE PLASTIC OR METAL. LID MUST BE SOLID.
7. OVERFLOW: NOT REQUIRED FOR SITES WITH INFILTRATION RATES  $\geq 2"/\text{HOUR}$ . FOR AREAS WITH INFILTRATION RATES  $< 2"/\text{HOUR}$ , INSTALL OVERFLOW PIPE TO APPROVED DISCHARGE POINT. FOR FLATTER SITES, OPTION "A" MAY BE USED, WHERE OVERFLOW IS SET 2"-6" HIGHER THAN INLET TO SILT BASIN. FOR SLOPED SITES, USE OPTION "B" WITH TEE THAT IS 4"-6" HIGHER THAN PIPE IN TRENCH.
8. SOAKAGE TRENCHES RECEIVING FLOW FROM ANYTHING OTHER THAN SINGLE-FAMILY RESIDENTIAL ROOF RUNOFF MUST BE REGISTERED WITH DEQ AS A (UIC).

### SOAKAGE TRENCH CONSTRUCTION



FILTER FABRIC TO BE PLACED ON SIDES AND ENDS OF TRENCH. ADD DRAIN ROCK AND FOLD ONE SIDE OF FABRIC OVER ROCK. PLACE PERFORATED PIPE IN CENTER AND THEN INSTALL GREEN TRACER WIRE ON PIPE. COVER ALL WITH REMAINING SIDE OF FABRIC PRIOR TO BACKFILL.

- DRAWING NOT TO SCALE -  
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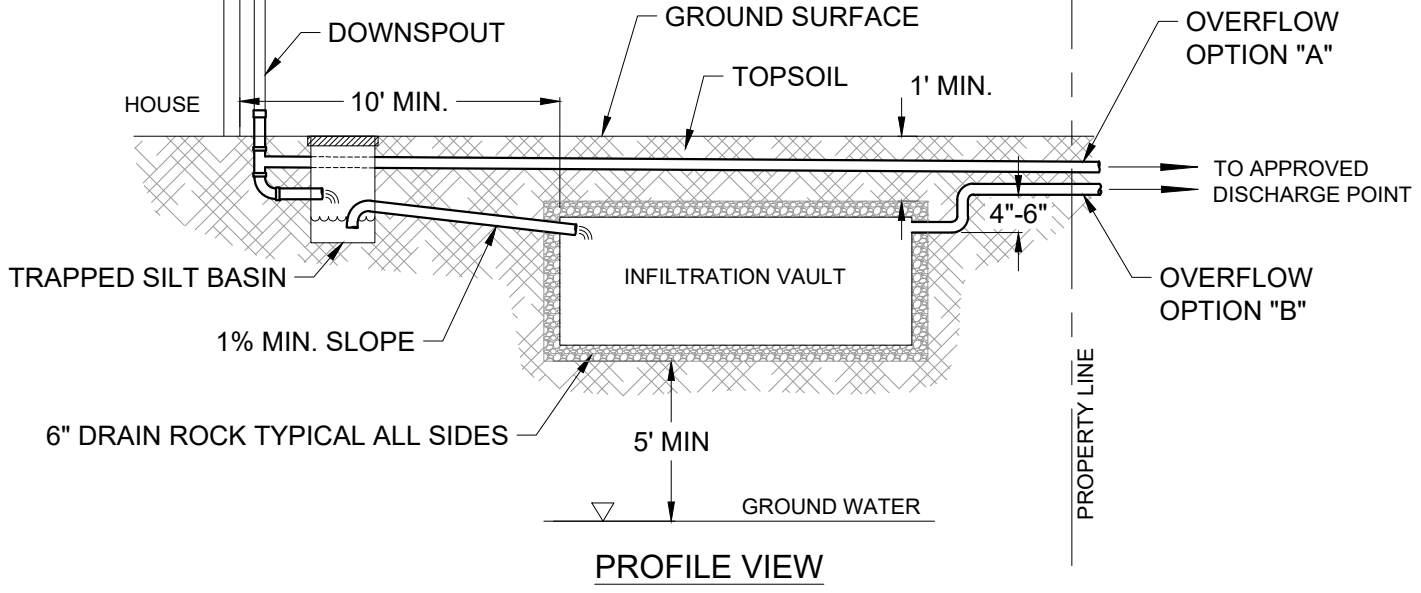
CITY OF  
GRESHAM

