

OPTIONAL MATERIALS LEGEND		UNITS	PLAN QUANTITY	PERMIT QUANTITY (FILL IN)
<b>VEHICULAR PAVING</b>				
	- VEHICULAR DRAINAGE STRIPS IN DRIVEWAY SEE DETAILS 8 & 9 ON SHEET L3.0	LF	42	
	- CONCRETE	SF	380	
<b>PEDESTRIAN PAVING</b>				
	- CONCRETE (POURED IN PLACE)	SF	368	
	- AGGREGATE PATH CHOOSE FROM DETAILS #1-5 ON L3.0	SF	42	
	- MULCH SEE DETAIL 5 ON SHEET L3.2	SF		
<b>STORM WATER ELEMENTS (OPTIONAL)</b>				
	- STORM DRAINAGE ACROSS/UNDER PATH, SEE DETAIL 6 ON SHEET L3.1	EA	1	

\*SEE SHEETS L3.0-3.2 FOR MATERIALS OPTIONS

PLANTING LEGEND		SIZE	SPACING	PLAN QUANTITY	PERMIT QUANTITY (FILL IN)
<b>PLANTING LOW WATER USE</b>					
	LARGE TREE 50-80' SINKGO QUERCUS SUBER (CORK OAK)	15G	30-60' O.C.	1	
	MEDIUM TREE 30-50' PISTACIA CHINENSIS (PISTACHE)	15G	20-40' O.C.	3	
	LARGE SHRUB 6-18' SAMBUCUS NIGRA	5G	10-20' O.C.	3	
	GRASS - FESTUCA 'SISKIYOU BLUE'	4"	2' O.C.	33	
<b>PERENNIALS 0-1' SUN</b>					
	ERIOPHYLLUM LANATUM 'SISKIYOU'	4" OR 1G	4' O.C.	19	
	LESSINGIA FILAGINIFOLIA 'SILVER CARPET'	1G	6' O.C.	10	
<b>PERENNIALS 2-4' SUN</b>					
	ANIGOZANTHOS (KANGAROO PAW)	1G	2' O.C.	23	
	HELIANTHEMUM 'BEN NEVIS'	4"	3' O.C.	31	
	PHORMIUM 'CHOCOLATE BABY'	1G	2' O.C.	8	
	SEDUM SPECTABILE	4"	3' O.C.	11	
<b>SHRUBS 1-3' SUN</b>					
	ARCTOSTAPHYLOS 'JOHN DOURLEY' (MANZANITA)	1G	4-6' O.C.	8	
<b>SHRUBS 3-6' SUN</b>					
	RIBES MALVACEUM 'DANCING TASSELS'	1G	6' O.C.	3	
<b>VINE PLANTING</b>					
	VITIS CALIFORNICA 'ROGERS RED'	1G		1	
<b>PLANTING MED WATER USE</b>					
<b>PARK STRIP (OPTIONAL)</b>					
	- NO MOW FESCUE	SOD OR 2" OR 4" PLUGS - 16" O.C.		257 SF	

\*SEE MASTER PLANT LIST FOR PLANT SUBSTITUTIONS AND SHADE ALTERNATES, AVAILABLE FROM SONOMA-MARIN SAVING WATER PARTNERSHIP <http://www.savingwaterpartnership.org>.

**PLANTING NOTES:**  
1. REFER TO PLANTING DETAILS ON SHEET L3.2.

PLANT WATER USE TABLE			
WATER USE	PLAN SF (%)	PERMIT SF (FILL IN)	PERMIT % (FILL IN)
LOW	1,908 (89%)		
MED	244 (11%)		
TOTAL	2,152 (100%)		

BY USING THESE PLANS, I AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE SONOMA-MARIN SAVING WATER PARTNERSHIP, ITS MEMBERS (SONOMA COUNTY WATER AGENCY, CITY OF SONOMA, MARIN MUNICIPAL WATER DISTRICT, NORTH BAY AREA WATER DISTRICT, CITY OF ROSS, CITY OF PETALUMA, CITY OF GAITHER, CITY OF SONOMA, VALLEY OF THE MOON WATER DISTRICT) AND TOWN OF WOODBURN AND THEIR DIRECTORS, OFFICERS, AGENTS, EMPLOYEES AND LANDSCAPE DESIGN CONSULTANTS AGAINST ANY AND ALL LOSS, LIABILITY, EXPENSE, CLAIMS, SUITS AND DAMAGES, INCLUDING ATTORNEY'S FEES, ARISING OUT OF OR FROM THE USE OF THESE PLANS. I AGREE TO PLAN, UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT PLANS ELEMENTS ARE IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE STATUTES, RULES, REGULATIONS, ORDINANCES AND/OR CODES.



**ABLA**  
ANN BAKER LANDSCAPE ARCHITECTURE  
625 2ND ST., STE 110  
PETALUMA, CA 94952  
TEL.: (707) 772-5062  
EMAIL: [landarches@gmail.com](mailto:landarches@gmail.com)



P D G

PANORAMIC DESIGN GROUP  
LANDSCAPE ARCHITECTURE

RESIDENTIAL LANDSCAPE DESIGN TEMPLATE  
SONOMA-MARIN SAVING WATER PARTNERSHIP  
[www.savingwaterpartnership.org](http://www.savingwaterpartnership.org)

NAME: \_\_\_\_\_  
SITE ADDRESS: \_\_\_\_\_



SHEET TITLE:

LAYOUT &  
PLANTING PLAN  
CONTEMPORARY B

DATE  
PERMIT PLAN  
JANUARY 17, 2019

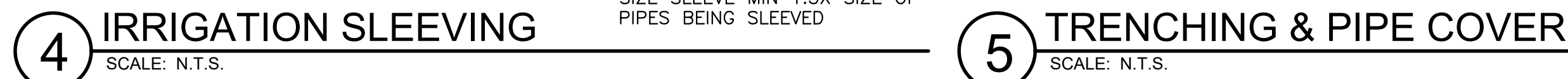
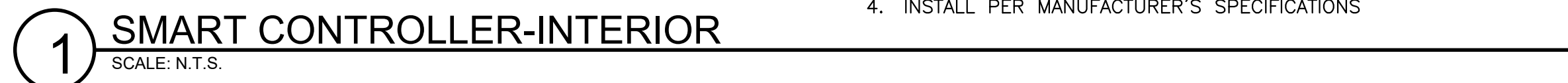
L-1.0

