TITLE SHEET

REFERENCE SHEET **A**

STANDARD RAINWISE DETAILS
9/1/2025

TABLE OF CONTENTS:

ABBREVIATIONS:

ABS	ACRYLONITRILE BUTADIENE STYRENE	GPM	GALLONS PER MINUTE
		PVC	POLYVINYL CHLORIDE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	SDR	STANDARD DIMENSION RATIO
		SF	SQUARE FEET
BMP	BEST MANAGEMENT PRACTICE	TYP	TYPICAL
COS	CITY OF SEATTLE	UPC	UNIFORM PLUMBING CODE
CSO	COMBINED SEWER OVERFLOW		

REFERENCE MATERIALS:

RAINWISE REBATE CALCULATOR
https://700milliongallons.org/rainwise/contractor-resources/rebate-calculator/

SEATTLE STORMWATER MANUAL
https://www.seattle.gov/documents/Departments/SDCI/Codes/StormwaterCode/2021SWFullManualFinalClean.pdf

RAIN GARDEN HANDBOOK FOR WESTERN WASHINGTON
https://streamteam.info/wp-content/uploads/2025/01/Rain-Garden-Handbook_2024_UPDATE_REDUCED-compressed.pdf

RAINWISE RAIN GARDEN PLANTING PLANS
https://700milliongallons.org/wp-content/uploads/2020/08/RainWise_PlantingPlan_16.pdf

SEATTLE GREEN FACTOR PLANT LIST
https://www.seattle.gov/documents/Departments/SDCI/Codes/GreenFactorPlantList2010.pdf

SEATTLE RIGHT-OF-WAY IMPROVEMENTS MANUAL
https://streetsillustrated.seattle.gov

SEATTLE STANDARD SPECIFICATIONS AND STANDARD PLANS
http://www.seattle.gov/utilities/construction-resources/design-standards/standard-specs-and-plans

SEATTLE SIDE SEWER PERMIT REQUIREMENTS
http://www.seattle.gov/dpd/permits/permittypes/sidesewer/

SEATTLE DIRECTOR'S RULES
http://web6.seattle.gov/dpd/dirrulesviewer/

SEATTLE LAND USE CODES
http://seattle.gov/sdci/codes/codes-we-enforce-(a-z)/land-use-code

UNIFORM PLUMBING CODE AS AMENDED BY THE CITY OF SEATTLE
https://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/plumbing-code

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF SEATTLE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION; THE CITY OF SEATTLE STANDARD PLANS FOR MUNICIPAL CONSTRUCTION, CURRENT EDITION; CITY OF SEATTLE DEPARTMENT OF CONSTRUCTION AND INSPECTIONS DIRECTORS RULES: 17-2017, 31-2017, 4-2019, 11-2020; AND CODES ADOPTED BY REFERENCE INCLUDING THE SEATTLE BUILDING CODE AND SEATTLE FIRE CODE.

2. A RAINWISE PROJECT MUST MANAGE RUNOFF FROM AT LEAST 400 SQUARE FEET OF TOTAL ROOF AREA TO QUALIFY FOR A RAINWISE REBATE. A CISTERN MUST COLLECT RUNOFF FROM A MINIMUM OF 300 SQUARE FEET OF ROOF AREA; THERE IS NO MINIMUM ROOF AREA FOR A RAIN GARDEN.

3. ROOF DRAINAGE AREAS GREATER THAN 2,000 SQUARE FEET **REQUIRE CONSULTATION WITH RAINWISE INSPECTOR.** ROOF DRAINAGE AREAS GREATER THAN 2,000 SQUARE FEET ARE NOT ELIGIBLE FOR A PRE-INSPECTION WAIVER.

4. ALL DISCHARGE FROM RAIN GARDENS AND/OR CISTERNS MUST BE SAFELY CONVEYED OFF SITE BELOW GROUND IN A SIDE SEWER OR ABOVE GROUND TO THE RIGHT-OF-WAY. DISCHARGE MUST HAVE A SAFE FLOW PATHWAY WITHIN THE RIGHT-OF-WAY TO THE PUBLIC DRAINAGE SYSTEM (ARTIFICIAL OR NATURAL) THAT DOES NOT HARM PRIVATE OR PUBLIC PROPERTY OR STRUCTURES.

5. IN ACCORDANCE WITH VOLUME 3, SECTION 4.3 OF COS DIRECTOR'S RULE 10-2021 (SEATTLE STORMWATER MANUAL), OVERFLOW CONVEYANCE MUST SAFELY CONVEY THE 25-YEAR STORM REOCCURRENCE EVENT.

6. ALL CONVEYANCE PIPE DOWNSTREAM OF THE EXISTING DOWNSPOUT MUST MEET RAINWISE REQUIREMENTS.

7. CONNECTIONS TO A SIDE SEWER MAY REQUIRE A SEPARATE SIDE SEWER PERMIT AND INSPECTION. A SIDE SEWER PERMIT AND INSPECTION ARE NEEDED IF:
   - THE SIDE SEWER CONNECTION IS NEW, OR
   - THE SIDE SEWER CONNECTION IS MADE BELOW GRADE, OR
   - THE PROJECT RESULTS IN MORE ROOF AREA CONNECTED TO THE SIDE SEWER.

8. FOR ABOVE GROUND AND BELOW GROUND USE, PIPE MATERIAL SHALL BE:
   - SDR 35 PVC AND SHALL MEET ASTM D 3034, OR
   - SCHEDULE 40 OR SCHEDULE 80 PVC AND SHALL MEET ASTM D 1785, F 1732, OR D 2729 WITH FITTINGS PER ASTM D 2466 AND D 2467.
   - ALTERNATIVE PIPE MATERIALS MUST BE REVIEWED AND APPROVED BY RAINWISE INSPECTOR.
   - ABOVE GROUND USE ONLY: SCHEDULE 40 ABS MEETING ASTM D 2661 OR F 628 WITH FITTINGS PER ASTM D 2661 OR ASTM F 628.

9. FLEXIBLE TUBING OR HOSE IS REQUIRED FOR A PORTION OF CISTERN FLOW CONTROL OUTLET PIPING (SEE SHEET 15). TUBING OR HOSE SHALL BE NON-CLEAR AND UV RESISTANT.

10. PER UPC 2.3.3, PIPES SHALL NOT BE EXPOSED TO DIRECT SUNLIGHT. PIPES MAY BE PAINTED BY HOMEOWNER IF THE HOMEOWNER AGREES TO PERFORM SUCH WORK. PAINT SHALL BE APPROPRIATE FOR PIPE MATERIAL TYPE.

11. PER UPC 2.5.2, ALL PIPES NOT FULLY BURIED SHALL BE SECURED TO THE GROUND OR AGAINST A WALL OR FOUNDATION IN A MANNER TO RESIST MOVEMENT. ALL ABOVE GROUND PIPES SHALL BE SUPPORTED EVERY 4 FEET HORIZONTALLY, AT EVERY CHANGE IN DIRECTION, AT EVERY JOINT, AND EVERY 8 FEET VERTICALLY. PIPES SHALL NOT SAG; DECREASE THE SPACING OF PIPE SUPPORTS AS NEEDED. PIPE SUPPORTS SHALL BE SECURED TO A FIRM SUBSTRATE. PIPE SUPPORTS ON WALLS AND FOUNDATIONS SHALL BE DOUBLE-ANCHORED PIPE HANGER STRAPPING, HANGERS, OR APPROVED EQUAL. PIPE SUPPORTS ON THE GROUND SHALL BE ANCHORED IN PLACE.

12. ALL PIPE AND FITTING JOINTS SHALL BE WATERTIGHT AND GLUED, BONDED, OR MECHANICALLY SECURED AS APPROPRIATE PER PIPE MATERIAL.

13. ANY FLOW CONTROL OUTLET MUST REMAIN OPEN DURING THE WET SEASON (SEPTEMBER TO MAY).

14. RAINWISE PROJECTS SHALL NOT REMOVE EXISTING TREES AND PROJECT IMPROVEMENTS SHALL BE SITED TO MINIMIZE IMPACT TO EXISTING TREES. SEATTLE TREE PROTECTION REQUIREMENTS (SEATTLE MUNICIPAL CODE 25.11) APPLY TO RAINWISE PROJECTS. ANY PROPOSED GROUND DISTURBANCE WITHIN A TREE DRIPLINE (SEE SEATTLE STANDARD PLAN 133) MUST BE COORDINATED WITH RAINWISE INSPECTOR FOR TREE PROTECTION. SITING AND GROUND DISTURBANCE ARE NOT ALLOWED WITHIN THE INNER HALF OF A TREE DRIPLINE DIAMETER. NO MORE THAN 30 PERCENT OF A TREE DRIPLINE DIAMETER AREA MAY BE DISTURBED.

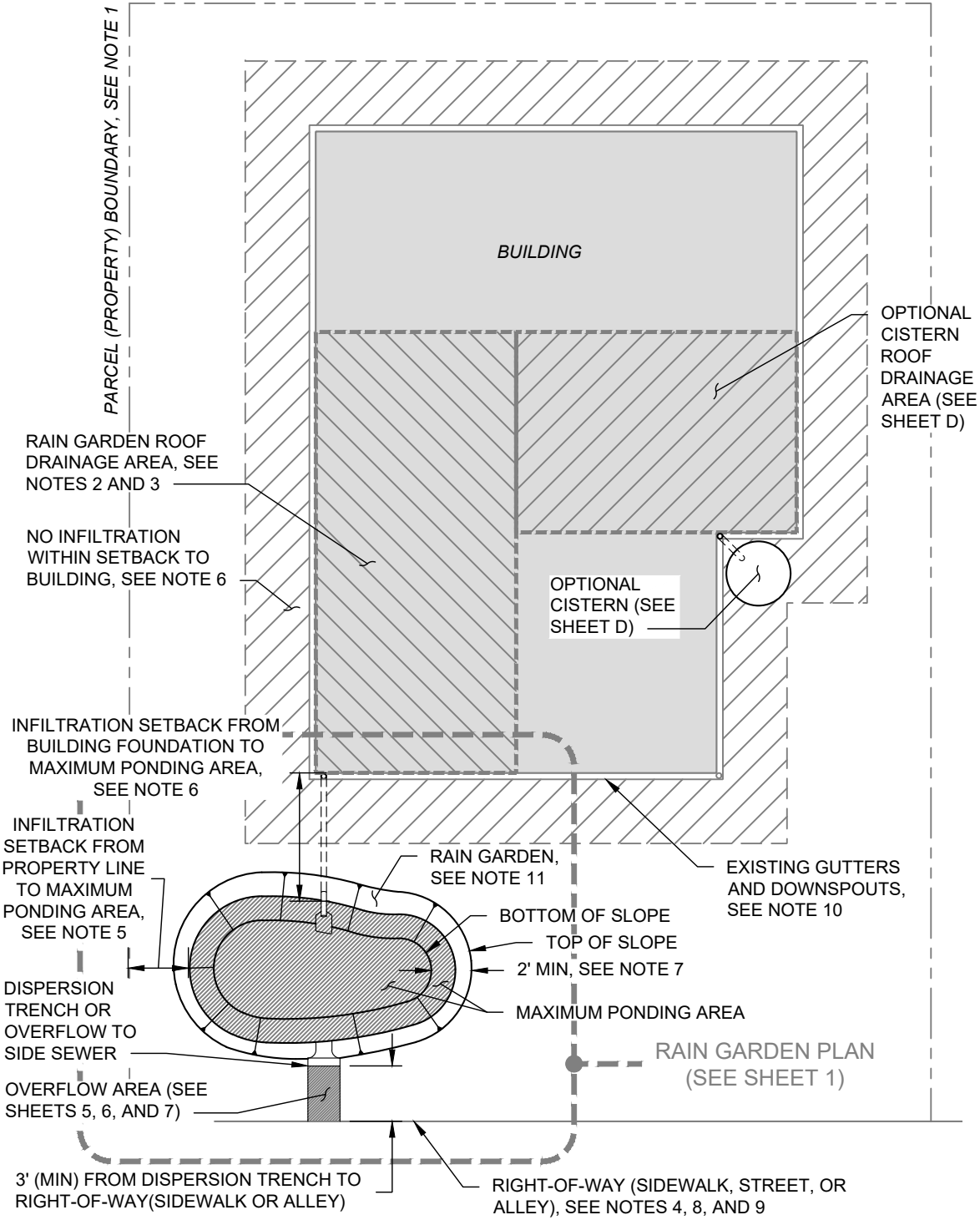
15. RAIN GARDENS, CISTERNS, AND RELATED PIPING SHALL BE LOCATED TO MAINTAIN THE FOLLOWING CLEAR ZONES:
   - AT LEAST 2 FEET FROM THE SIDE AND AT LEAST 3 FEET FROM THE FRONT OF ANY GAS METER INFRASTRUCTURE.
   - AT LEAST 1.5 FEET FROM THE SIDE AND AT LEAST 3 FEET FROM THE FRONT OF ANY ELECTRIC METER INFRASTRUCTURE.

16. ALL GUTTERS AND DOWNSPOUTS SHALL BE INSTALLED OR REINSTALLED TO BE LEAK FREE AND SO THAT WATER DOES NOT POOL AT ANY LOCATION. GUTTERS SHALL HAVE A SLOPE NOT LESS THAN 1/8-INCH PER FOOT ALONG THEIR ENTIRE LENGTH.