## SOAKAGE TRENCH

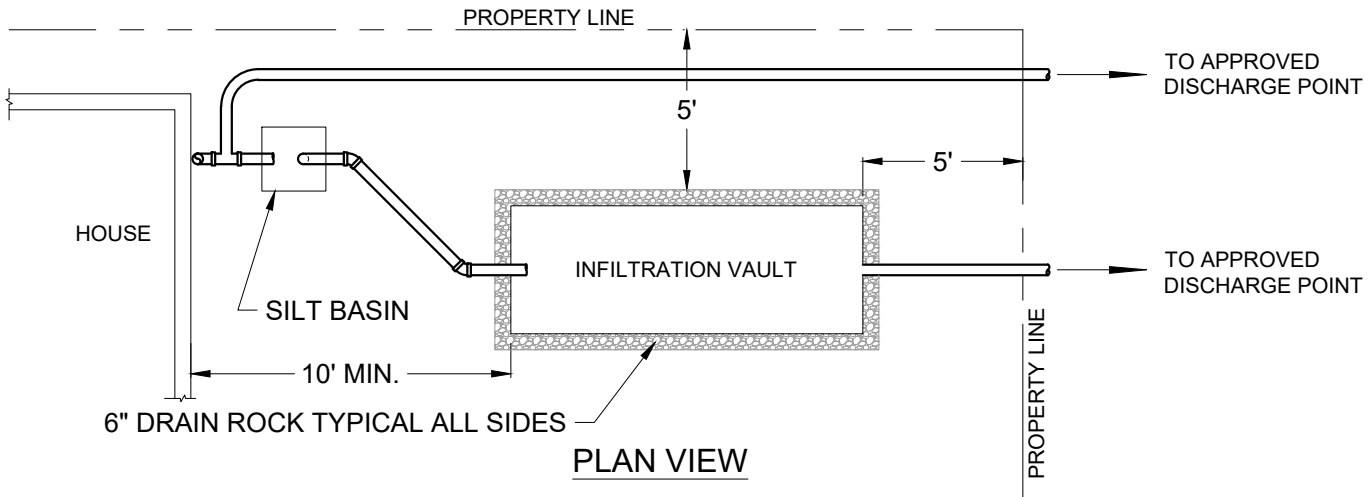
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DRAWN	DRO
REV. DATE	OCT 2019
APPR.	
DETAIL NO.	ST-180

FILENAME: y:\des\stormwater\stormwater management manual\current\swmm\apph standard details\private storm details complete 20221128.dwg, Plotted 11/28/2022 10:00 AM, By: Kimberly Bogert, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



**PROFILE VIEW**



**PLAN VIEW**

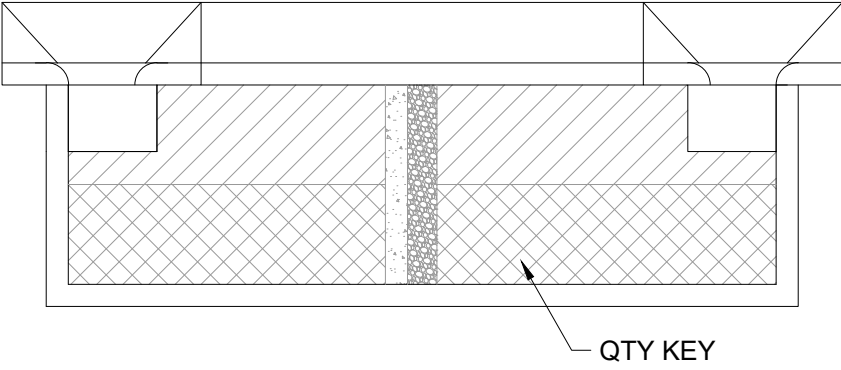
1. SILT BASIN: SHALL BE INCLUDED AS PRE-TREATMENT FOR RESIDENTIAL ROOFS. SILT BASIN SHALL BE IN ACCORDANCE WITH DESIGN SPECIFICATIONS FOR CATCH BASIN STANDARDS PER OREGON PLUMBING SPECIALITY CODE 1101.11.1-1101.11.5. MATERIAL MAY BE PLASTIC OR METAL. LID MUST BE SOLID.
2. INFILTRATION VAULTS RECEIVING 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  $\geq 2$ "/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", WHERE OVERFLOW LEAVES VAULT WITH A 4"-6" UPTURN.
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 -