SHEET  
OF

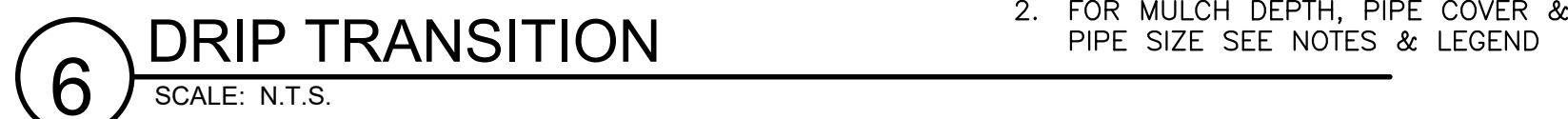






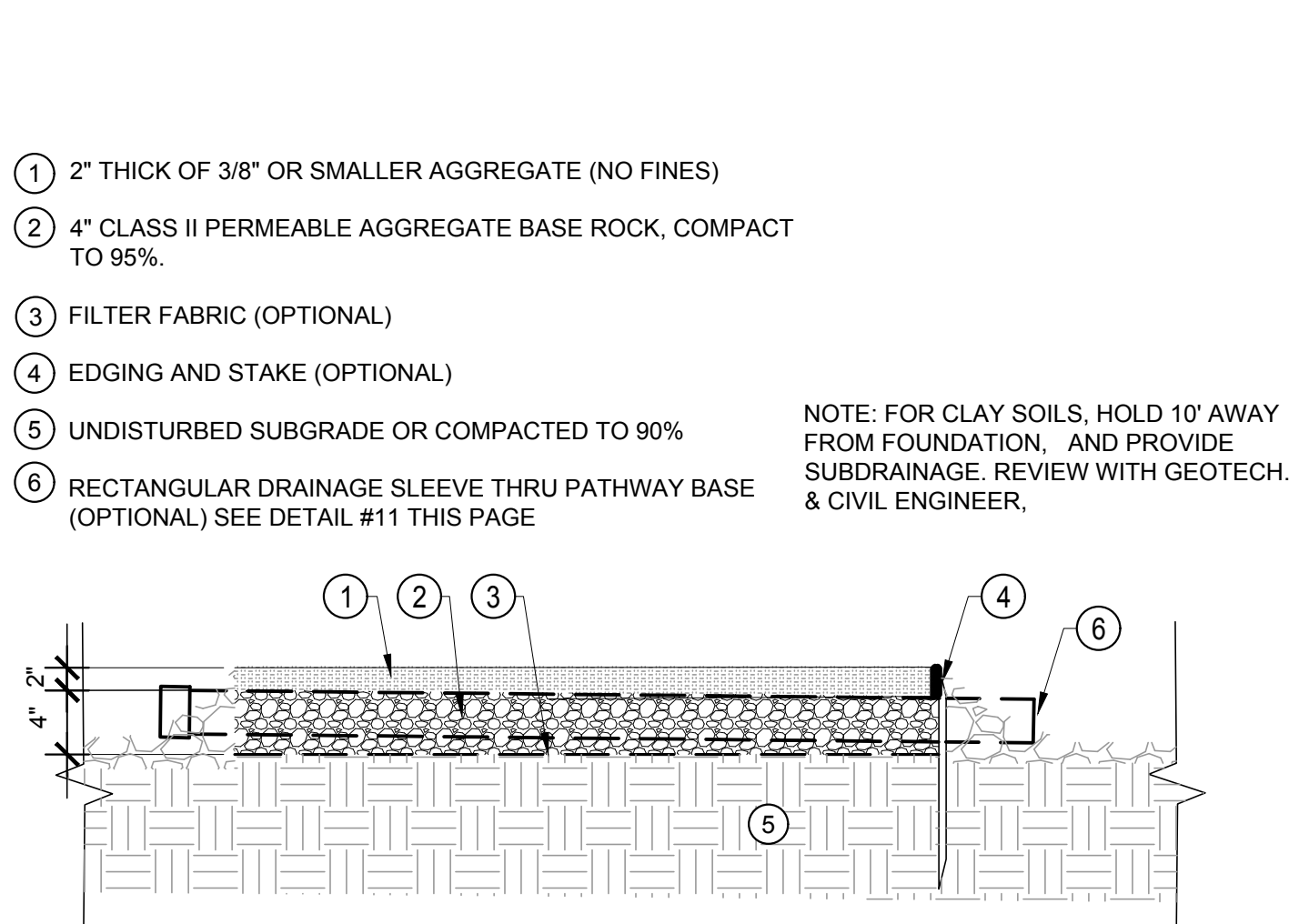


FOR IRRIGATION VALVE TABLE SEE IRRIGATION PLAN SHEET L2.0

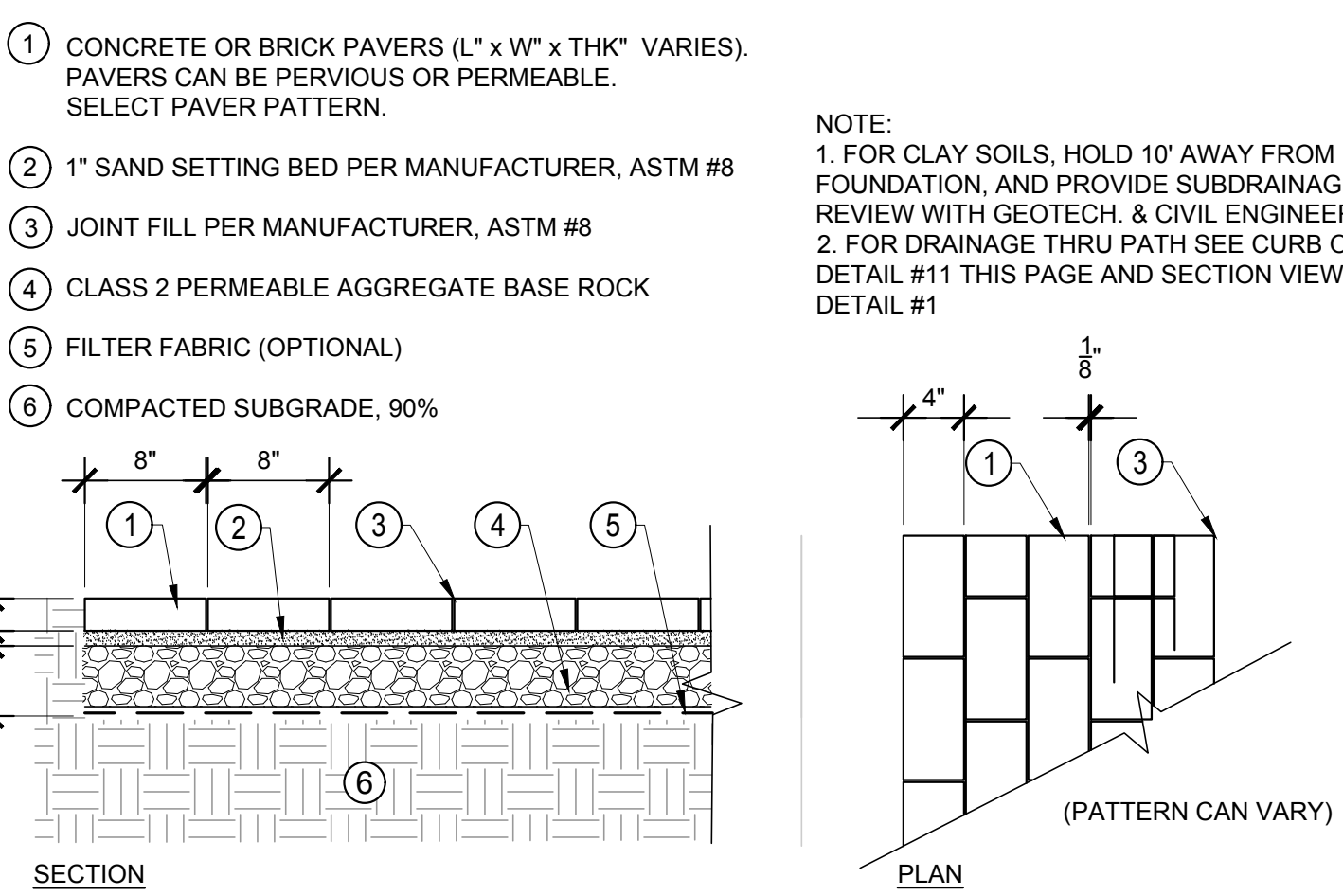


1. INSTALLATION WILL BE BY CONTRACTOR WITH A VALID CURRENT CALIFORNIA C-27 LICENSE OR BY HOMEOWNER WITH RELEVANT KNOWLEDGE, SKILLS & EXPERIENCE.
2. THE IRRIGATION PLAN IS DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE COMPLETED. IRRIGATION EQUIPMENT OR PIPING MAY BE SHOWN IN PAVED AREAS FOR GRAPHIC CLARITY. OBTAIN APPROVAL OF LAYOUT FROM OWNER'S REPRESENTATIVE PRIOR TO FINAL INSTALLATION.
3. VERIFY LOCATION OF SUBSURFACE UTILITIES, PIPES AND STRUCTURES. NOTIFY THE OWNER'S REPRESENTATIVE SHOULD UTILITIES OR OTHER WORK NOT SHOWN ON THE PLANS BE FOUND DURING EXCAVATIONS.
4. CAREFULLY INVESTIGATE EXISTING FIELD CONDITIONS AND NOTIFY OWNER'S REPRESENTATIVE OF ANY POTENTIAL CONFLICT WITH DESIGN..
5. CONFIRM ADEQUATE GPM AT POINT OF CONNECTION PRIOR TO START OF WORK.
6. CONFIRM MINIMUM STATIC PRESSURE AT THE POINT OF CONNECTION PRIOR TO START OF WORK.
7. NOTIFY OWNER'S REPRESENTATIVE IF STATIC PRESSURE IS LOWER THAN REQUIRED. IF STATIC PRESSURE IS HIGHER THAN 75 PSI, INSTALL A WILKINS #600 PRESSURE REGULATOR DOWNSTREAM OF BACKFLOW PREVENTER. ADJUST OUTLET PRESSURE TO 55 PSI.
8. MAKE IRRIGATION POINT OF CONNECTION AS INDICATED ON PLAN AND COORDINATE WITH OTHER WORK AS REQUIRED. EXACT LOCATION OF TO BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
9. INSTALL IRRIGATION CONTROLLER IN LOCATION APPROVED BY OWNER'S REPRESENTATIVE. ENSURE 120 VOLT A.C. ELECTRICAL SUPPLY IS PROVIDED FOR IN IMMEDIATE VICINITY. INSTALL AS DETAILED AND PER MANUFACTURER'S INSTRUCTIONS. GROUND CONTROLLER AND CONFORM TO LOCAL CODES.
10. MOUNT WEATHER SENSOR ON EXTERIOR WALL OR GUTTER WHERE IT WILL BE EXPOSED TO UNOBSTRUCTED RAINFALL. INSTALL PER MANUFACTURERS INSTRUCTIONS.
11. BACKFLOW PREVENTION IS REQUIRED. IF NOT PROVIDED BY ANTI-SIPHON VALVES THEN CODE APPROVED BACKFLOW PREVENTION DEVICE MUST BE INSTALLED.
12. INSTALL ISOLATION VALVE AT POC UPSTREAM OF BACKFLOW PREVENTION (ANTI-SIPHON VALVES)
13. ENSURE THAT ALL COMPONENTS ARE CONNECTED AND OPERATIONAL
14. PROVIDE PVC SCH 40 SLEEVES FOR ALL PIPING AND WIRE UNDER PAVING. COORDINATE WITH CONCRETE CONTRACTOR INSTALL SLEEVES PRIOR TO POURING CONCRETE. EXTEND SLEEVE 6 INCHES BEYOND EDGE OF PAVING. ENSURE THAT SLEEVES ARE SIZED ADEQUATELY TO CONTAIN PIPES BEING SLEEVED.
15. ENSURE ADEQUATE PIPE SIZE TO PROVIDE REQUIRED FLOW.
16. PIPE COVER: SEE DETAIL
17. PIPE SIZE: 0-6 GPM: 3/4" PIPE; 7-12 GPM: 1" PIPE;
18. INSTALL ALL PLASTIC PIPING IN TRENCHES IN A SERPENTINE MANNER.