RAINWISE SITE REQUIREMENTS - RAIN GARDENS

REFERENCE SHEET **C**

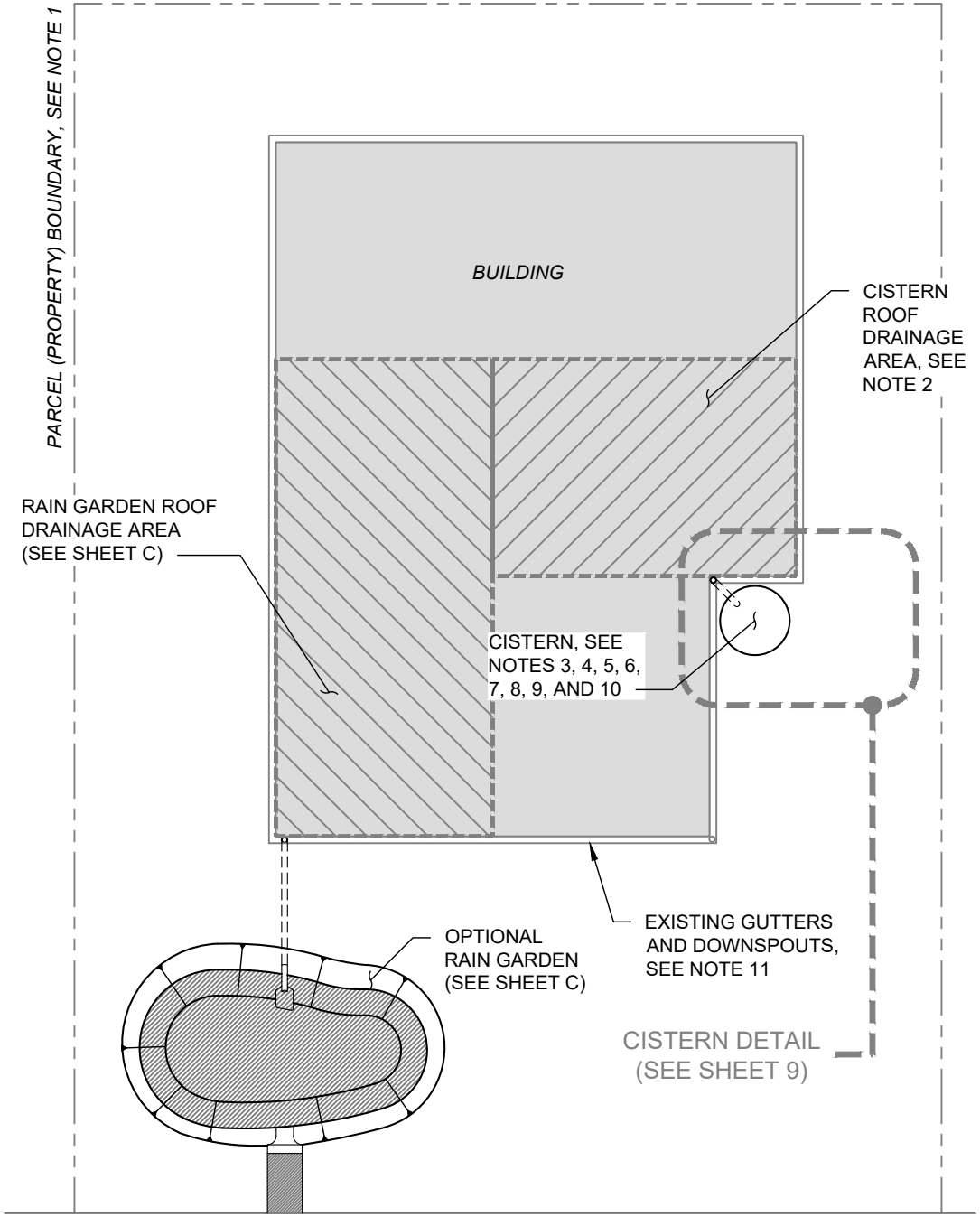
STANDARD RAINWISE DETAILS
9/1/2025



NOTES:

1. SUBJECT PARCEL MUST BE IN A QUALIFYING CSO BASIN.
2. A RAINWISE PROJECT MUST MANAGE RUNOFF FROM AT LEAST 400 SQUARE FEET OF ROOF AREA (TOTAL) TO QUALIFY FOR A RAINWISE REBATE. THERE IS NO MINIMUM ROOF AREA THAT MUST BE CONVEYED TO A RAIN GARDEN.
3. PROJECTS INFILTRATING MORE THAN 2,000 SQUARE FEET OF IMPERVIOUS SURFACE MUST ADHERE TO THE SEATTLE STORMWATER MANUAL.
4. NO MORE THAN 1,000 SQUARE FEET OF CONTRIBUTING IMPERVIOUS SURFACE MAY OVERFLOW TO CITY SIDEWALK AT A SINGLE LOCATION. SYSTEMS IN EXCESS OF 1,000 SQUARE FEET SHALL HAVE TWO OR MORE OVERFLOWS (AS NECESSARY), EACH SEPARATED BY A DISTANCE OF 10 FEET OR MORE.
5. NO INFILTRATION SETBACK FROM PROPERTY LINES IS REQUIRED IF BUILDING SETBACK REQUIREMENTS ARE MET, EXCEPT A MINIMUM 3 FOOT SETBACK IS REQUIRED FROM PROPERTY LINES ADJACENT TO A PUBLIC RIGHT-OF-WAY.
6. FOR BUILDINGS WITHOUT A SUBGRADE FLOOR (BASEMENT OR CRAWL SPACE), INFILTRATION IS PROHIBITED WITHIN 5 FOOT SETBACK OF THE BUILDING. FOR BUILDINGS WITH A SUBGRADE FLOOR, INFILTRATION IS PROHIBITED WITHIN SETBACK DISTANCE: 2 TIMES SUBGRADE FLOOR DEPTH, MINIMUM 10 FOOT SETBACK. SUBGRADE FLOOR DEPTH IS MEASURED FROM INTERIOR SUBGRADE FLOOR TO EXTERNAL EXISTING GRADE. THIS INCLUDES NEIGHBORING BUILDINGS. CONVEYANCE WITHIN EITHER SETBACK MUST BE IMPERVIOUS (I.E., LINED OR PIPED). INFILTRATION SETBACK IS MEASURED FROM BUILDING FOUNDATION TO EDGE OF MAXIMUM PONDING AREA.
7. THE DISTANCE FROM THE BOTTOM TO TOP OF RAIN GARDEN SIDE SLOPE MUST BE AT LEAST 2 FEET TO SATISFY PONDING, FREEBOARD, AND SIDESLOPE DESIGN CRITERIA. THIS DISTANCE MAY BE GREATER THAN 2 FEET WHEN EXISTING GRADES ARE NOT FLAT. IF BERM IS INCLUDED IN DESIGN, BERM TOP WIDTH AND BERM SIDE SLOPE WIDTH MUST BE INCLUDED IN SIDE SLOPE DISTANCE. THE SIDE SLOPE DISTANCE MUST BE CALCULATED PRIOR TO INSTALLATION TO ENSURE ALL RAIN GARDEN SITING AND SETBACK REQUIREMENTS ARE MET.
8. INFILTRATION IS PROHIBITED WITHIN A DISTANCE OF 2 TIMES THE WALL HEIGHT, "H", OF A RETAINING WALL OR ROCKERY AS MEASURED FROM THE VISIBLE TOE OF THE WALL TO THE TOP OF THE WALL (SEE SHEET 6).
9. RAIN GARDEN OVERFLOWS TO THE RIGHT-OF-WAY MUST ENTER THE STORMWATER OR COMBINED SEWER SYSTEM. OVERFLOWS SHALL NOT ENTER PRIVATE PROPERTY OR CAUSE PONDING.
10. REMOVE DOWNSPOUT PIPING AND PLUG AND SEAL GUTTER INLETS AT ALL ABANDONED DOWNSPOUT LOCATIONS.
11. FOR RAIN GARDEN SIZING, REFER TO RAINWISE REBATE CALCULATOR.

RAINWISE SITE REQUIREMENTS - CISTERNS



NOTES:

1. SUBJECT PARCEL MUST BE IN A QUALIFYING CSO BASIN.

2. A RAINWISE PROJECT MUST MANAGE RUNOFF FROM AT LEAST 400 SQUARE FEET OF TOTAL ROOF AREA TO QUALIFY FOR A RAINWISE REBATE. A CISTERN MUST COLLECT RUNOFF FROM A MINIMUM OF 300 SQUARE FEET OF ROOF AREA.

3. NO MORE THAN 1,000 SQUARE FEET OF CONTRIBUTING IMPERVIOUS SURFACE MAY OVERFLOW TO CITY SIDEWALK AT A SINGLE LOCATION. SYSTEMS IN EXCESS OF 1,000 SQUARE FEET SHALL HAVE TWO OR MORE OVERFLOWS (AS NECESSARY), EACH SEPARATED BY A DISTANCE OF 10 FEET OR MORE.

4. QUALIFYING CISTERNS MUST HAVE A MINIMUM MANUFACTURER-SPECIFIED STORAGE VOLUME OF 200 GALLONS, A MAXIMUM VOLUME OF 5,000 GALLONS, AND A MINIMUM LIVE STORAGE DEPTH OF 2.0 FEET. CISTERN LOW FLOW ORIFICE SIZE IS PROJECT SPECIFIC AND MUST MATCH REQUIRED SIZE SPECIFIED IN THE RAINWISE REBATE CALCULATOR. CISTERNS WITH A TOTAL HEIGHT LESS THAN 2.5 FEET MAY BE ALLOWED AT INSPECTOR DISCRETION AND MUST HAVE: MAX 3,900 SQUARE FEET TRIBUTARY ROOF AREA, SNORKEL OVERFLOW CONFIGURATION (SEE SHEET 12), AND 4-INCH OVERFLOW PIPE DIAMETER.

5. ROUTE CISTERN OVERFLOWS TO RAIN GARDEN, RIGHT-OF-WAY, OR SANITARY SEWER (SEE SHEET 12). CISTERN OVERFLOWS TO A RAIN GARDEN SHALL MEET ALL RAIN GARDEN REQUIREMENTS. CISTERN OVERFLOWS TO THE RIGHT-OF-WAY MUST ENTER THE STORMWATER OR COMBINED SEWER SYSTEM. OVERFLOWS SHALL NOT ENTER PRIVATE PROPERTY OR CAUSE PONDING.

6. IN ADDITION TO OTHER APPLICABLE MUNICIPAL CODES (SEE SHEET B), CISTERN SITING MUST COMPLY WITH SETBACK AND YARD REQUIREMENTS ESTABLISHED IN SEATTLE LAND USE CODE. ON SINGLE FAMILY LOTS, CISTERNS MORE THAN 4.5 FEET TALL, 4 FEET WIDE, OR 600 GALLONS IN VOLUME SHALL NOT:
   - BE LOCATED CLOSER THAN 3 FEET FROM A SIDE LOT LINE,
   - BE CLOSER THAN 20 FEET FROM A REAR LOT LINE OR THE CENTERLINE OF AN ALLEY ABUTTING THE REAR LOT LINE, OR
   - BE CLOSER THAN 15 FEET FROM THE FRONT LOT LINE.

   SETBACKS APPLY TO ABOVE GRADE PORTIONS OF CISTERN FOUNDATIONS. CISTERNS SMALLER THAN THOSE GOVERNED BY CODE ARE NOT SUBJECT TO THE SAME SITING RESTRICTIONS AND MAY BE LOCATED WITHIN THESE SETBACKS.

7. CISTERNS MAY EXERT A LATERAL LOAD ON A VERTICAL FEATURE SUCH AS A WALL, FOUNDATION, SLOPE, OR ROCKERY AND SHALL HAVE AN APPROPRIATE SETBACK. DUE TO THE HIGH VARIABILITY OF SITE AND SOIL CONDITIONS THE HOMEOWNER IS RESPONSIBLE FOR ASSESSING AND DETERMINING A SUITABLE LOCATION FOR CISTERN INSTALLATIONS (SEE SHEETS 10 AND 11).

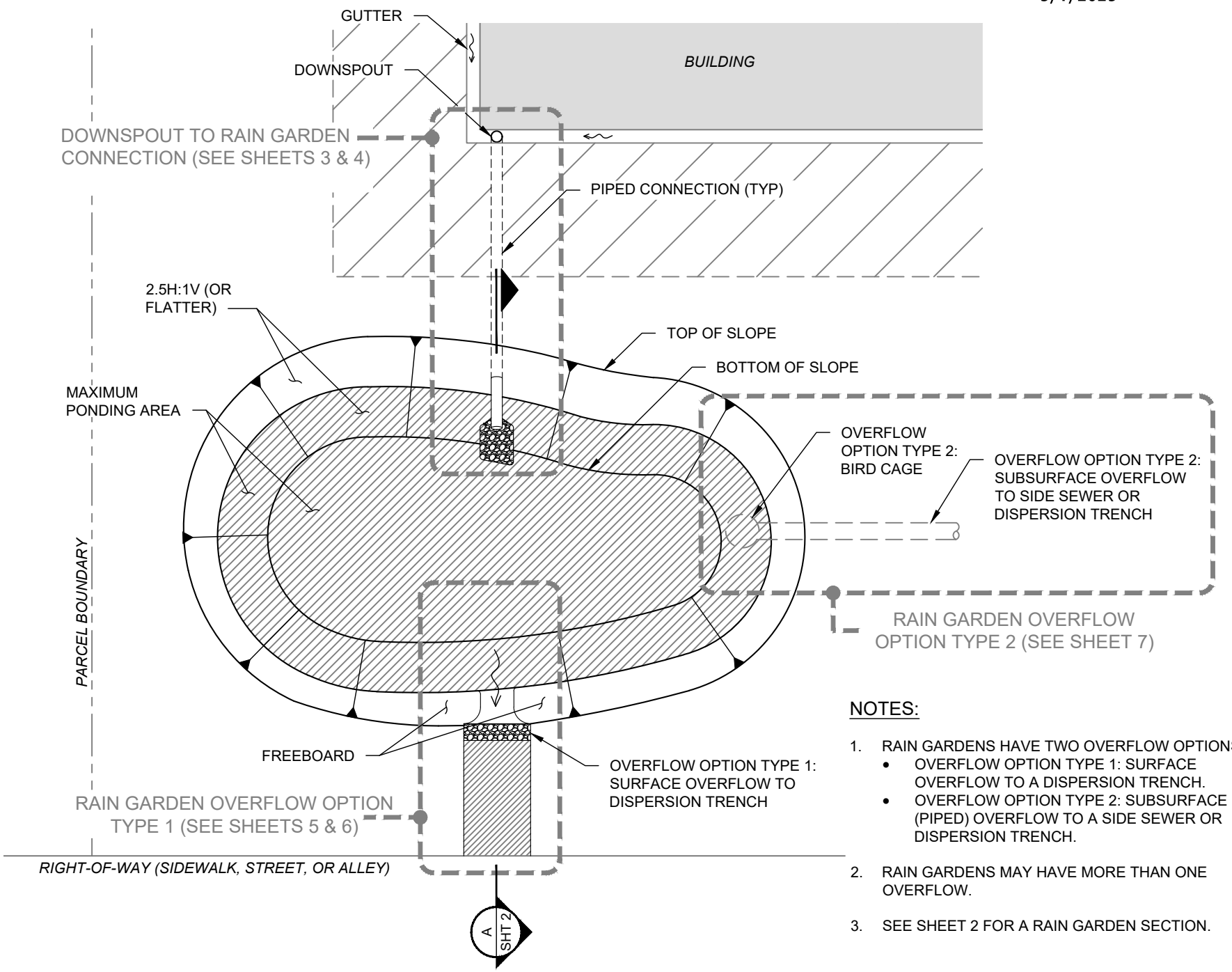
8. CISTERN SITING MUST ALLOW FOR MAINTENANCE ACCESS.

9. FOR CISTERN SIZING, REFER TO RAINWISE REBATE CALCULATOR.

10. CISTERNS SHALL NOT BE LOCATED WITHIN AN EXISTING SURFACE WATER FLOW PATH AND SHALL NOT BLOCK EXISTING DRAINAGE PATHWAYS.

11. REMOVE DOWNSPOUT PIPING AND PLUG AND SEAL GUTTER INLETS AT ALL ABANDONED DOWNSPOUT LOCATIONS. CAP EXISTING (ABANDONED) DOWNSPOUT ABOVE GROUND WITH REMOVABLE CAP (SEE SHEET 3 FOR EXAMPLE).