<p><b>CITY OF GRESHAM</b></p>	<p><b>INFILTRATION VAULT</b></p>	<p>DRAWN <b>KRB</b></p>
		<p>REV. DATE <b>NOV 2022</b></p>
		<p>APPR. </p>
		<p>DETAIL NO. <b>ST-190</b></p>
<p>PUBLISHED: JAN 2023</p>		

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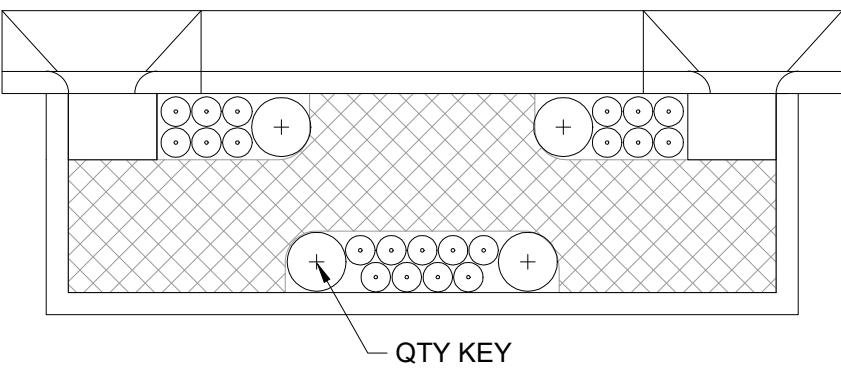
**TEMPLATE 1**



**PLANT LEGEND 1**

SYMBOL	BOTANICAL NAME COMMON NAME
	JUNCUS PATENS SPREADING RUSH
	CAREX OBNUPTA SLOUGH SEDGE

**TEMPLATE 2**



**PLANT LEGEND 2**

SYMBOL	BOTANICAL NAME COMMON NAME
	JUNCUS PATENS SPREADING RUSH
	CAREX OBNUPTA SLOUGH SEDGE
	SPIRAEA JAPONICA 'GOLD MOUND' GOLDMOUND JAPANESE SPIREA

**SAMPLE PLANTING LEGEND**

SYMBOL	BOTANIC NAME	COMMON NAME	SPACING	SQ. FOOT AREA = SPACING	X QTY.
	Xxxxxx xxxxx	xxxxx	X	X	X
	Xxxxxx xxxxx	xxxxx	X	X	X