19. PROVIDE VALVE BOXES FOR: ISOLATION VALVE, DRIP TRANSITION AND FLUSHOUT VALVE.
20. VALVE BOXES: SET PARALLEL TO EACH OTHER AND PERPENDICULAR TO ADJACENT EDGE. SET WITH SUFFICIENT CLEARANCE ABOVE GRADE SO THAT FINAL MULCH GRADE IS FLUSH WITH EDGES OF BOXES. PROVIDE BOLT DOWN
21. LIDS FOR EACH BOX.
22. INSTALL ALL WIRING IN ACCORDANCE WITH ALL APPLICABLE CODES.
23. USE COPPER WIRE WITH U.L. APPROVAL FOR DIRECT BURIAL IN GROUND. USE WHITE INSULATING JACKET FOR COMMON GROUND WIRE. USE INSULATING JACKET OF COLOR OTHER THAN WHITE FOR CONTROL WIRE. TAPE AND BUNDLE WIRING AT 10 FOOT INTERVALS.
24. CHECK VALVES: INSTALL CHECK VALVES ON LATERAL LINES AS REQUIRED TO PREVENT LOW HEAD DRAINAGE. ENSURE THAT IN-LINE DRIP TUBING HAS CHECK VALVES EMBEDDED INTO EMITTERS.
25. ENSURE THAT ALL EQUIPMENT IS SIZED CORRECTLY BASED ON EXISTING SITE CONDITIONS AND HYDRAULICS.
26. VERIFY SOIL TYPE AND USE APPROPRIATE EMITTER SIZE AND SPACING.
27. INSTALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S SPECIFICATIONS.
28. DO NOT USE SMALL DIAMETER DISTRIBUTION TUBING.
29. DO NOT INSTALL POST MANUFACTURED BUTTON EMITTERS INTO IN-LINE TUBING.
30. REVIEW DRIP LAYOUT WITH OWNER'S REPRESENTATIVE PRIOR TO COVERING WITH MULCH
31. STAKE DRIP TUBING IN PLACE @ 2 FT O.C. MAX
32. MAINTAIN A 3" MIN. DEPTH OF MULCH COVER OVER DRIP TUBING.
33. MAXIMUM LENGTH OF DRIP TUBING IS 200' IN ANY DIRECTION FROM WATER SOURCE.
34. OPEN LINE ENDS AND FLUSH THOROUGHLY BEFORE INSTALLATION OF END FLUSH CAPS.
35. FLUSH MAINLINES AFTER INSTALLING RISERS AND PRIOR TO INSTALLING OR RECONNECTING TO VALVES.
36. FLUSH LATERALS AFTER INSTALLING RISERS AND PRIOR TO INSTALLING TUBING
37. PRESSURE TEST PRIOR TO BACKFILLING, PROVIDE RESULTS TO OWNER'S REP.
38. FILL ALL EXCAVATIONS WITH COMPACTED BACKFILL. IN TWO MECHANICALLY COMPACTED LIFTS. REPAIR ALL SETTLED TRENCHES.
39. PERFORM COVERAGE TEST. ADJUST SYSTEM AS NEEDED TO PROVIDE FULL COVERAGE AND TO AVOID RUNOFF.
40. AFTER COMPLETION PROVIDE AS-BUILT PLANS.
41. PROVIDE CONTROLLER SCHEDULE.
42. SCHEDULE THE TREE ZONE TO RUN AT A LOW FREQUENCY AND LONG DURATION TO PROVIDE DEEP WATERING FOR THE TREES. ADJUST SCHEDULE PER WEATHER AND SEASON.
43. SCHEDULE THE SHRUB ZONES TO RUN AT A HIGH FREQUENCY AND SHORT DURATION TO ESTABLISH THE NEW SHRUBS. ADJUST THE SCHEDULE AS THE SHRUBS BECOME ESTABLISHED AND PER WEATHER AND SEASON.
44. THE DESIGN INTENT IS TO PROVIDE THE MINIMUM AMOUNT OF WATER TO SUSTAIN HEALTHY PLANT GROWTH AND TO AVOID RUN-OFF, LOW HEAD DRAINAGE AND OVERSPRAY.
45. ENSURE THAT CONTROLLER SCHEDULE IS ADJUSTED SEASONALLY AT A MINIMUM
46. RUN SYSTEM TO CHECK FOR LEAKS AND REPAIR THEM SEASONALLY AT A MINIMUM.