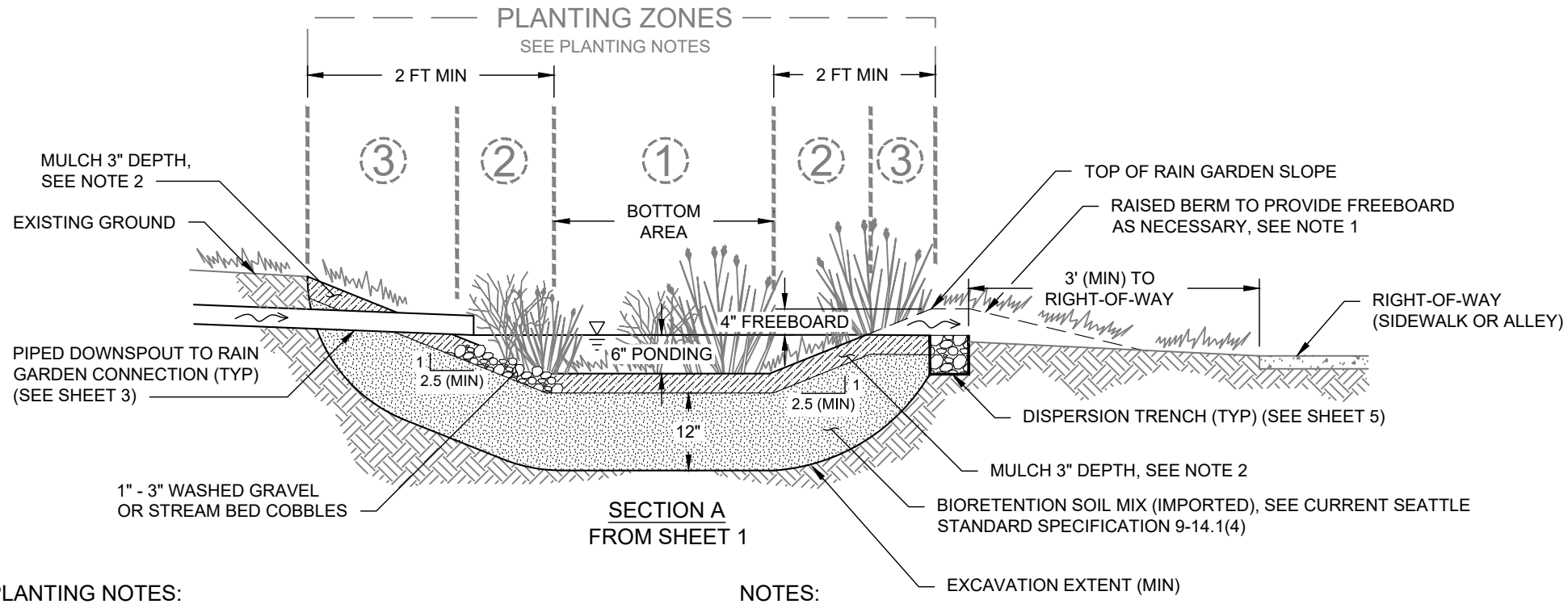
RAIN GARDEN PLAN



NOTES:

1. RAIN GARDENS HAVE TWO OVERFLOW OPTIONS:
   - OVERFLOW OPTION TYPE 1: SURFACE OVERFLOW TO A DISPERSION TRENCH.
   - OVERFLOW OPTION TYPE 2: SUBSURFACE (PIPED) OVERFLOW TO A SIDE SEWER OR DISPERSION TRENCH.
2. RAIN GARDENS MAY HAVE MORE THAN ONE OVERFLOW.
3. SEE SHEET 2 FOR A RAIN GARDEN SECTION.

RAIN GARDEN SECTION



SECTION A
FROM SHEET 1

PLANTING NOTES:

1. REFER TO THE RAINWISE PLANTING PLAN, RAIN GARDEN HANDBOOK FOR WESTERN WASHINGTON, AND THE SEATTLE GREEN FACTOR PLANT LIST FOR GUIDANCE ON PLANT SELECTION SITING AND SPACING BY ZONE. ZONE 1: WET CONDITION PLANTS, ZONE 2: PLANTS THAT TOLERATE OCCASIONAL STANDING WATER, ZONE 3: DRIER CONDITION PLANTS.
2. PLANT MATERIAL MUST BE PERENNIAL AND ADAPTED TO THE CONDITIONS ENCOUNTERED IN ITS LOCATION IN THE RAIN GARDEN.
3. EVERGREEN AND DECIDUOUS VEGETATION MAY BE USED BUT THE MAJORITY OF MATERIAL MUST PROVIDE A SIGNIFICANT ABOVE GROUND PRESENCE YEAR ROUND.
4. PLANT MATERIAL MUST BE OF A SUFFICIENT DENSITY TO ACHIEVE A MINIMUM OF 80% CANOPY COVER AFTER THE 3 YEAR ESTABLISHMENT PERIOD.
5. RAIN GARDEN PLANTING DESIGN SHOULD MINIMIZE COMPACTION OF BIORETENTION SOIL THROUGH PLANNED ACCESS. ANNUAL PLANTS REQUIRING SOIL DISTURBANCE FOR HARVESTING (E.G., CARROTS) OR YEARLY REPLANTING ARE NOT PERMITTED.

NOTES:

1. RAISED BERM SHALL BE FIRM, UNDISTURBED, NON-YIELDING NATIVE SOIL OR DISTURBED SITE SOILS COMPACTED WITH 12-POUND HAND TAMPER IN 3-INCH LIFTS. IF SITE SOILS ARE SANDY, IMPORT DENSER, NON-PERMISSIVE SOILS FOR RAISED BERM. TOP OF BERM SHALL BE MINIMUM 6 INCHES WIDE. KEY BOTTOM OF BERM INTO SUBGRADE MINIMUM 3 INCHES. BERM SIDE SLOPES SHALL BE 2.5 (MINIMUM) TO 1.
2. USE WOOD-BASED MULCH. ROCK MULCH, BARK CHIP MULCH, AND DRY STREAMS ARE NOT PERMITTED WITHIN THE RAIN GARDEN. MULCH SHALL BE MEDIUM TO COARSE TEXTURE, PREFERABLY ARBORIST WOOD CHIPS. ARBORIST WOOD CHIPS SHALL COMPLY WITH SEATTLE STANDARD SPECIFICATION 8-01.3(6)C. COMPOST MAY NOT BE USED AS MULCH.

DOWNSPOUT TO RAIN GARDEN CONNECTION (1 OF 2)

STANDARD RAINWISE DETAILS
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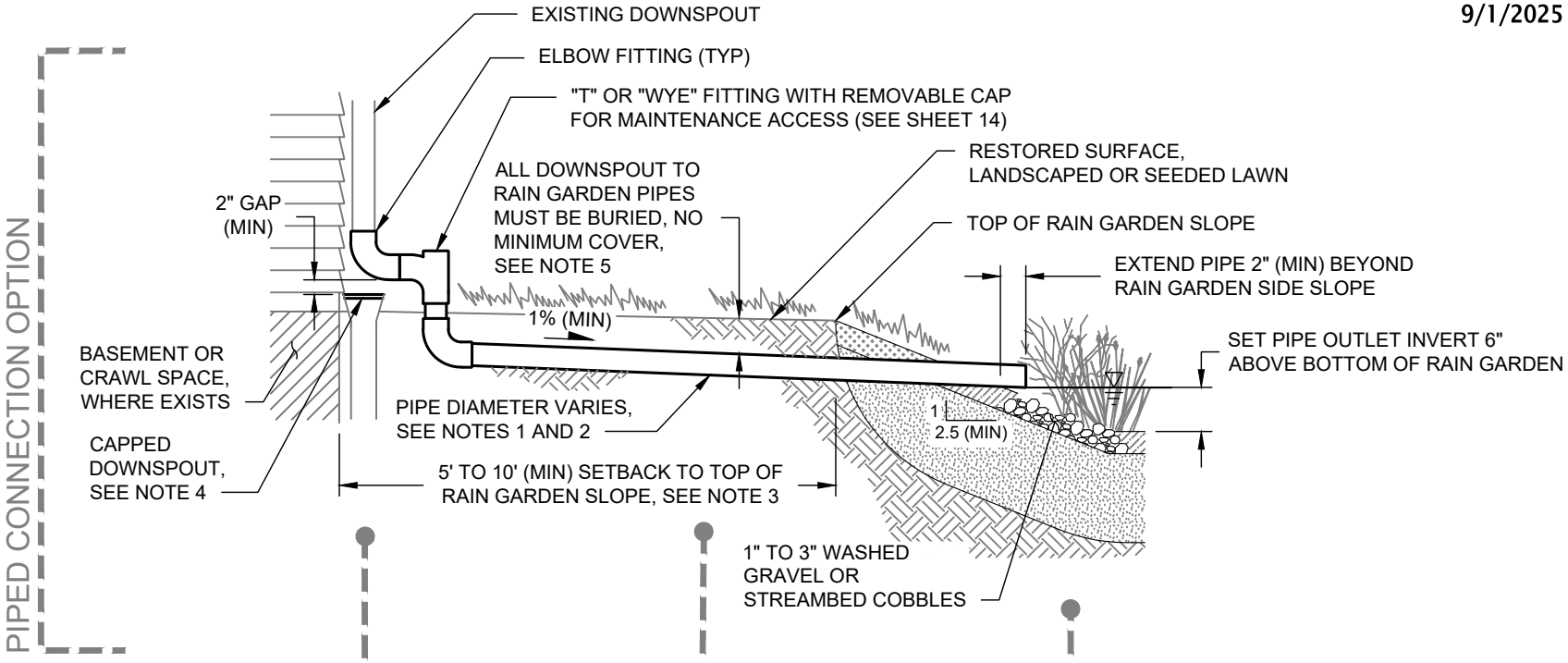


ELBOW FITTINGS AND CAPPED DOWNSPOUT AT EXISTING DOWNSPOUT

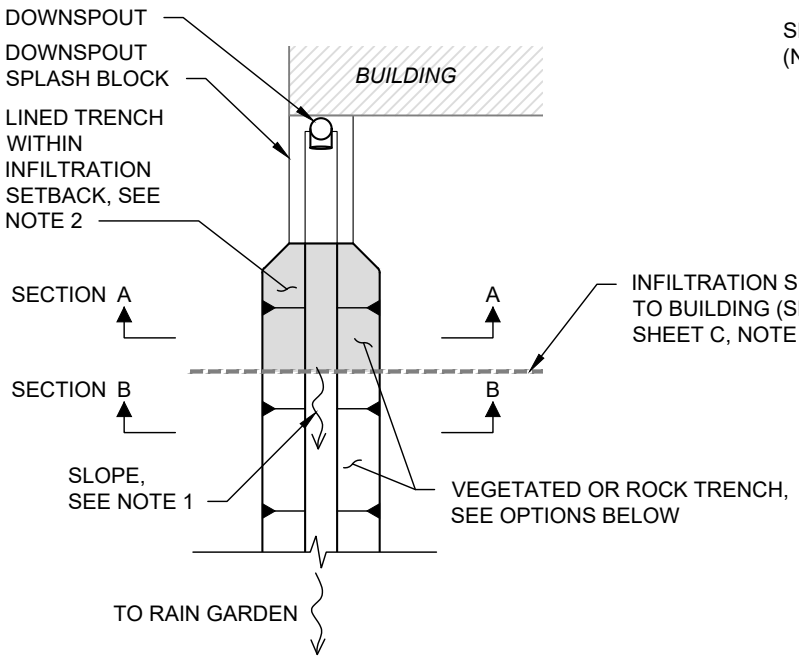
DOWNSPOUT TO RAIN GARDEN PIPED CONNECTION UNDER CONSTRUCTION

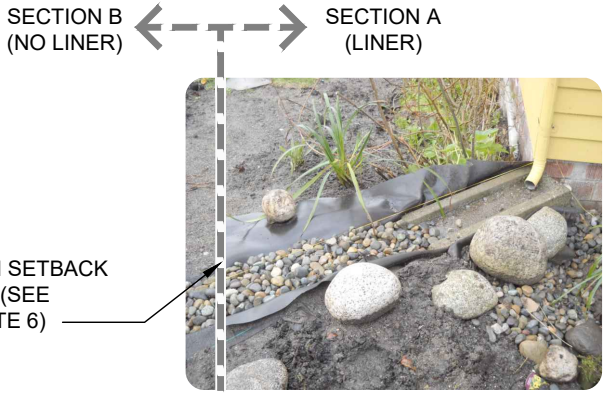
WASHED GRAVEL OR STREAM BED COBBLES AT PIPE OUTLET

NOTES:

1. MINIMUM PIPE DIAMETER AND ASSOCIATED FITTING SIZE VARIES BASED ON CONTRIBUTING AREA AS FOLLOWS:
   - UP TO 2,000 SQUARE FEET: 3-INCH DIAMETER
   - 2,000 TO 5,000 SQUARE FEET: 4-INCH DIAMETER
2. ALL PIPES MUST MEET THE GENERAL PIPING REQUIREMENT ON REFERENCE SHEET B. PIPE MATERIAL MUST BE APPROPRIATE FOR THE LOCATION AND ALL PIPE CONNECTIONS MUST BE SECURED.
3. RAIN GARDEN LOCATION MUST MEET THE REQUIREMENTS ON REFERENCE SHEET C.
4. DOWNSPOUT CAP SHALL BE REMOVABLE.
5. DOWNSPOUT PIPED CONNECTION SHALL BE INSPECTED BEFORE PIPE IS BURIED.

DOWNSPOUT TO RAIN GARDEN CONNECTION (2 OF 2)



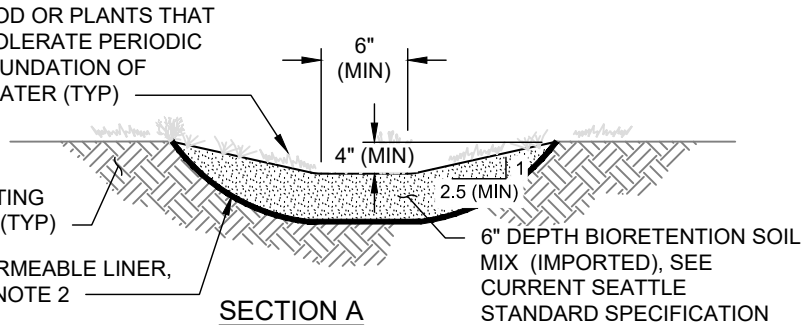


EXAMPLE DOWNSPOUT TO RAIN GARDEN ROCK TRENCH CONNECTION

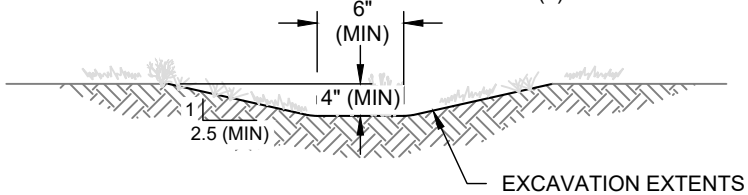
NOTES:

1. MINIMUM TRENCH SLOPE SHALL BE 1%. MAXIMUM SLOPE SHALL BE 4%. INSTALL CHECK DAMS PER SEATTLE STORMWATER MANUAL BMP E2.35 (VOLUME 2, FIGURE 9) FOR SLOPES GREATER THAN 4%.
2. IMPERMEABLE LINER SHALL COMPLY WITH REQUIREMENTS FOR "DITCH LINING" IN SEATTLE STANDARD SPECIFICATION 9-37.2, TABLE 4.