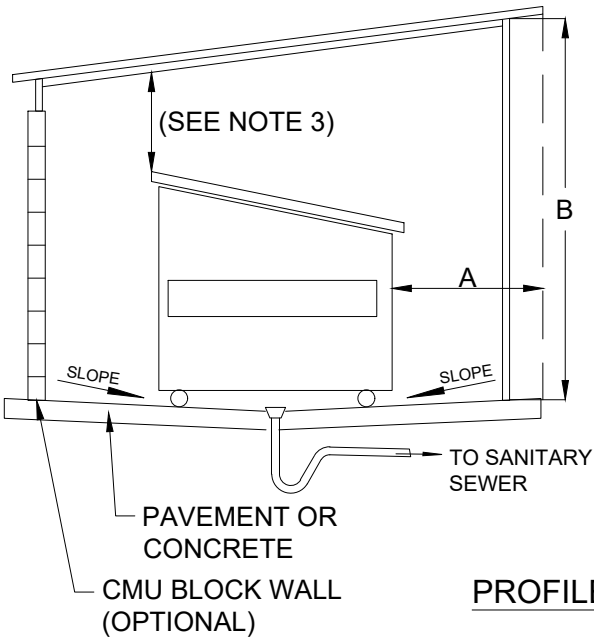
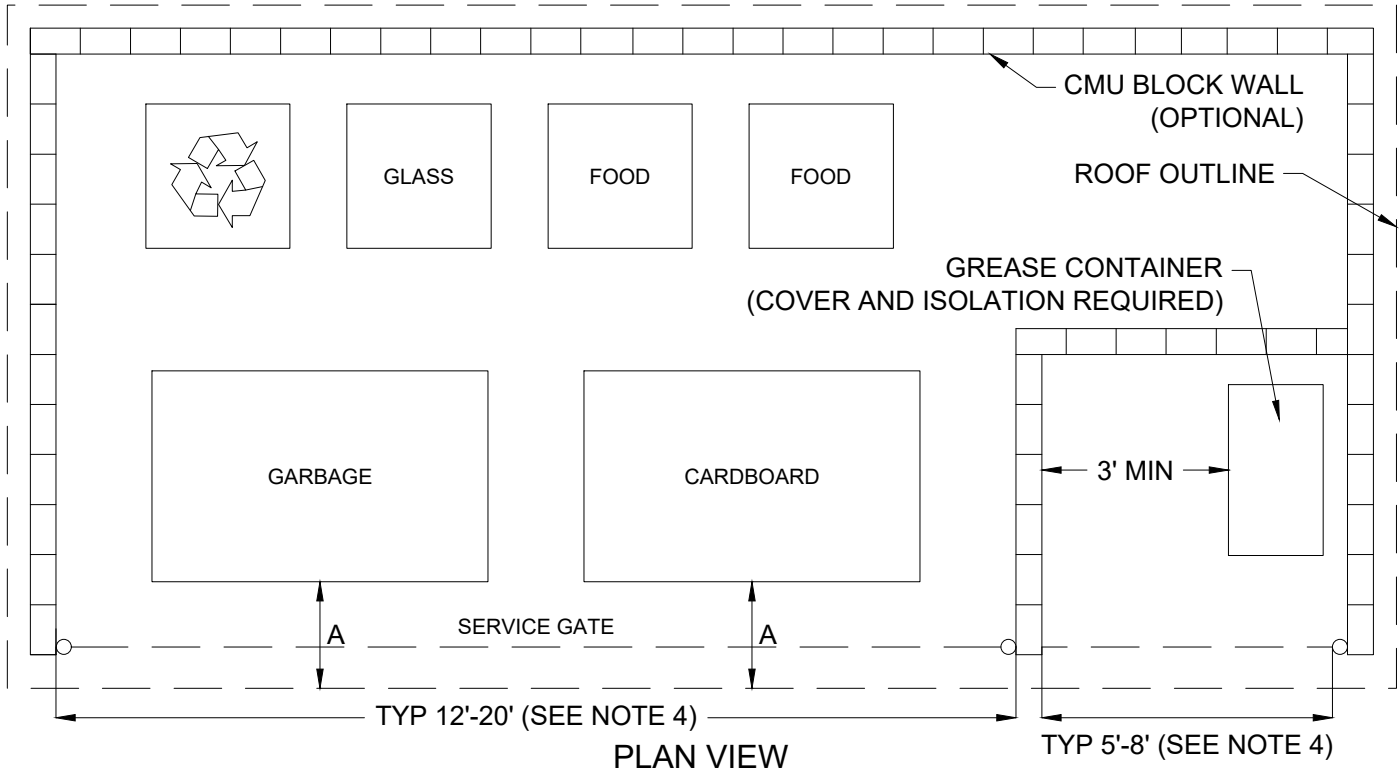
**INSTRUCTIONS:**

1. CHOOSE A TEMPLATE AND ALTER IT TO DESIGN. THESE ARE EXAMPLES OF APPROVED PLANTING TEMPLATES. OTHER PLANTING PLANS MAY BE APPROVED.
2. PLANT LISTS AND ON-CENTER SPACING REQUIREMENTS ARE FOUND IN THE STORMWATER MANAGEMENT MANUAL.
3. PLANTING LEGEND REQUIRED. STATE PLANT SPECIES, SPACING, AND QUANTITIES.
4. PLANTING PLANS SHALL INCLUDE LABELS FOR EACH PLANT GROUP IDENTIFYING THE PLANT SPECIES AND QUANTITY IN THE GROUP.

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

<p><b>CITY OF GRESHAM</b></p>	<p><b>PUBLIC FACILITY LANDSCAPING TEMPLATE</b></p>	<p>DRAWN    DRO</p>
		<p>REV. DATE    APR 2018</p>
		<p>APPR. </p>
		<p>DETAIL NO.    ST-200</p>
<p>PUBLISHED: JAN 2023</p>		

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

**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 align="center"><b>WASTE CONTAINER ENCLOSURE</b></p> <p align="center">PUBLISHED: JAN 2023</p>	DRAWN <b>DRO</b>
		REV. DATE <b>APR 2018</b>
		APPR.
		DETAIL NO. <b>ST-210</b>