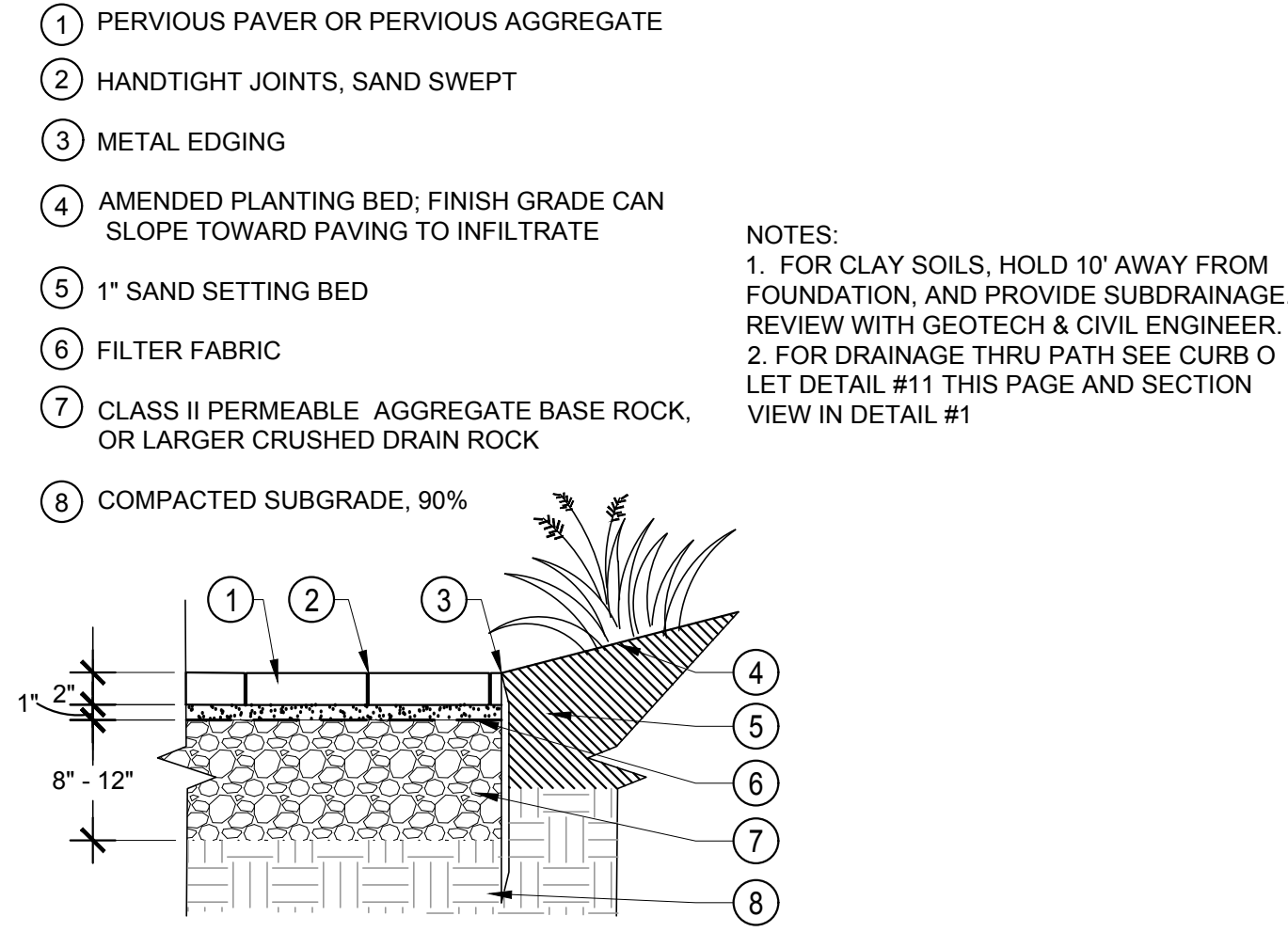




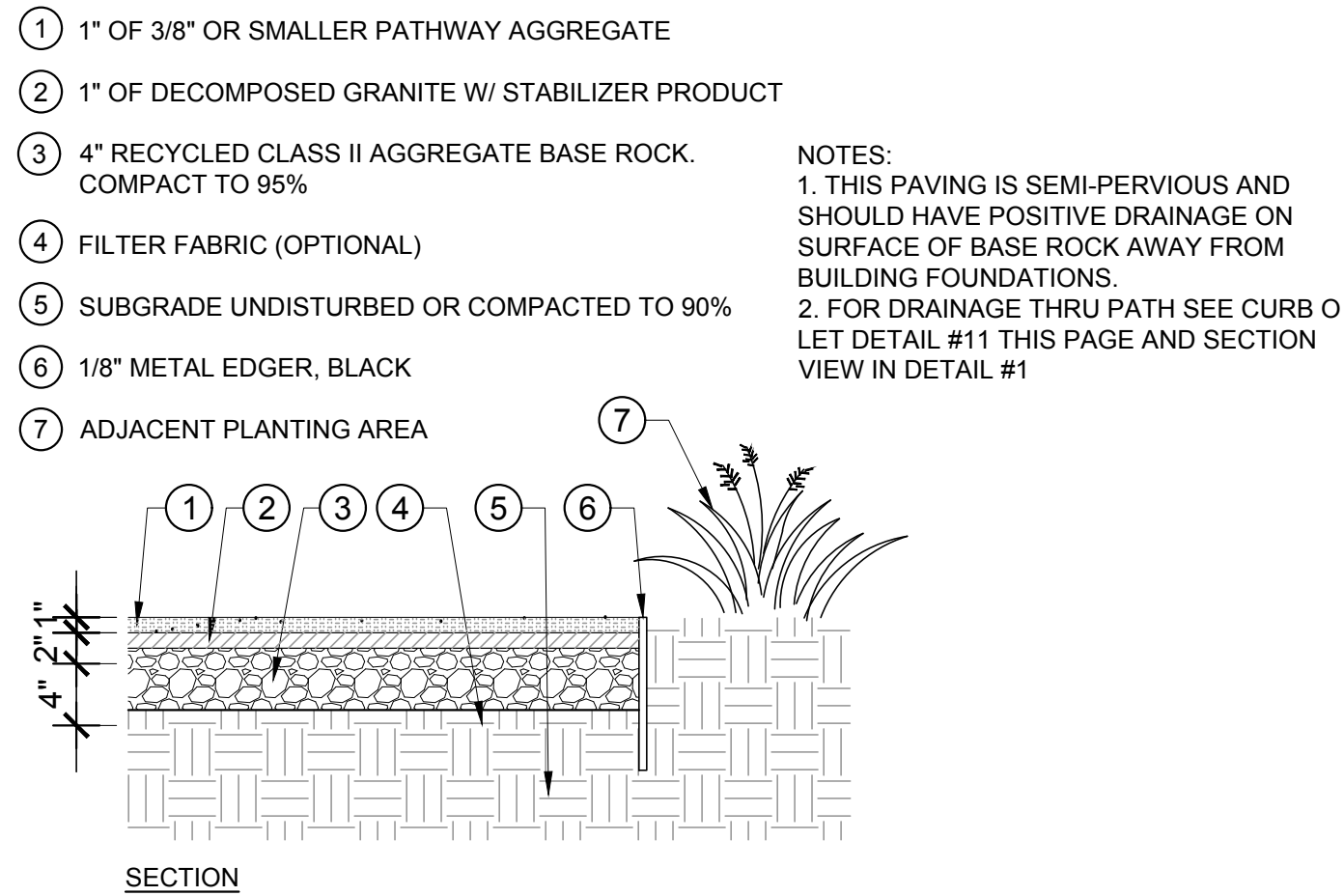
**1 PERMEABLE AGGREGATE PAVING - PATH OR PATIO**  
SCALE: 1"=1'-0"