VEGETATED TRENCH OPTION

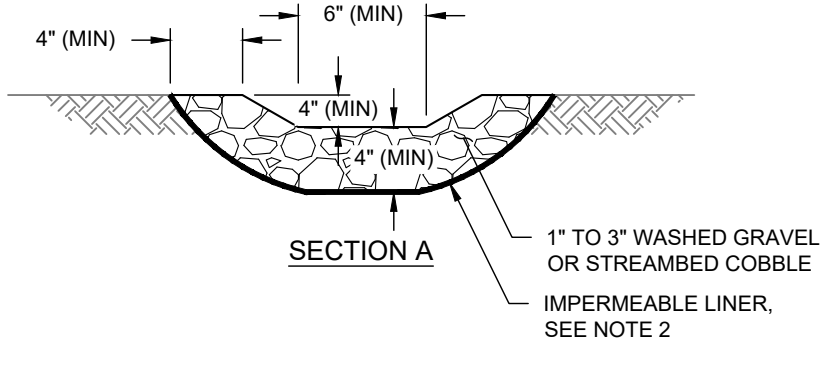


SECTION A

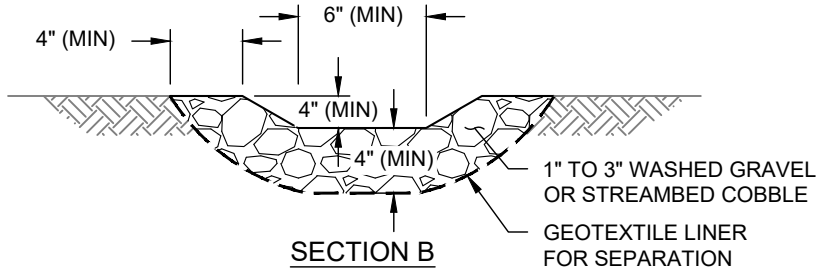


SECTION B

ROCK TRENCH OPTION



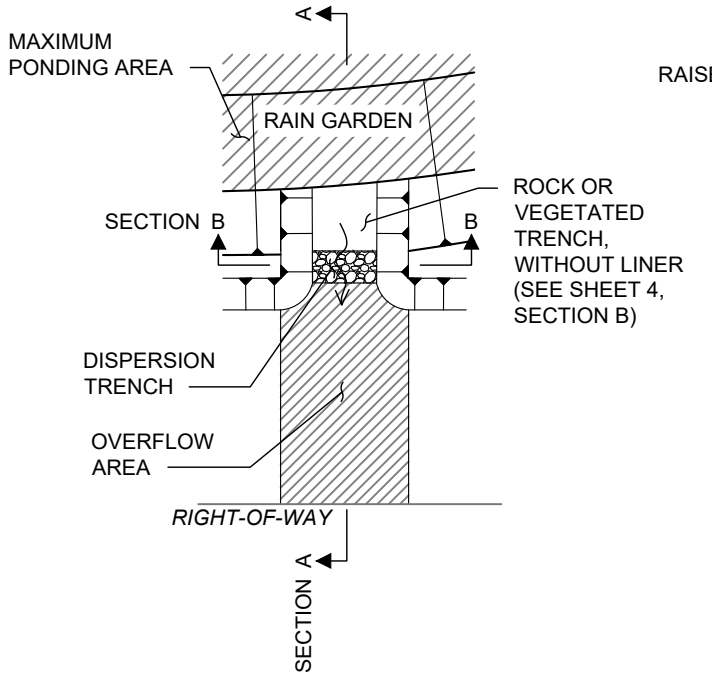
SECTION A

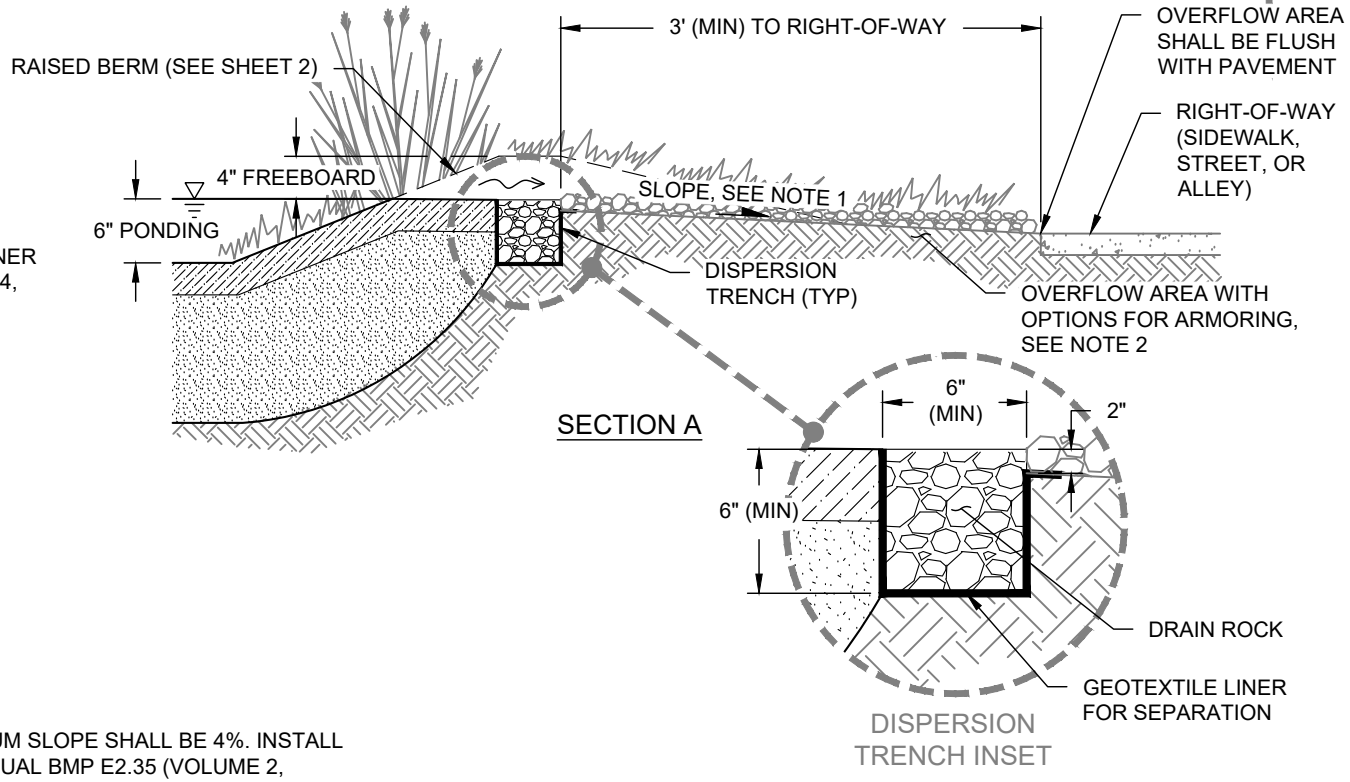


SECTION B

RAIN GARDEN OVERFLOW TYPE 1 - SURFACE OVERFLOWS (1 OF 2)

DISPERSION TRENCH OPTION





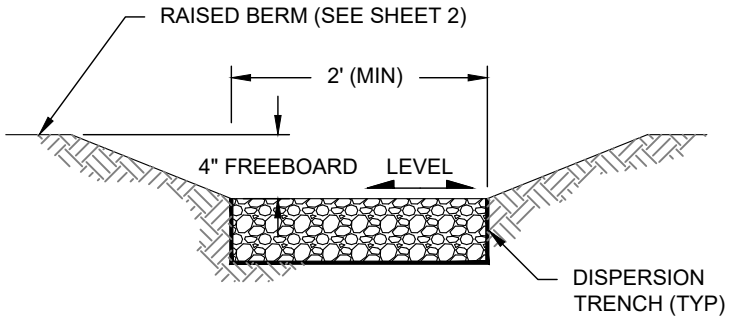
SECTION A

DISPERSION TRENCH INSET

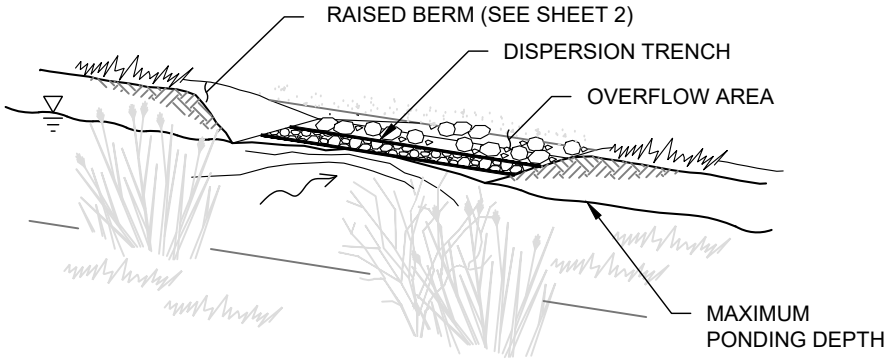
NOTES:

1. MINIMUM TRENCH SLOPE SHALL BE 1%. MAXIMUM SLOPE SHALL BE 4%. INSTALL CHECK DAMS PER SEATTLE STORMWATER MANUAL BMP E2.35 (VOLUME 2, FIGURE 9) FOR SLOPES GREATER THAN 4%.

2. OVERFLOW AREA SHALL BE VEGETATED OR ARMORED WITH MINIMUM 3-INCH DEPTH 1-INCH TO 3-INCH WASHED GRAVEL OR STREAMBED COBBLES.



SECTION B



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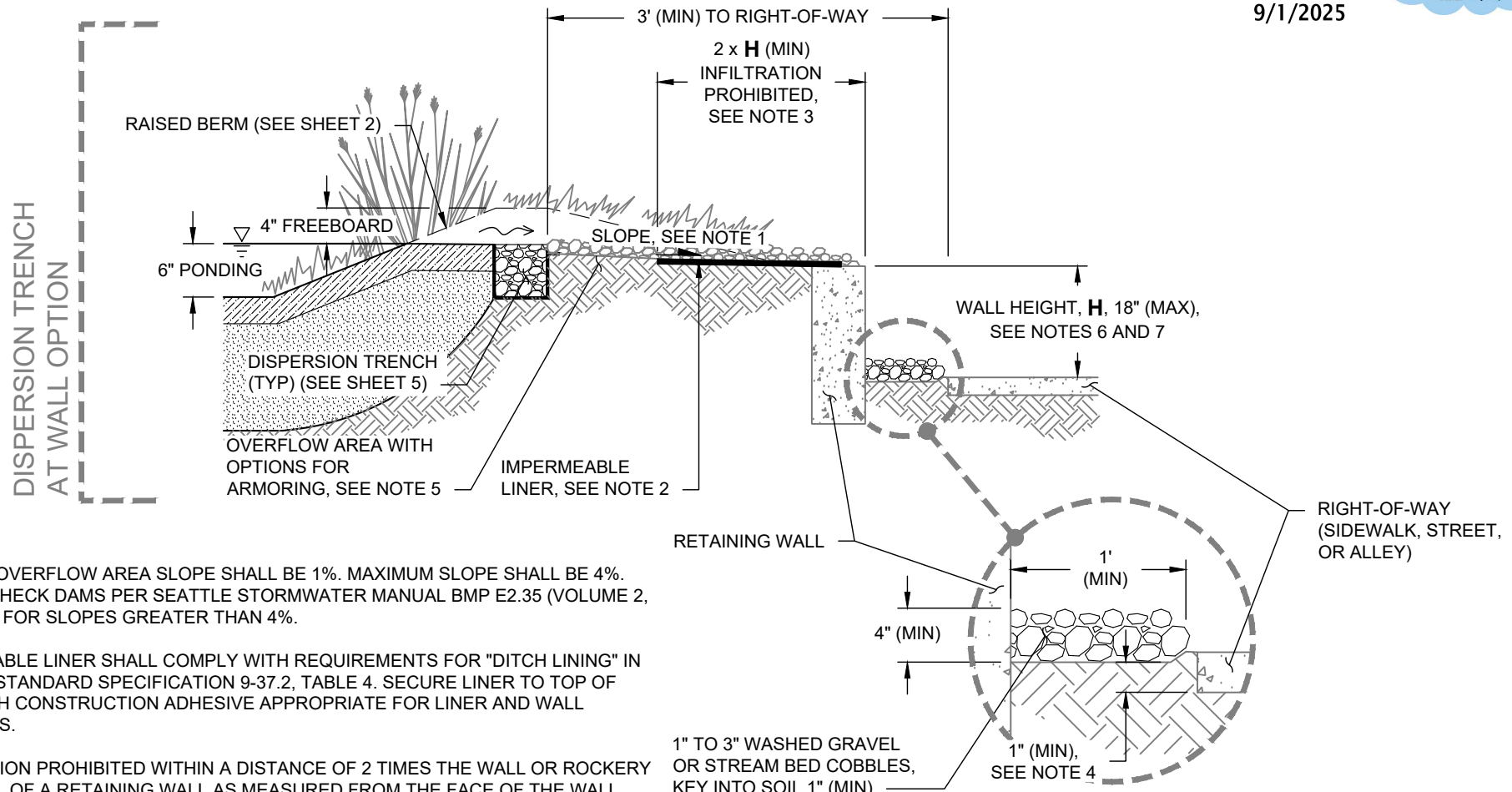
RAIN GARDEN OVERFLOW TYPE 1 - SURFACE OVERFLOWS (2 OF 2)



OVERFLOW ARMORING AT SIDEWALK INSET

NOTES:

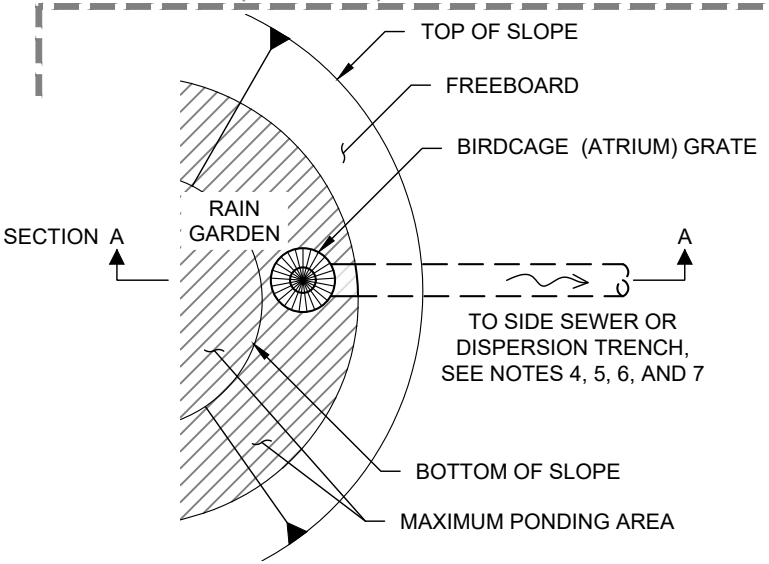
1. MINIMUM OVERFLOW AREA SLOPE SHALL BE 1%. MAXIMUM SLOPE SHALL BE 4%. INSTALL CHECK DAMS PER SEATTLE STORMWATER MANUAL BMP E2.35 (VOLUME 2, FIGURE 9) FOR SLOPES GREATER THAN 4%.
2. IMPERMEABLE LINER SHALL COMPLY WITH REQUIREMENTS FOR "DITCH LINING" IN SEATTLE STANDARD SPECIFICATION 9-37.2, TABLE 4. SECURE LINER TO TOP OF WALL WITH CONSTRUCTION ADHESIVE APPROPRIATE FOR LINER AND WALL MATERIALS.
3. INFILTRATION PROHIBITED WITHIN A DISTANCE OF 2 TIMES THE WALL OR ROCKERY HEIGHT, **H**, OF A RETAINING WALL AS MEASURED FROM THE FACE OF THE WALL.
4. GRAVEL OR COBBLES SHALL BE SET 1-INCH (MIN) ABOVE BOTTOM OF SIDEWALK SLAB TO AVOID UNDERMINING SIDEWALK.
5. OVERFLOW AREA SHALL BE VEGETATED OR ARMORED WITH MINIMUM 3-INCH DEPTH 1-INCH TO 3-INCH WASHED GRAVEL OR STREAM BED COBBLES.
6. RETAINING WALL HEIGHT MEASURED FROM VISIBLE TOE OF WALL TO TOP OF WALL.
7. FOR DISCHARGE OVER RETAINING WALLS, MAXIMUM ALLOWABLE DROP FROM TOP OF WALL TO TOE OF WALL IS 18 INCHES. FOR RAIN GARDEN DISCHARGE TOWARD A SERIES OF STACKED OR STEPPED WALLS OR ROCKERIES, THE MAXIMUM ALLOWABLE DROP FOR ANY ONE WALL OR ROCKERY IN THE SERIES IS 18 INCHES.

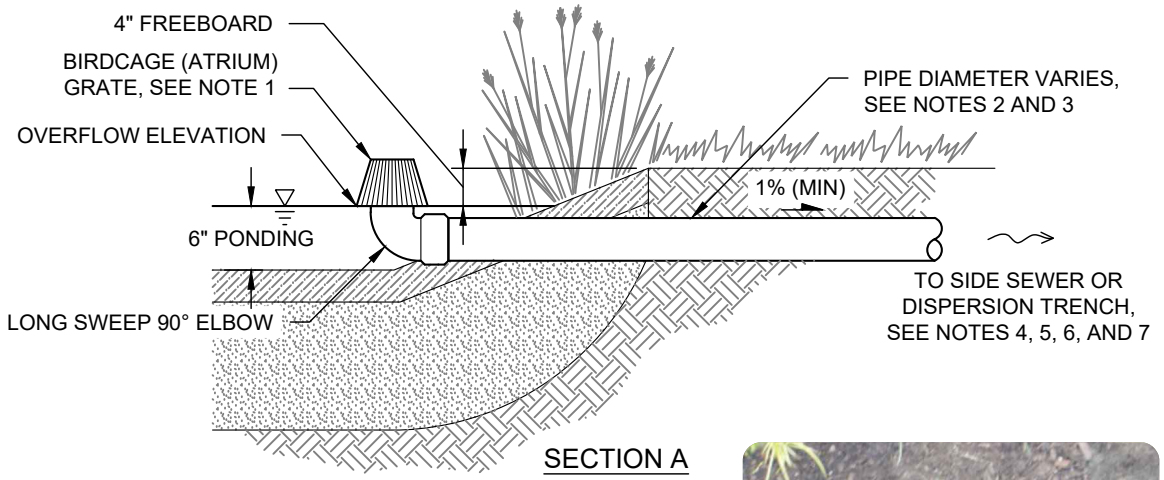
OVERFLOW AREA WITH ARMORING (VIEW FROM RIGHT-OF-WAY)

OVERFLOW AREA WITH ARMORING (VIEW FROM RAIN GARDEN)

RAIN GARDEN OVERFLOW TYPE 2 - SUBSURFACE OVERFLOWS

BIRDCAGE (ATRIUM) GRATE OVERFLOW





SECTION A

BIRDCAGE OVERFLOW

NOTES:

1. BIRDCAGE (ATRIUM) GRATE AND ANY EXPOSED PIPES AND FITTINGS SHALL BE MADE OF UV STABILIZED MATERIAL.

2. MINIMUM PIPE DIAMETER AND ASSOCIATED FITTING SIZE VARIES BASED ON CONTRIBUTING AREA AS FOLLOWS:
   - UP TO 2,300 SQUARE FEET: 4-INCH DIAMETER PIPE AND 4-INCH BIRDCAGE (ATRIUM) GRATE
   - 2,300 to 5,000 SQUARE FEET: 4-INCH DIAMETER PIPE AND 6-INCH BIRDCAGE (ATRIUM) GRATE

   INSTALL 6-INCH X 4-INCH REDUCER ON OVERFLOW PIPE IF USING 6-INCH BIRDCAGE GRATE ON 4-INCH OVERFLOW PIPE.

3. ALL PIPES MUST MEET THE GENERAL PIPING REQUIREMENTS ON REFERENCE SHEET B. PIPE MATERIAL MUST BE APPROPRIATE FOR THE LOCATION AND ALL PIPE CONNECTIONS MUST BE SECURED.

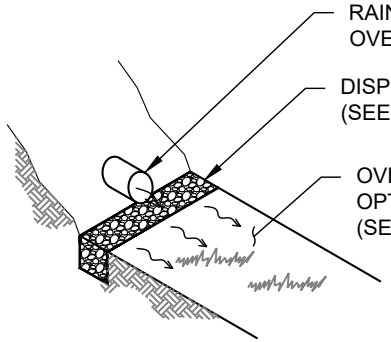
4. CONNECTIONS TO SIDE SEWER MAY REQUIRE A SEPARATE SIDE SEWER PERMIT AND INSPECTION.

5. ALL CONNECTIONS TO A SIDE SEWER SHALL COMPLY WITH REQUIREMENTS FOR DESIGN AND CONSTRUCTION OF DRAINAGE WATER DISCHARGES IN DIRECTOR'S RULES 4-2011 AND 5-2011 AND SIDE SEWER INSTALLATION REQUIREMENTS IN SEATTLE STANDARD PLAN NO. 283.

6. SIDE SEWER FUNCTION MUST BE CONFIRMED FOR ABOVE GROUND OR BELOW GROUND DISCHARGE TO A SIDE SEWER. TESTING OR VIDEO SCOPING OF SIDE SEWER MAY BE REQUIRED TO CONFIRM FUNCTIONING SIDE SEWER.

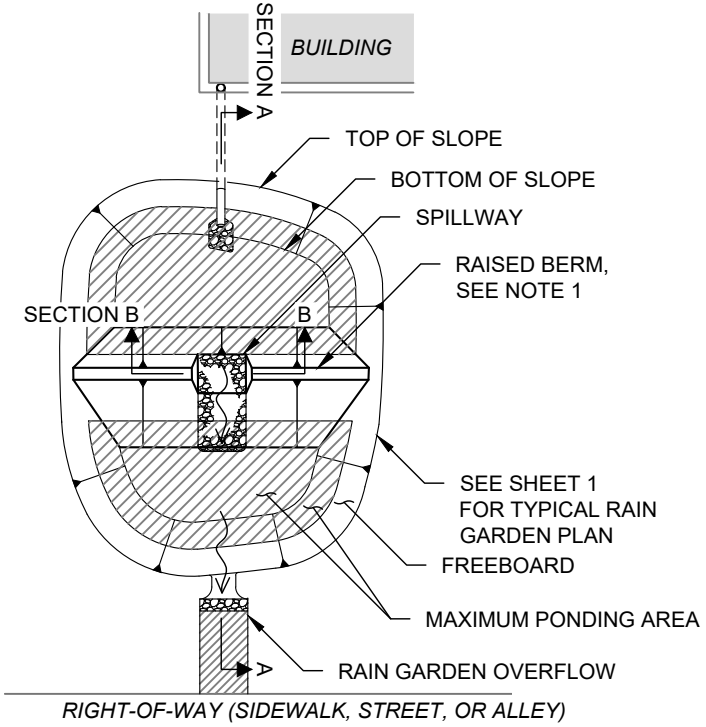
7. A PRE-INSPECTION SHOULD BE REQUESTED WHEN A PIPED SUBSURFACE OVERFLOW IS PLANNED.

DISPERSION TRENCH OPTION



TERRACED RAIN GARDENS

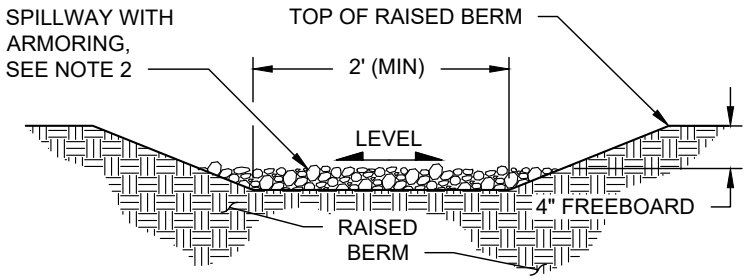
TERRACED RAIN GARDEN PLAN



NOTES:

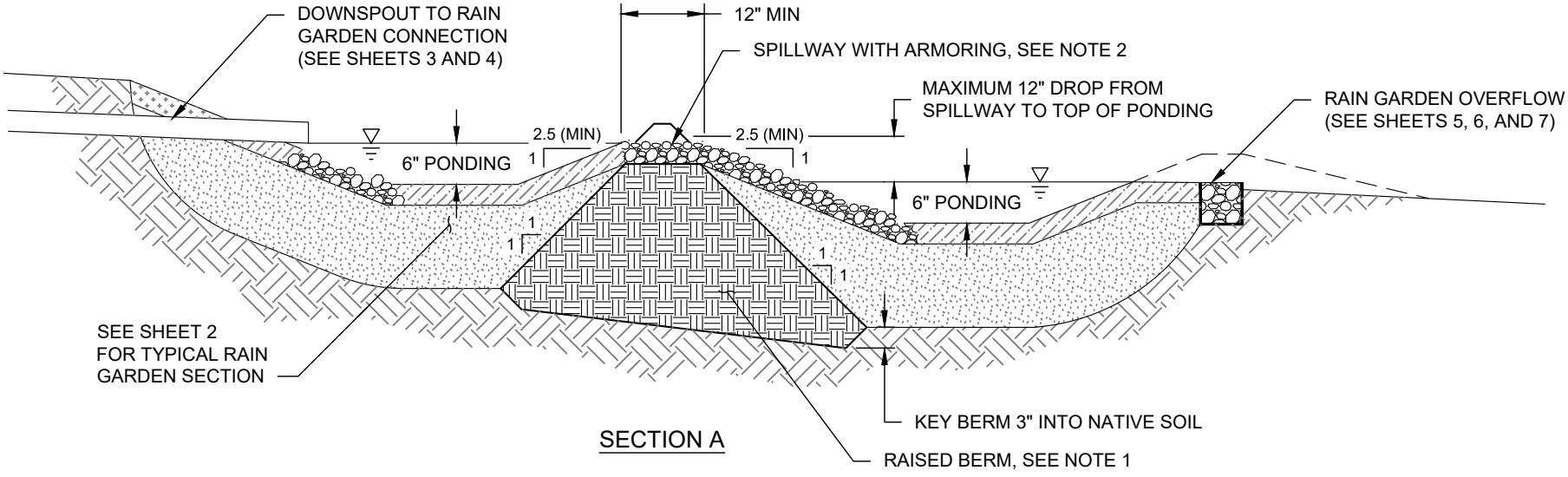
1. RAISED BERM SHALL BE FIRM, UNDISTURBED, NON-YIELDING NATIVE SOIL OR DISTURBED SITE SOILS COMPACTED WITH 12-POUND HAND TAMPER IN 3-INCH LIFTS. IF SITE SOILS ARE SANDY, IMPORT DENSER, NON-PERMISSIVE SOILS FOR RAISED BERM. TOP OF BERM SHALL BE MINIMUM 6 INCHES WIDE. KEY BOTTOM INTO SUBRADE MINIMUM 3 INCHES. BERM SIDE SLOPES SHALL BE 2.5 (MINIMUM) TO 1.