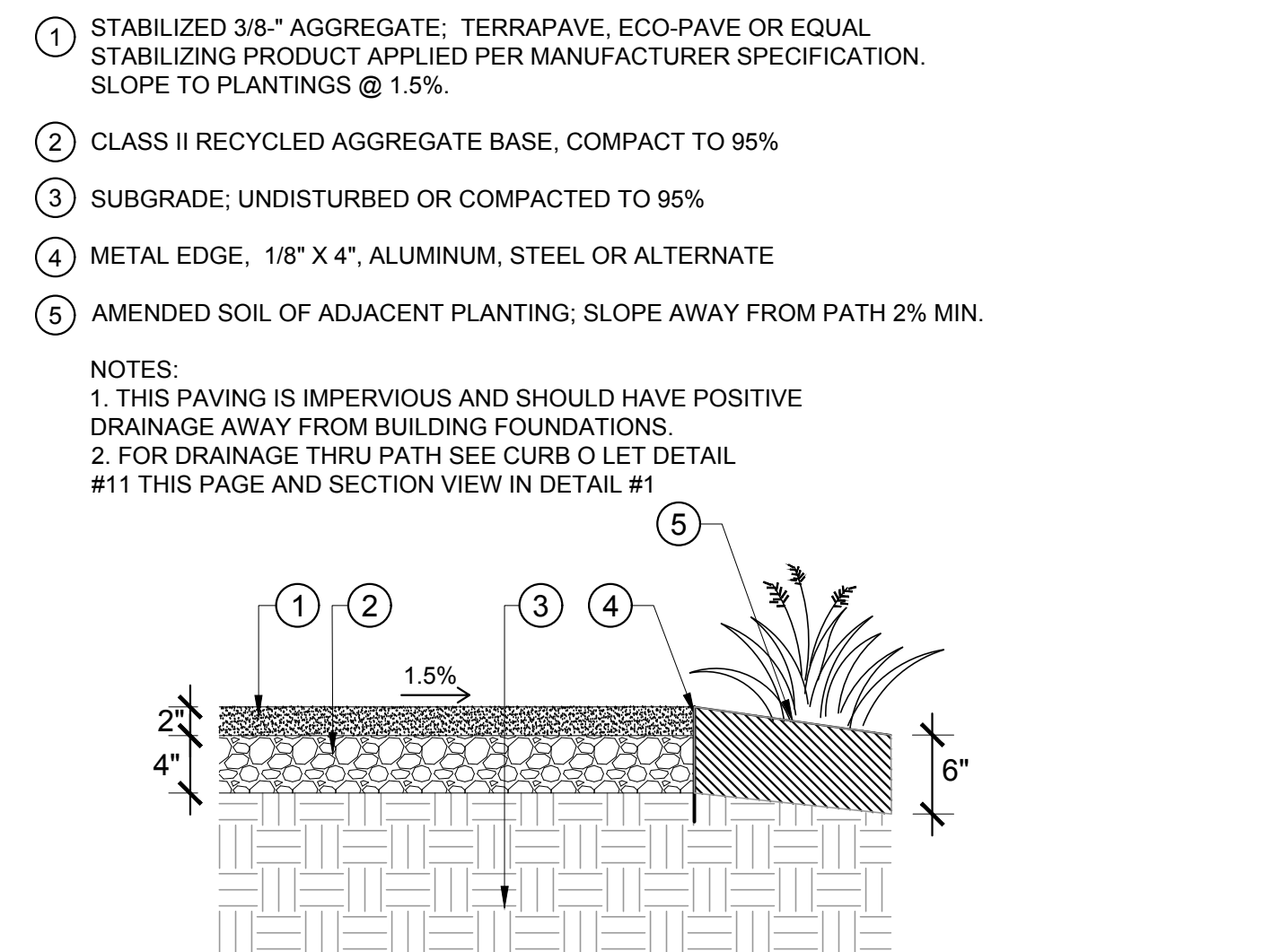
**2 PERMEABLE PAVERS - PATH OR PATIO**  
SCALE: 1"=1'-0"



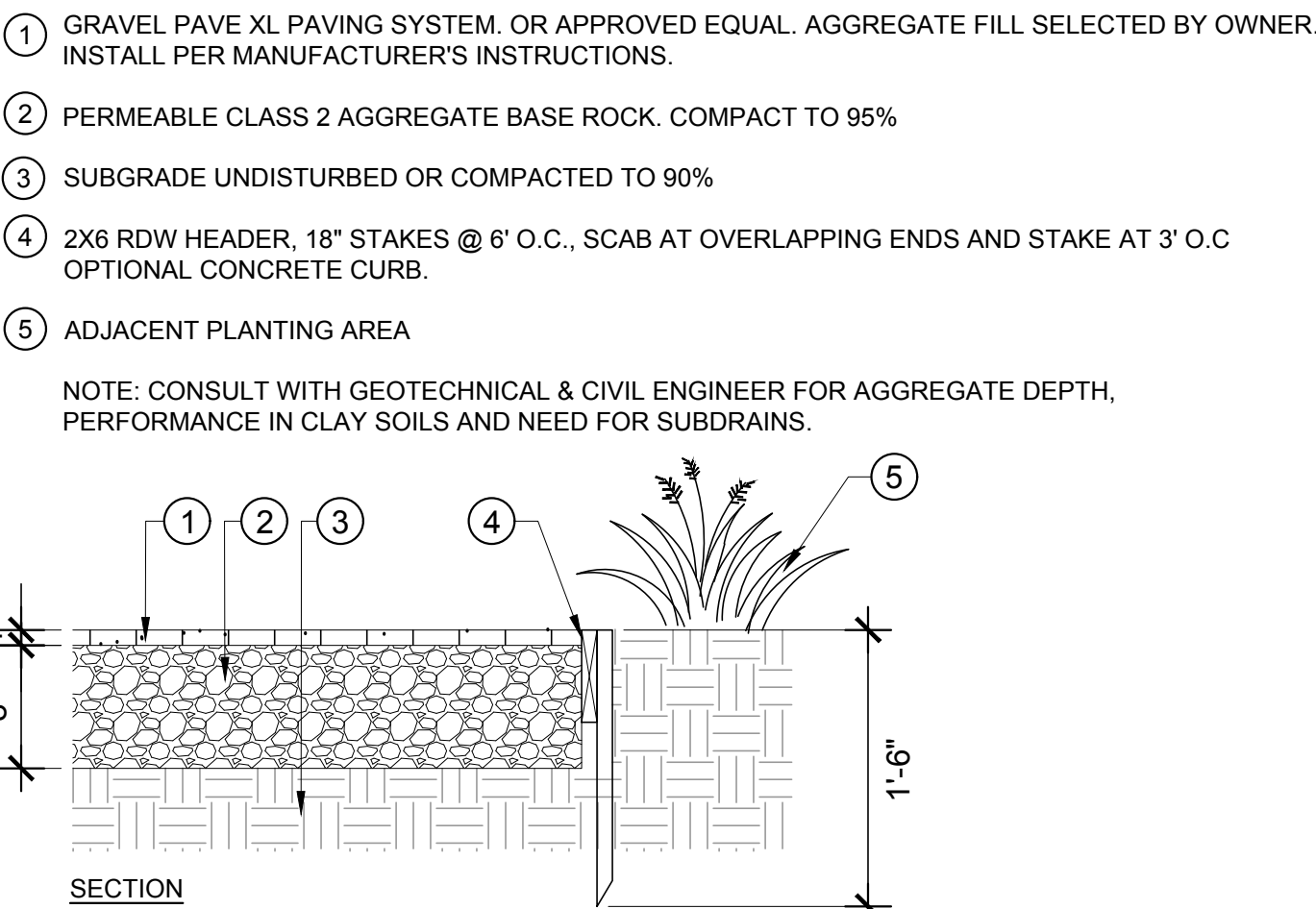
**3 PERMEABLE INFILTRATION - PEDESTRIAN**  
SCALE: 1"=1'-0"



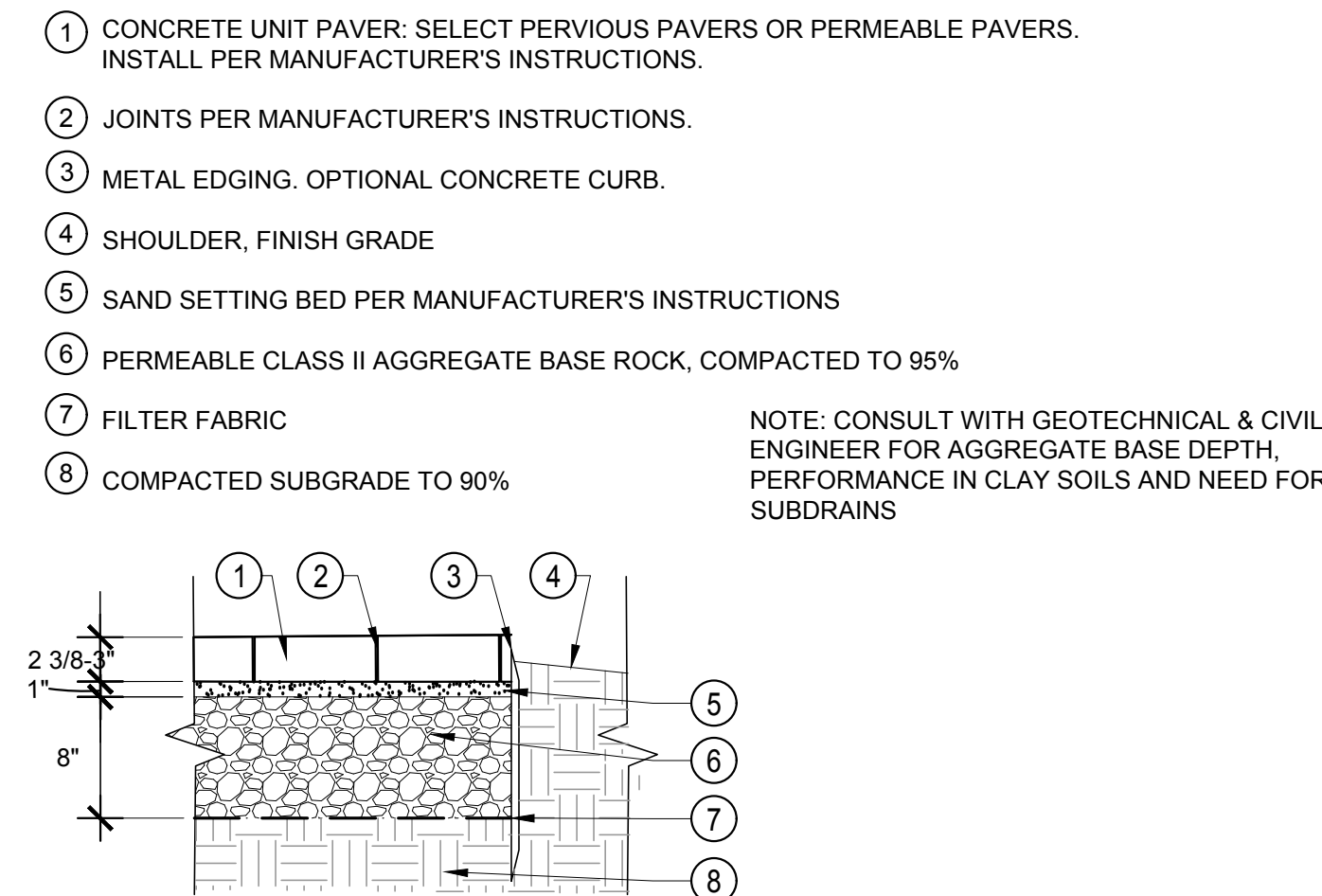
**4 AGGREGATE PAVING - PEDESTRIAN**  
SCALE: 1"=1'-0"



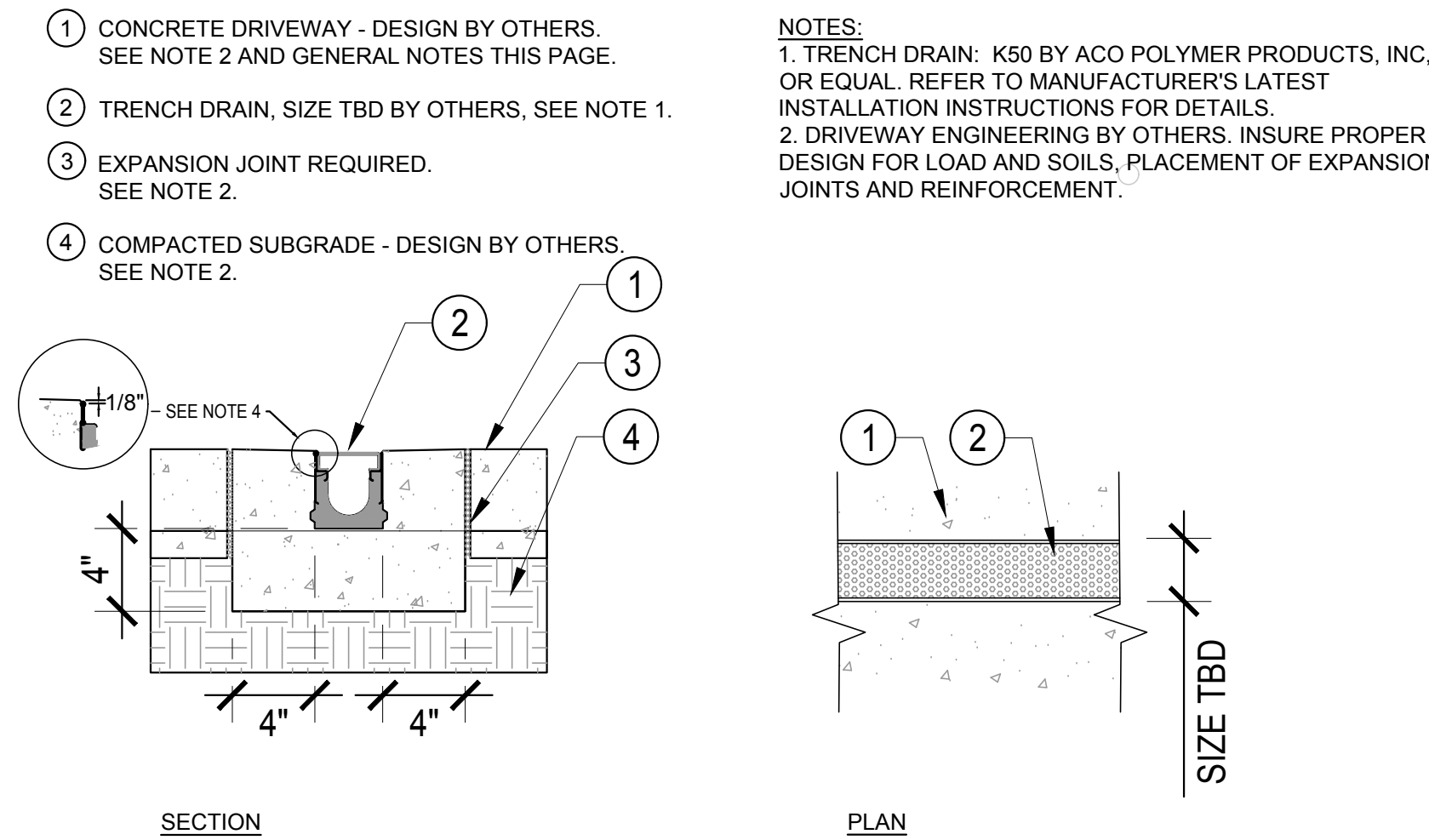
**5 STABILIZED AGGREGATE - PATH OR PATIO**  
SCALE: 1"=1'-0"