2. ARMOR SPILLWAY WITH 3-INCH DEPTH 1-INCH TO 3-INCH WASHED GRAVEL OR STREAMBED COBBLES.



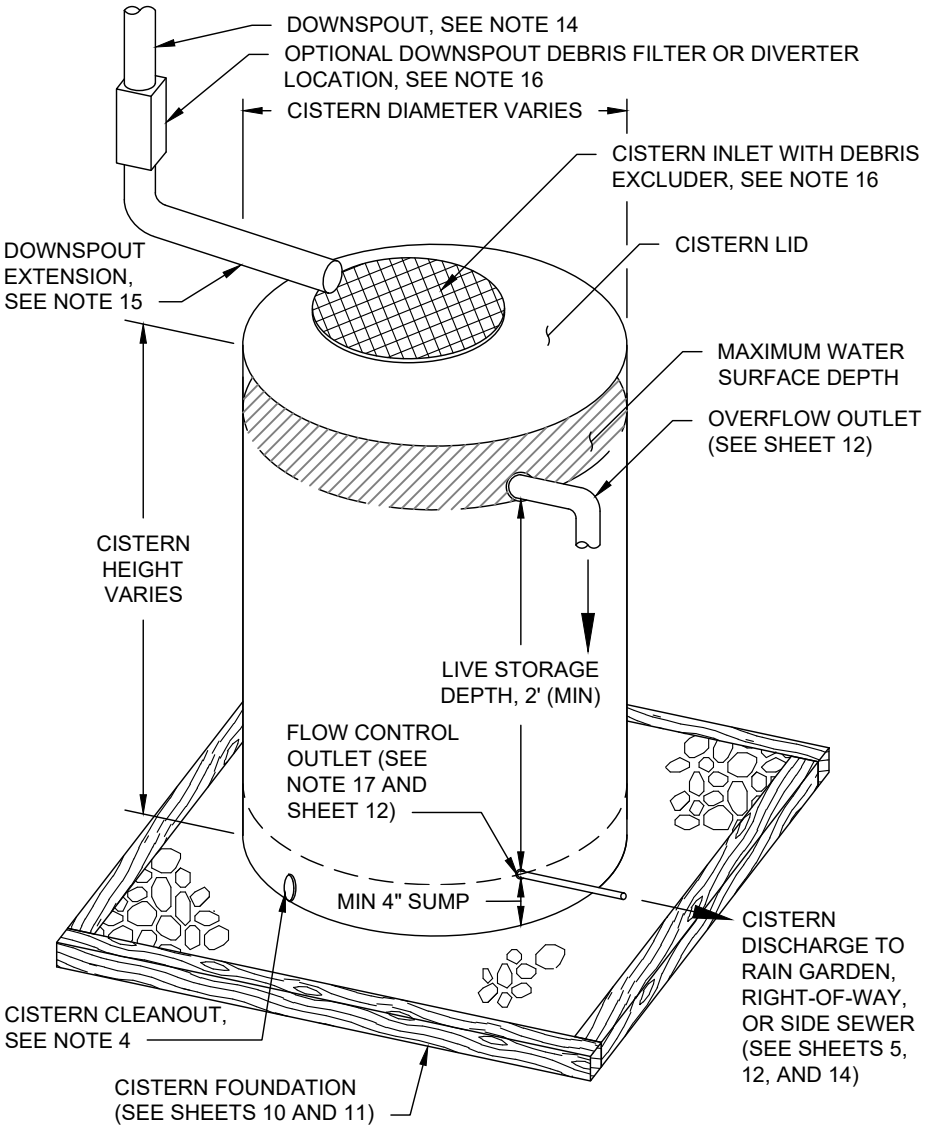
SECTION B

TERRACED RAIN GARDEN SECTION



SECTION A

CISTERN SECTION

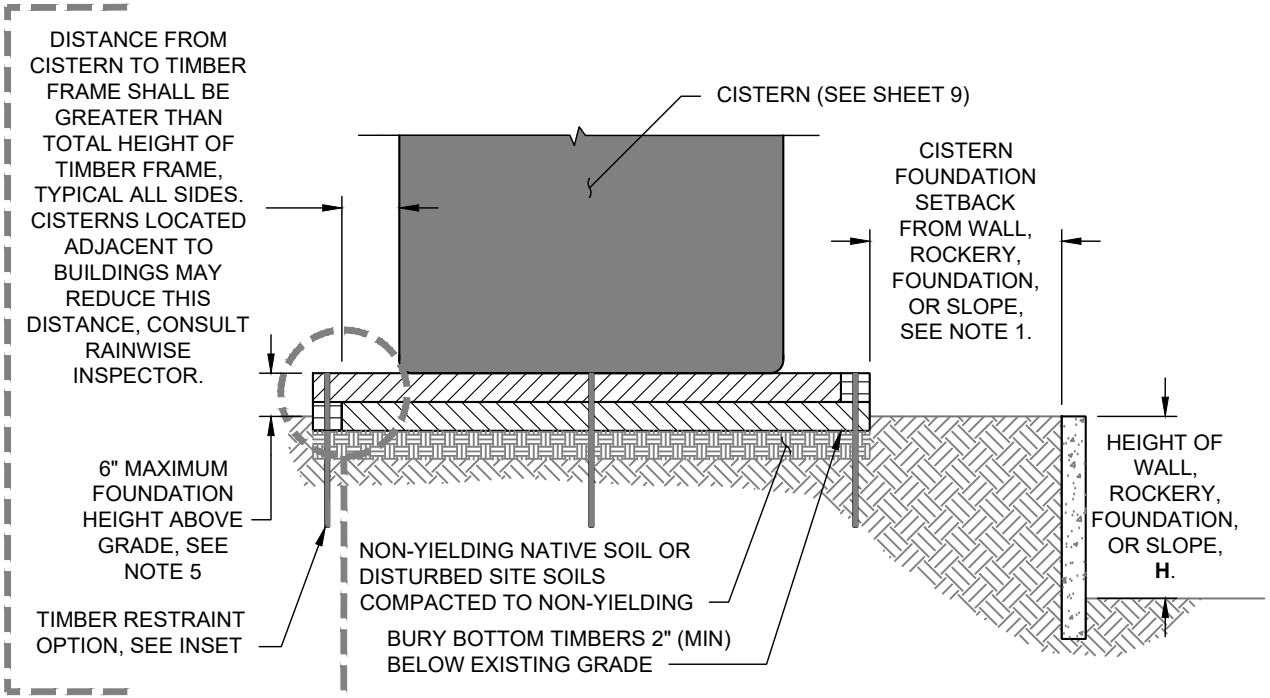


NOTES:

1. CISTERNS SHALL MEET ALL REQUIREMENTS ON REFERENCE SHEETS B AND D AND SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS.
2. ALL CISTERN ENTRANCE LOCATIONS SHALL BE SECURED AS TO BE CHILDPROOF AND TAMPER RESISTANT. A SCREW-ON CISTERN LID MEETS THIS REQUIREMENT.
3. CISTERNS WITH HEIGHT GREATER THAN THE NARROWEST DIMENSION (LENGTH, WIDTH, DIAMETER) SHALL BE RESTRAINED, AT INSPECTOR'S DISCRETION, TO PREVENT OVERTURNING.
4. SYSTEM MUST BE DESIGNED TO PROVIDE ACCESS TO CISTERN, CISTERN INTERIOR, AND CISTERN FITTINGS FOR CLEANING AND REMOVAL OF SEDIMENT AND ALGAE. ACCESS SHALL BE THROUGH REMOVABLE LID OR 6-INCH (MINIMUM) INSPECTION PORT. CLEANOUT SHALL BE PROVIDED AT BOTTOM OF TANK (VIA BOTTOM BULKHEAD FITTING). ADEQUATE ACCESS SHALL BE AT INSPECTOR'S DISCRETION.
5. CISTERNS OVER 6.5 FEET TALL OR WITH STORAGE CAPACITY GREATER THAN 1,100 GALLONS REQUIRE CONSULTATION AND PRE-INSPECTION WITH RAINWISE INSPECTOR.
6. ALL CISTERN PIPING MATERIALS SHALL BE RIGID EXCEPT 4" MIN, 16" MAXIMUM LINEAR INCHES OF FLEXIBLE PIPE MUST BE USED TO CONNECT TERMINUS OF FLOW CONTROL OUTLET TO OVERFLOW PIPING. FLEXIBLE PIPE DIAMETER MUST BE GREATER THAN THE DIAMETER OF THE FLOW CONTROL OUTLET ORIFICE, SEE NOTE 17. SEE SHEET 15 FOR AN EXAMPLE OUTLET PIPE CONFIGURATION. TUBING OR HOSE SHALL BE NON-CLEAR AND UV RESISTANT.
7. OVERFLOW AND LOW FLOW PIPE CONFIGURATIONS (FITTINGS AND PIPE LENGTH) MAY VARY BY CISTERN (SEE SHEET 12). PIPE SUPPORT TO BE PROVIDED PER REFERENCE SHEET B.
8. PLASTIC CISTERNS MUST BE UV STABILIZED. ALL CISTERNS MUST BE NON-COLLAPSIBLE, WATERTIGHT, AND OF DURABLE MATERIAL TO PROVIDE A LONG SERVICE LIFE.
9. TO PREVENT FREEZING DAMAGE, ALL EXPOSED PIPE MUST BE FREE DRAINING.
10. PROVIDE WATER TIGHT FITTINGS AT ALL CISTERN CONNECTIONS. FLEXIBLE COUPLING FITTINGS (FERNCO BRAND OR APPROVED EQUAL) ARE RECOMMENDED FOR CISTERN/PIPE CONNECTIONS.
11. LOCATE CISTERNS TO AVOID OBSTRUCTION OF UTILITIES, WINDOWS, OR OTHER SITE FEATURES THAT REQUIRE ACCESS.
12. SEE REFERENCE SHEET D FOR CISTERN SETBACK REQUIREMENTS.
13. SEE SHEET 13 FOR DESIGN REQUIREMENTS FOR CISTERNS IN SERIES.
14. INSTALL A REMOVABLE CAP ON ALL DOWNSPOUTS CUT FOR PROJECT INSTALLATION. SEE SHEET 3 FOR AN EXAMPLE.
15. MINIMUM PIPE DIAMETER AND ASSOCIATED FITTING SIZE VARIES BASED ON CONTRIBUTING AREA AS FOLLOWS:
    - UP TO 2,000 SQUARE FEET: 3-INCH DIAMETER
    - 2,000 TO 5,000 SQUARE FEET: 4-INCH DIAMETER
16. PROVIDE DEBRIS EXCLUDER WITH 1/16-INCH MAXIMUM MESH SCREEN SIZE AT CISTERN INLET. PROVIDE 3-INCH VERTICAL GAP BETWEEN DOWNSPOUT AND DEBRIS EXCLUDER SCREEN. DEBRIS EXCLUDER SHALL BE MAINTAINABLE AND LOCATED TO PROVIDE MAINTENANCE ACCESS. DEBRIS EXCLUDER AT CISTERN INLET MAY BE SUPPLEMENTED WITH A DOWNSPOUT FILTER OR DIVERTER TO REDUCE MAINTENANCE NEED. A LID COVERING THE DEBRIS EXCLUDER SCREEN IS NOT REQUIRED.
17. FLOW CONTROL OUTLET SHALL INCLUDE A UNIFORM DIAMETER INSPECTABLE AND CLEANABLE ORIFICE SIZED AS SPECIFIED IN THE RAINWISE REBATE CALCULATOR. NO ADDITIONAL VALVES OR FLOW RESTRICTOR PERMITTED DOWNSTREAM OF FLOW CONTROL OUTLET. SEE SHEET 15 FOR AN EXAMPLE CONFIGURATION.

CISTERN FOUNDATION (1 OF 2)

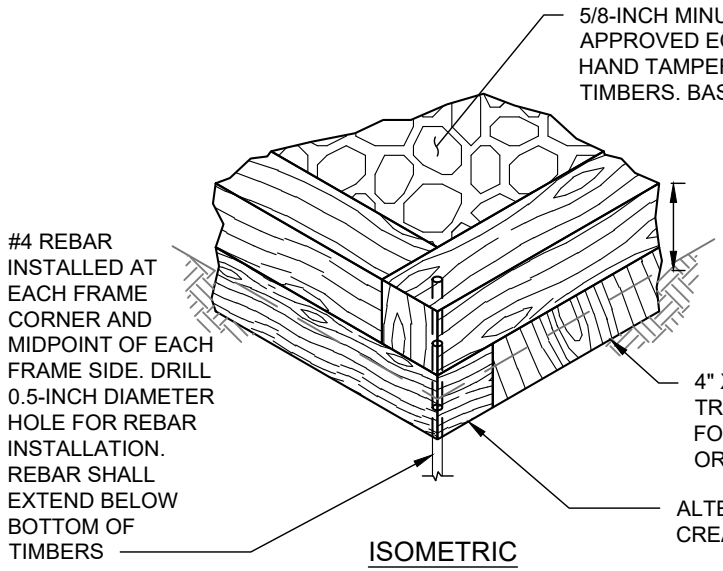
CISTERN FOUNDATION OPTION 1: TIMBER FRAME



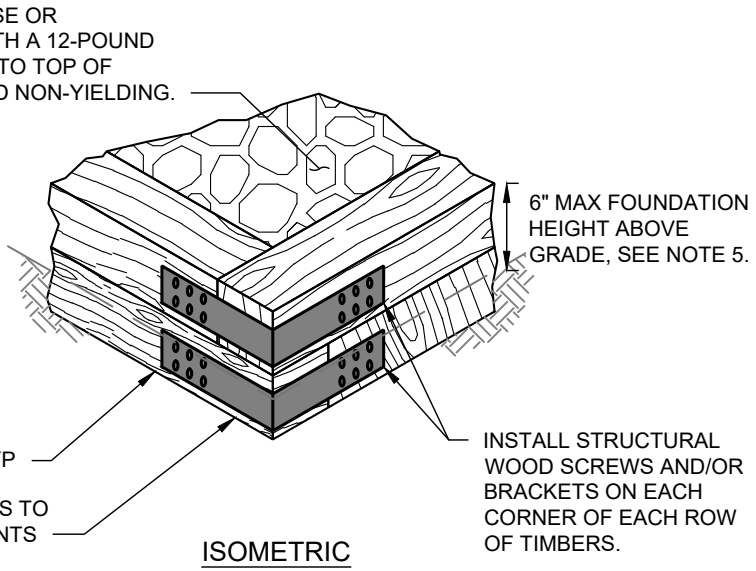
NOTES:

1. CISTERNS LOCATED WITHIN A SETBACK LESS THAN **H** FROM A WALL OR FOUNDATION, OR LESS THAN 2 x **H** FROM A ROCKERY, MAY EXERT A LATERAL LOAD ON THE VERTICAL FEATURE. DUE TO THE HIGH VARIABILITY OF SITE AND SOIL CONDITIONS, THE HOMEOWNER IS RESPONSIBLE FOR ASSESSING AND DETERMINING A SUITABLE LOCATION FOR CISTERN INSTALLATIONS.
2. CISTERN FOUNDATIONS SHALL BE INSTALLED FLAT AND LEVEL.
3. REMOVE FULL DEPTH OF SOIL WITH ORGANICS AND TOPSOIL FROM CISTERN FOUNDATION AREA.
4. ALL STRUCTURAL STEEL HARDWARE MUST BE RATED FOR USE WITH PRESSURE TREATED LUMBER.
5. FOUNDATION DESIGNS TALLER THAN 6 INCHES REQUIRE CONSULTATION WITH RAINWISE INSPECTOR.
6. ALTERNATIVE CISTERN FOUNDATION DESIGNS (E.G., CAST-IN-PLACE CONCRETE, CONCRETE PAVERS) MAY BE PERMITTED BUT REQUIRE CONSULTATION WITH RAINWISE INSPECTOR.
7. ALL PRODUCTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