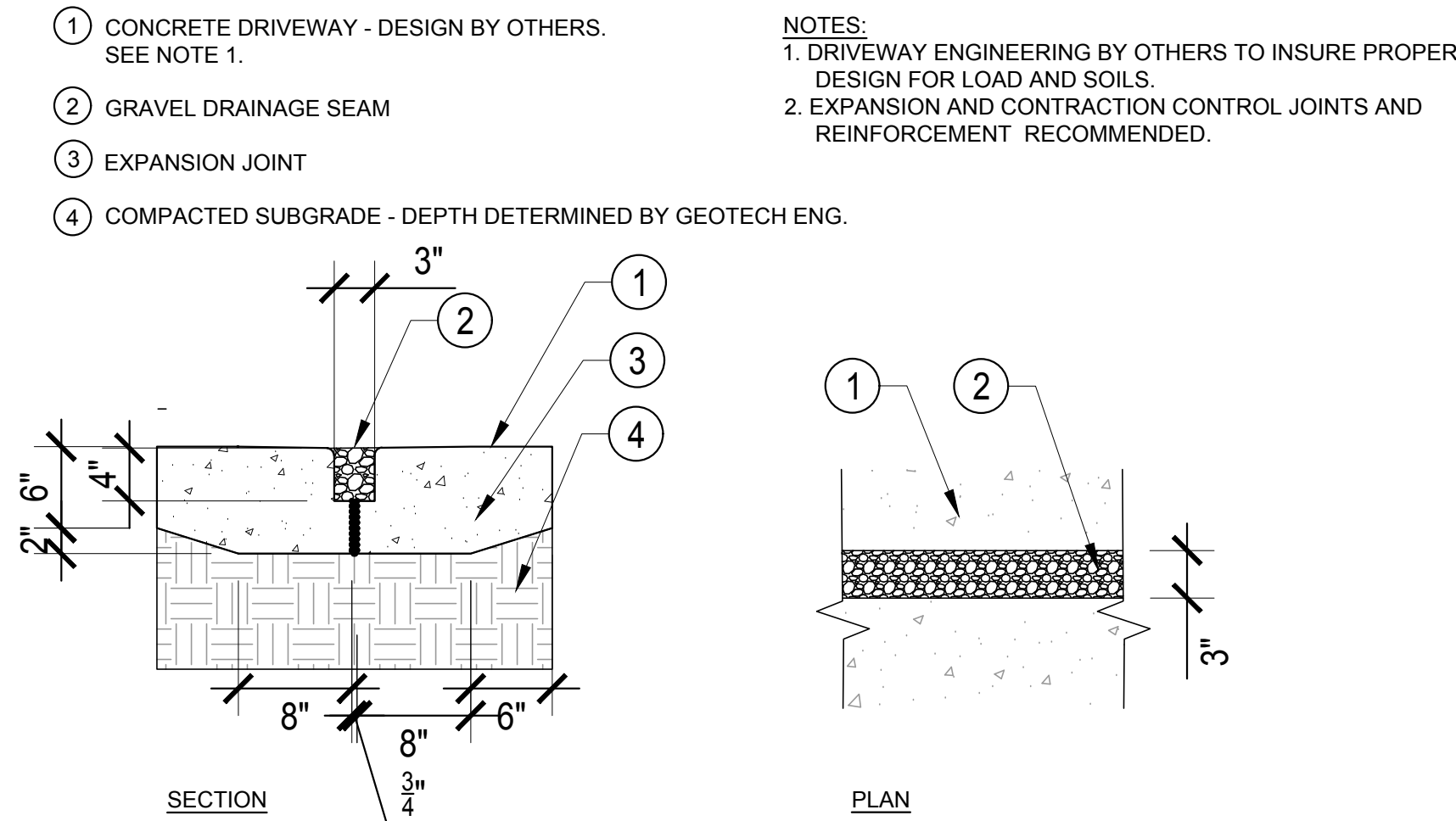
**6 GRAVELPAVE PAVING - VEHICLE**  
SCALE: 1"=1'-0"



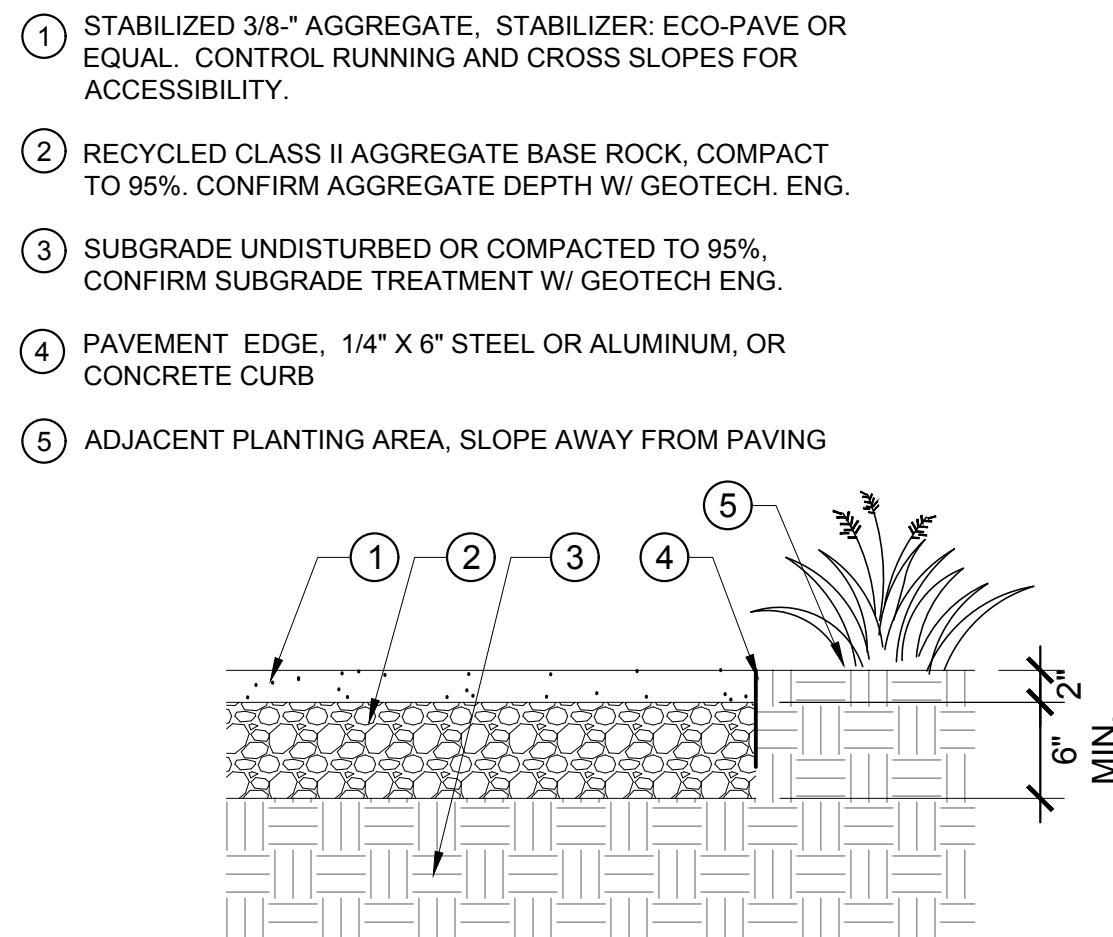
**7 PERVIOUS OR PERMEABLE UNIT PAVER - VEHICLE**  
SCALE: 1"=1'-0"