TIMBER FRAME RESTRAINT OPTION 1A: REBAR

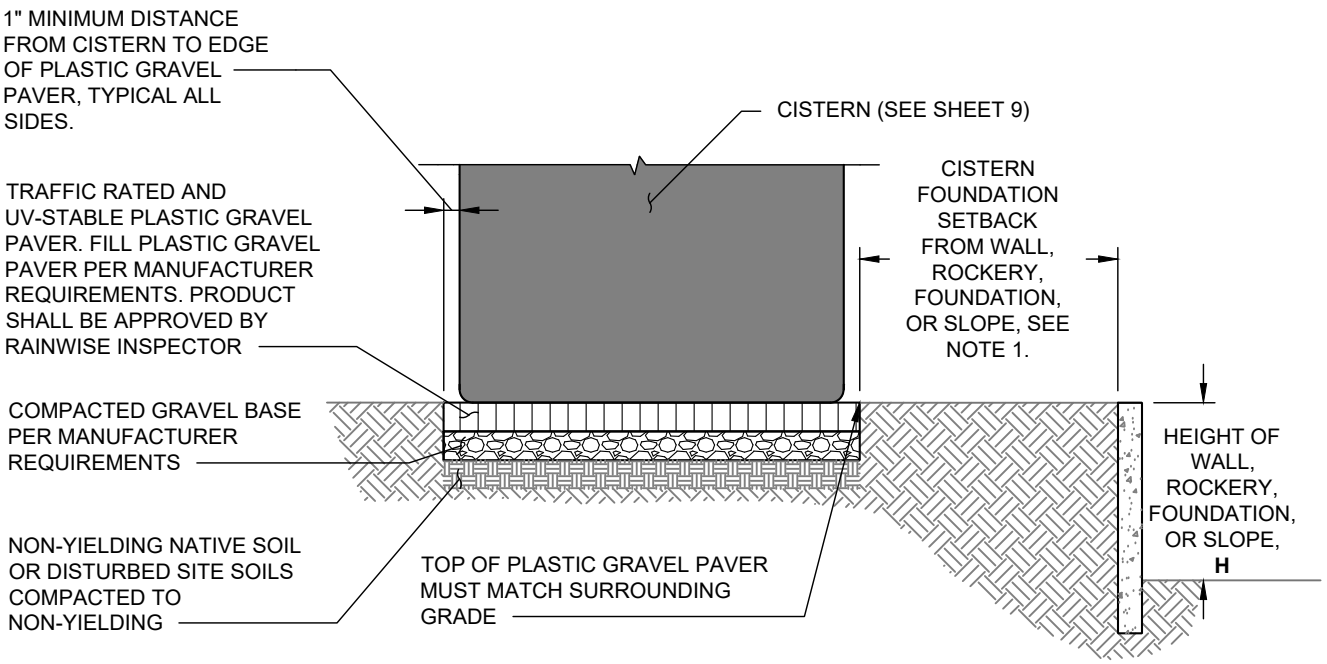


TIMBER FRAME RESTRAINT OPTION 1B: BRACKETS AND/OR STRUCTURAL SCREWS

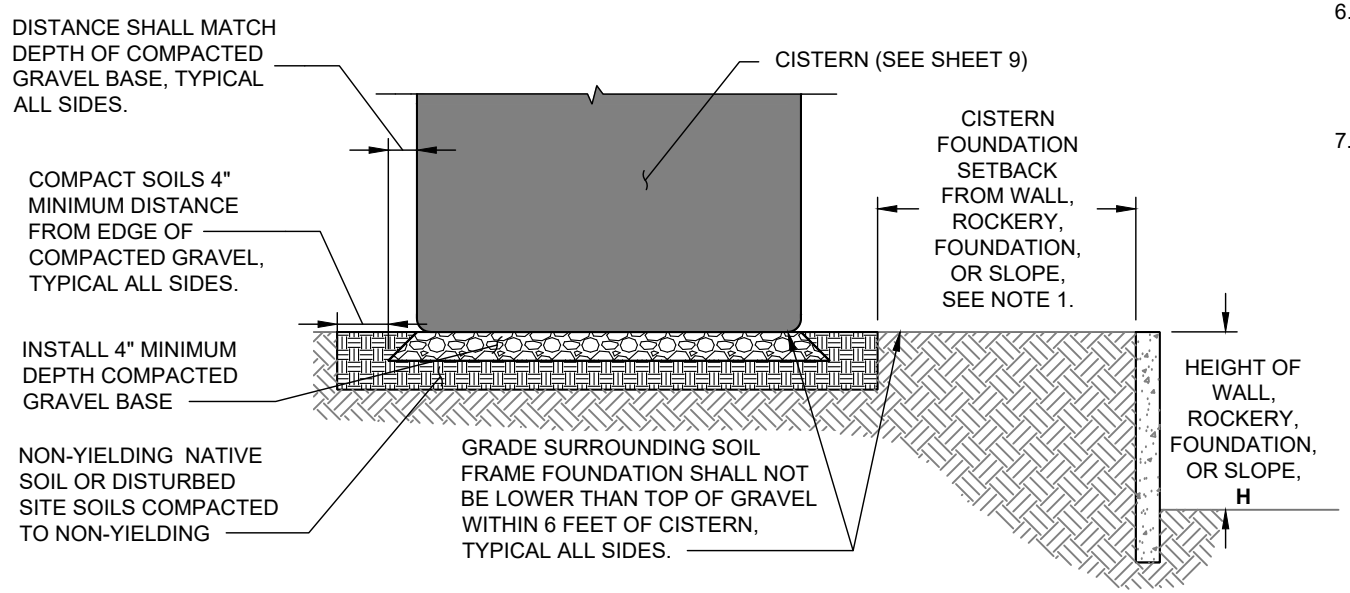


CISTERN FOUNDATION (2 OF 2)

CISTERN FOUNDATION OPTION 2: PLASTIC GEOGRID PAVER



CISTERN FOUNDATION OPTION 3: SOIL FRAME

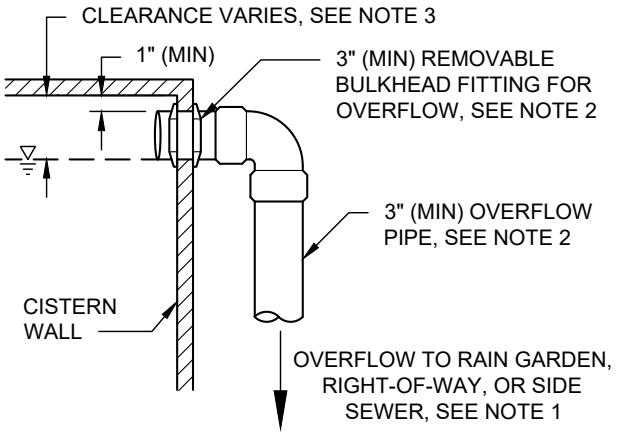


NOTES:

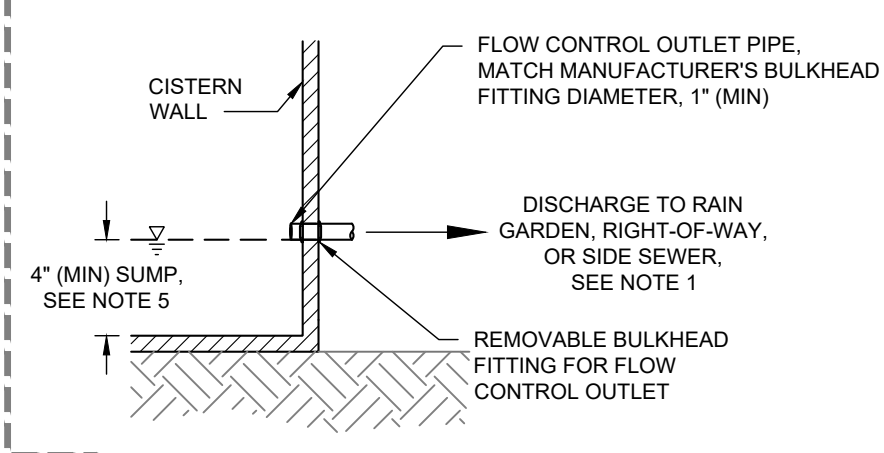
1. CISTERNS LOCATED WITHIN A SETBACK LESS THAN **H** FROM A WALL OR FOUNDATION, OR LESS THAN 2 X **H** FROM A ROCKERY, MAY EXERT A LATERAL LOAD ON THE VERTICAL FEATURE. DUE TO THE HIGH VARIABILITY OF SITE AND SOIL CONDITIONS, THE HOMEOWNER IS RESPONSIBLE FOR ASSESSING AND DETERMINING A SUITABLE LOCATION FOR CISTERN INSTALLATIONS.
2. CISTERN FOUNDATIONS SHALL BE INSTALLED FLAT AND LEVEL.
3. REMOVE FULL DEPTH OF SOIL WITH ORGANICS AND TOPSOIL FROM CISTERN FOUNDATION AREA.
4. ALL STRUCTURAL STEEL HARDWARE MUST BE RATED FOR USE WITH PRESSURE TREATED LUMBER.
5. FOUNDATION DESIGNS TALLER THAN 6 INCHES REQUIRE CONSULTATION WITH RAINWISE INSPECTOR.
6. ALTERNATIVE CISTERN FOUNDATION DESIGNS (E.G., CAST-IN-PLACE CONCRETE, CONCRETE PAVERS) MAY BE PERMITTED BUT REQUIRE CONSULTATION WITH RAINWISE INSPECTOR.
7. ALL PRODUCTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CISTERN OUTLETS

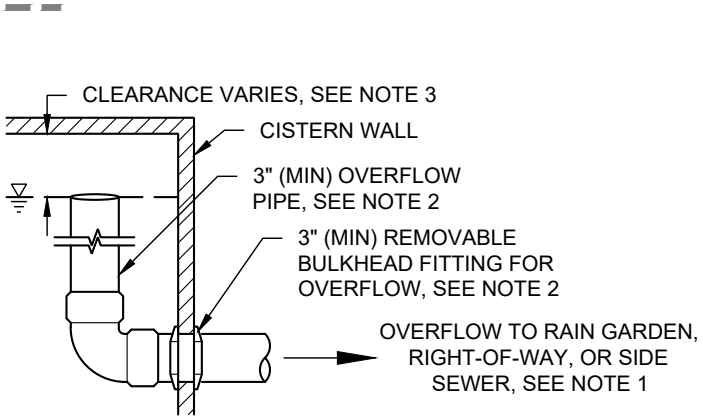
OPTION 1: EXTERNAL OVERFLOW OUTLET (PREFERRED)



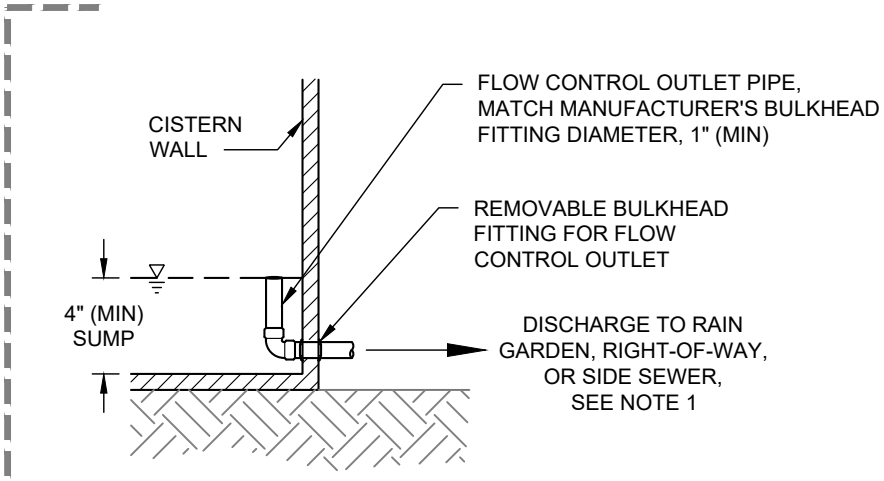
FLOW CONTROL OUTLET FOR CISTERNS (PREFERRED)



OPTION 2: INTERNAL OVERFLOW WITH RISER (SNORKEL) OUTLET



FLOW CONTROL OUTLET MODIFICATION (SNORKEL) FOR CISTERNS WITHOUT 4-INCH SUMP



NOTES:

1. CONNECTIONS TO SIDE SEWER MAY REQUIRE A SEPARATE SIDE SEWER PERMIT AND INSPECTION (SEE SHEET 14).

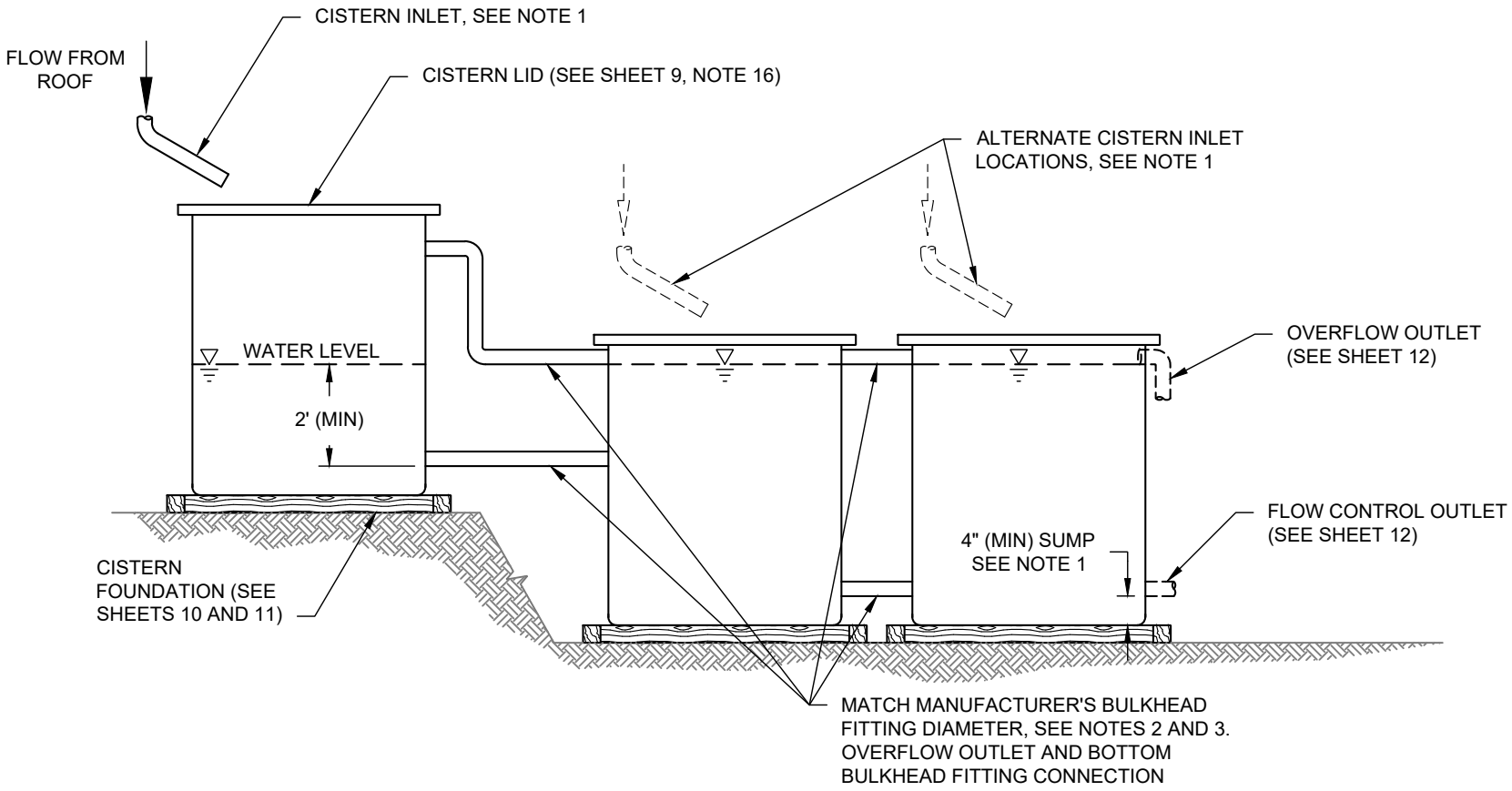
2. MINIMUM PIPE DIAMETER AND ASSOCIATED FITTING SIZE VARIES BASED ON CONTRIBUTING AREA AS FOLLOWS:
   - UP TO 2,000 SQUARE FEET: 3-INCH DIAMETER
   - 2,000 TO 5,000 SQUARE FEET: 4-INCH DIAMETER

3. CLEARANCE AT TOP OF OVERFLOW VARIES BASED ON OVERFLOW PIPE DIAMETER AS FOLLOWS:
   - 3-INCH PIPE DIAMETER: PROVIDE 4 INCHES CLEARANCE
   - 4-INCH PIPE DIAMETER: PROVIDE 5 INCHES CLEARANCE

4. SEE SHEET 15 FOR AN EXAMPLE CISTERN FLOW CONTROL OUTLET CONFIGURATION WITHOUT A SNORKEL.

5. PROVIDE MODIFIED FLOW CONTROL OUTLET (SNORKEL) FOR CISTERNS MANUFACTURED WITH SUMPS LESS THAN 4 INCHES, DETAIL THIS SHEET.

CISTERNS IN SERIES



NOTES:

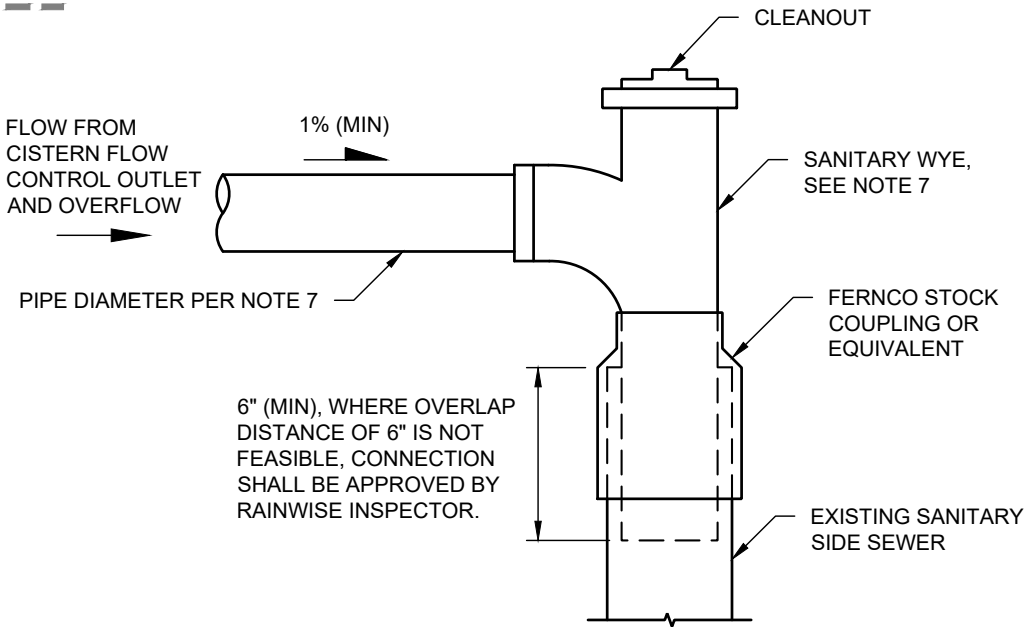
1. CISTERN INLET(S) MAY BE CONNECTED TO ANY CISTERN IN THE SERIES PROVIDED A 4-INCH SUMP IS INCLUDED AT EACH CISTERN WITH A CISTERN INLET CONNECTION AND AT THE CISTERN WITH FLOW CONTROL OUTLET.

2. OVERFLOW OUTLET AND BOTTOM BULKHEAD FITTING CONNECTION SHALL BE PROVIDED FOR EACH CISTERN IN SERIES. FLEXIBLE COUPLING FITTINGS (FERNCO BRAND OR APPROVED EQUAL) ARE RECOMMENDED FOR CISTERN/PIPE CONNECTIONS.

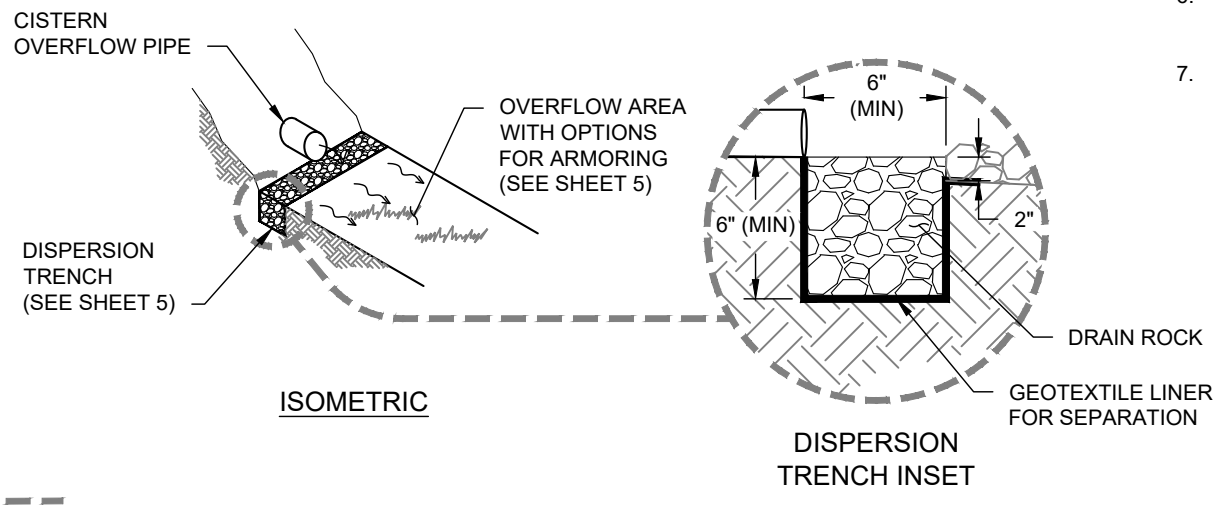
3. ALL CONNECTING PIPES SHALL BE RIGID AND PROPERLY SUPPORTED (SEE SHEET B). ALL CONNECTING PIPES SHALL BE ACCESSIBLE FOR MAINTENANCE AND FREE DRAINING. NO CONNECTING PIPE SHALL BE LOWER THAN THE FLOW CONTROL OUTLET PIPE.

CISTERN CONNECTIONS

CLEANOUT FOR ABOVE GROUND SIDE SEWER CONNECTIONS



DISPERSION TRENCH OPTION

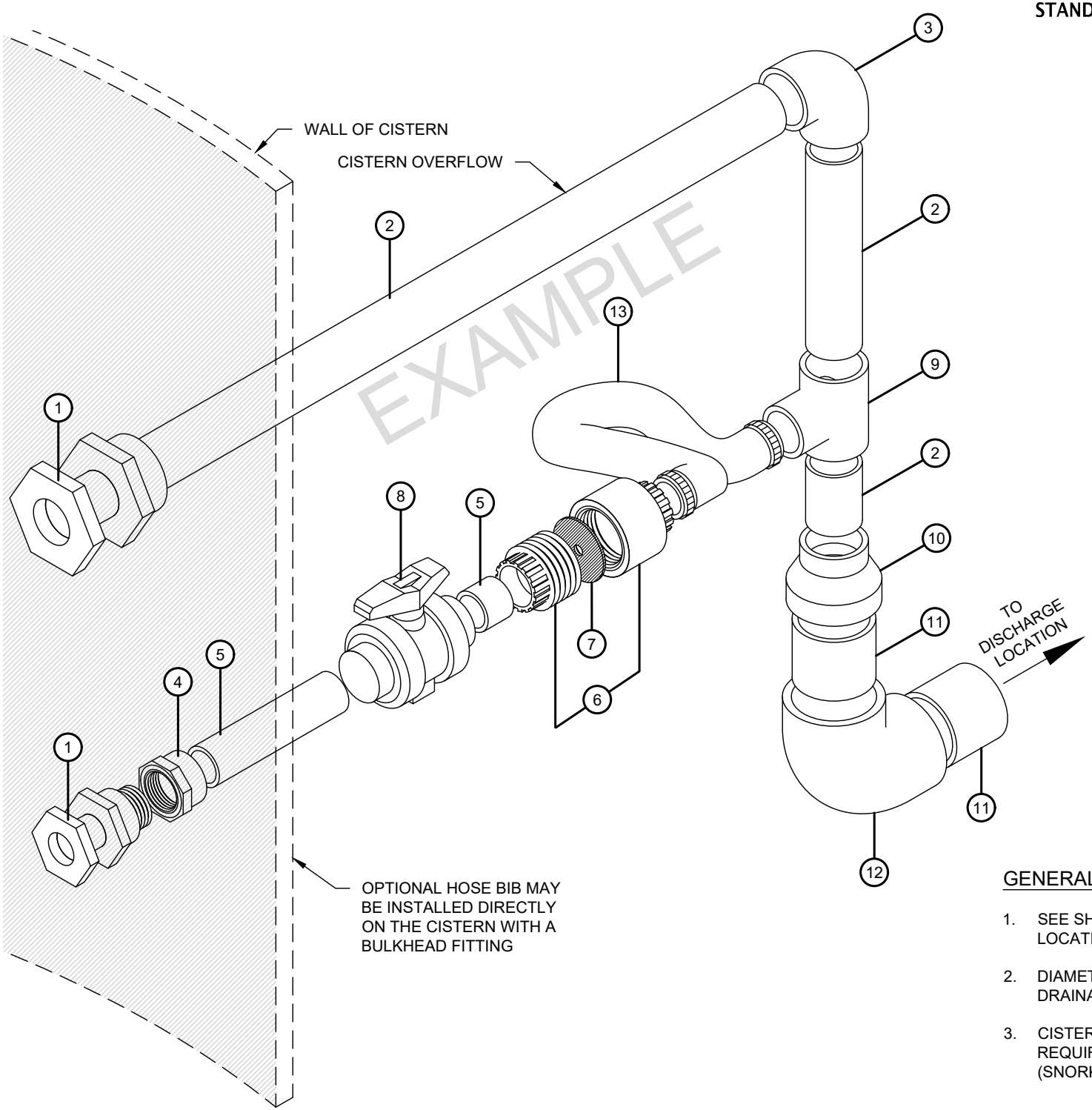


GENERAL NOTES:

1. CISTERN MAY DISCHARGE TO THE FOLLOWING LOCATIONS:
   - ABOVE GROUND TO SIDE SEWER (DETAIL THIS SHEET), A SEATTLE SIDE SEWER PERMIT MAY BE REQUIRED
   - BELOW GROUND TO SIDE SEWER PER SEATTLE SIDE SEWER PERMIT
   - ABOVE OR BELOW GROUND TO RAIN GARDEN
   - ABOVE OR BELOW GROUND TO DISPERSION TRENCH

   SEE SHEET B FOR SIDE SEWER REQUIREMENTS.
2. SIDE SEWER FUNCTION MUST BE CONFIRMED FOR DISCHARGE TO A SIDE SEWER. TESTING OR VIDEO SCOPING OF SIDE SEWER MAY BE REQUIRED TO CONFIRM FUNCTIONING SIDE SEWER.
3. ALL CONNECTIONS TO A SIDE SEWER SHALL COMPLY WITH REQUIREMENTS FOR DESIGN AND CONSTRUCTION OF DRAINAGE WATER DISCHARGES IN DIRECTOR'S RULES 4-2011 AND 5-2011 AND SIDE SEWER INSTALLATION REQUIREMENTS IN SEATTLE STANDARD PLAN NO. 283.
4. CISTERN DISCHARGE TO A RAIN GARDEN MAY BE INSTALLED IN A SIMILAR MANNER TO DETAILS ON SHEETS 3 AND 4.
5. CISTERN DISCHARGE TO A DISPERSION TRENCH MAY BE INSTALLED IN A SIMILAR MANNER TO DETAILS ON SHEETS 5 AND 6.
6. CISTERN DISCHARGE DESIGN AND MATERIALS SHALL MEET THE GENERAL REQUIREMENTS ON REFERENCE SHEET B.
7. MINIMUM PIPE DIAMETER AND ASSOCIATED FITTING SIZE VARIES BASED ON CONTRIBUTING AREA AS FOLLOWS:
   - UP TO 2,000 SQUARE FEET: 3-INCH DIAMETER
   - 2,000 TO 5,000 SQUARE FEET: 4-INCH DIAMETER

CISTERN FITTINGS EXAMPLE



1. REMOVABLE BULKHEAD FITTING
2. 3" OR 4" SCH 40 PVC, SEE NOTE 2
3. 3" OR 4" SCH 40 PVC SLP x SLP ELBOW, SEE NOTE 2
4. 1.5" FPT x 1.5" SLP ADAPTER
5. 1.5" SCH 40 PVC PIPE
6. 1.5" SCH 80 PVC UNION SLP-SLP
7. 1.5" x 1/4" BLACK NEOPRENE WASHER WITH HOLE. HOLE SHALL BE SIZED AS SPECIFIED IN THE RAINWISE REBATE CALCULATOR.
8. 1.5" SLP BALL VALVE SCH 40
9. (3" OR 4") x (3" OR 4") x (1.5") SLP REDUCING TEE, SEE NOTE 2
10. 4" x 3" PVC H-H COUPLING, AS NEEDED
11. 3" OR 4" SCH 40 PVC PIPE, SEE NOTE 2
12. 3" OR 4" SCH 40 PVC ELBOW, SEE NOTE 2
13. NON-CLEAR FLEXIBLE HOSE OR TUBING REQUIRED, DIAMETER MUST BE GREATER THAN DIAMETER OF FLOW CONTROL OUTLET ORIFICE, MINIMUM 0.5" DIAMETER. LENGTH OF FLEXIBLE HOSE OR TUBING SHALL BE 4" MIN, 16" MAX.

GENERAL NOTES:

1. SEE SHEET 14 FOR CISTERN OUTLETS DISCHARGE LOCATIONS.
2. DIAMETER OF PIPE VARIES BASED ON ROOF AREA DRAINAGE (SEE SHEET 12).
3. CISTERNS WITH A SUMP DEPTH LESS THAN 4 INCHES REQUIRE A FLOW CONTROL OUTLET MODIFICATION (SNORKEL) (SEE SHEET 12).