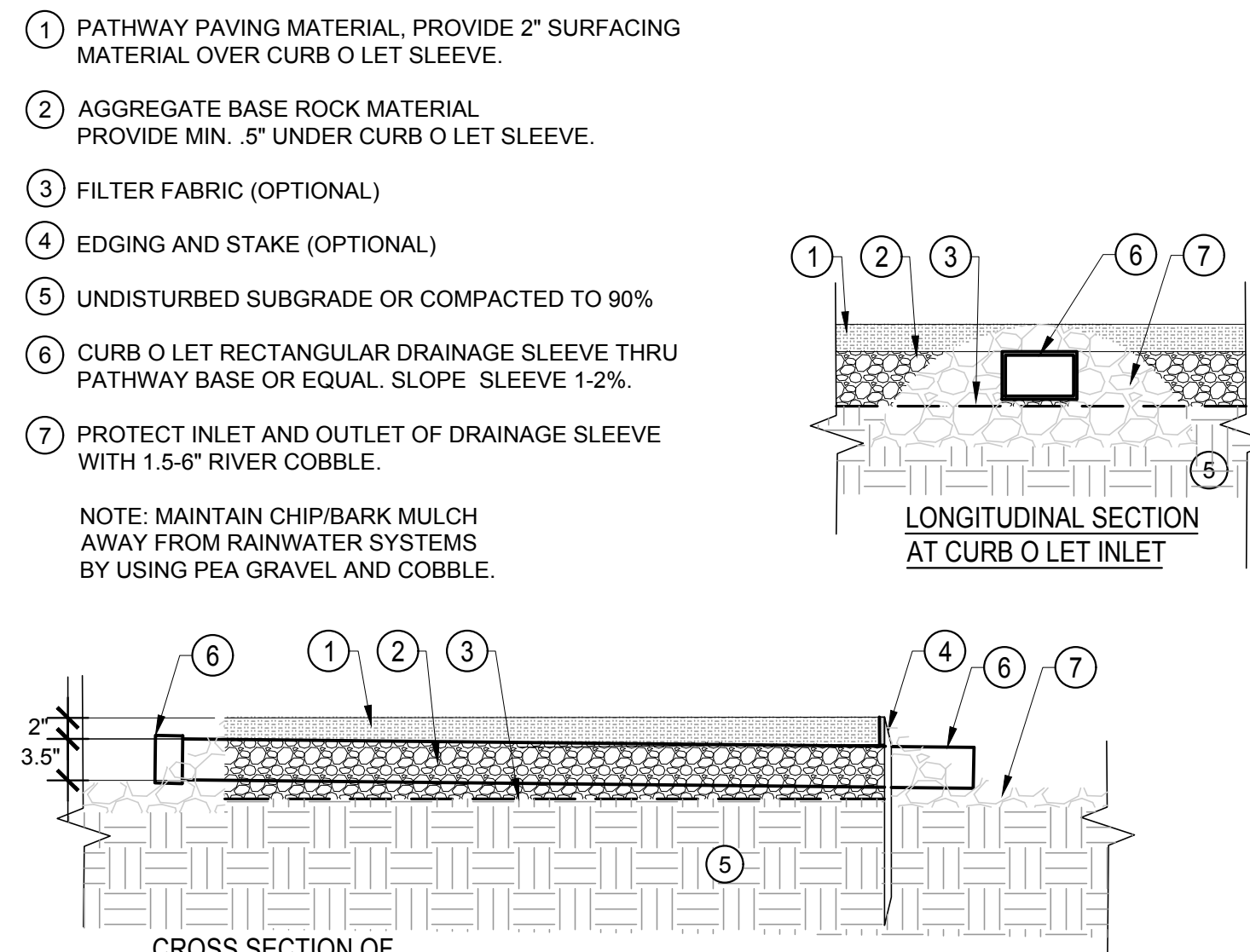
**8 CONCRETE - VEHICLE - TRENCH DRAIN**  
SCALE: 1"=1'-0"



**9 CONCRETE - VEHICLE - GRAVEL DRAINAGE SEAMS**  
SCALE: 1"=1'-0"



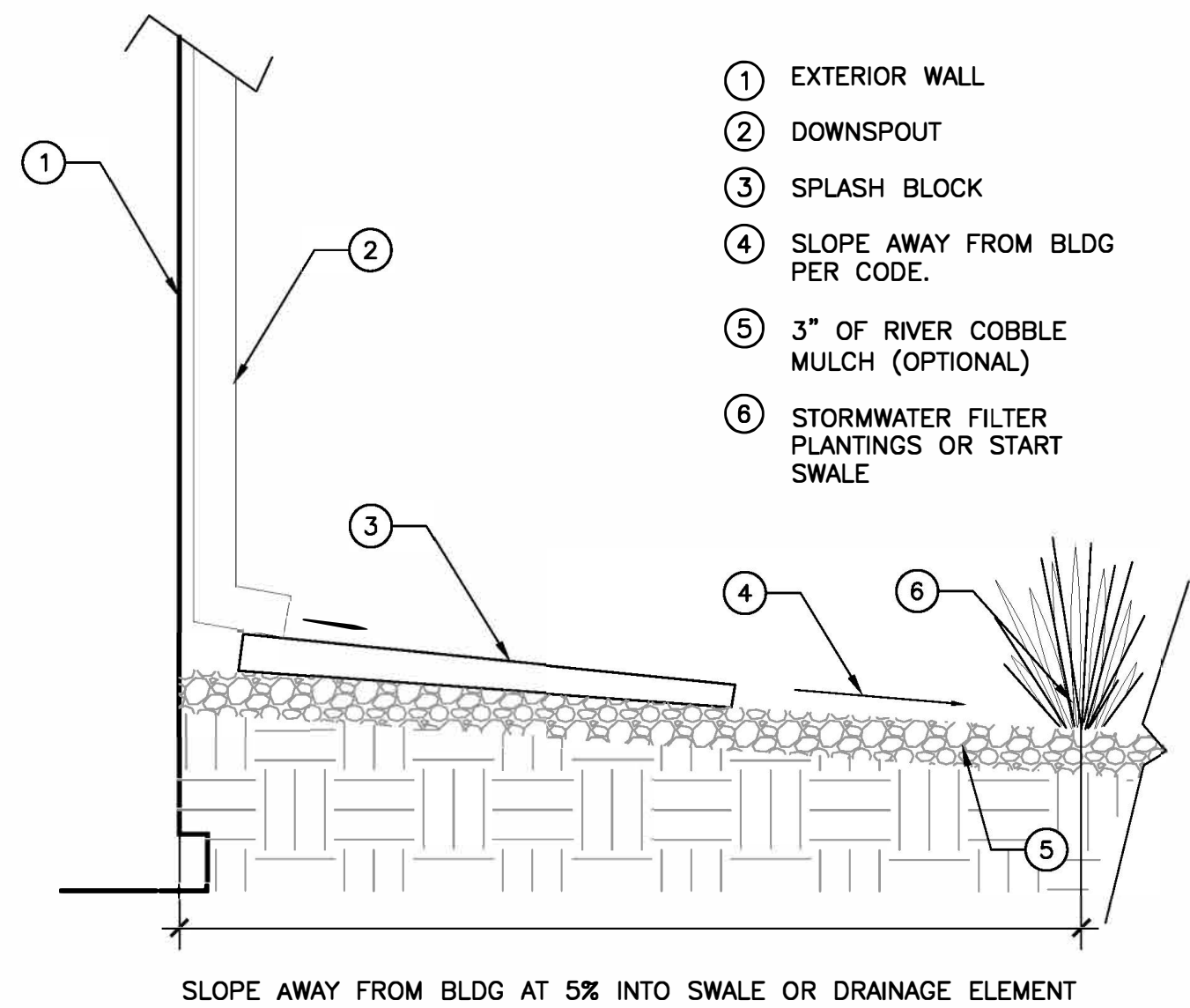
**10 STABILIZED AGGREGATE - VEHICLE**  
SCALE: 1"=1'-0"



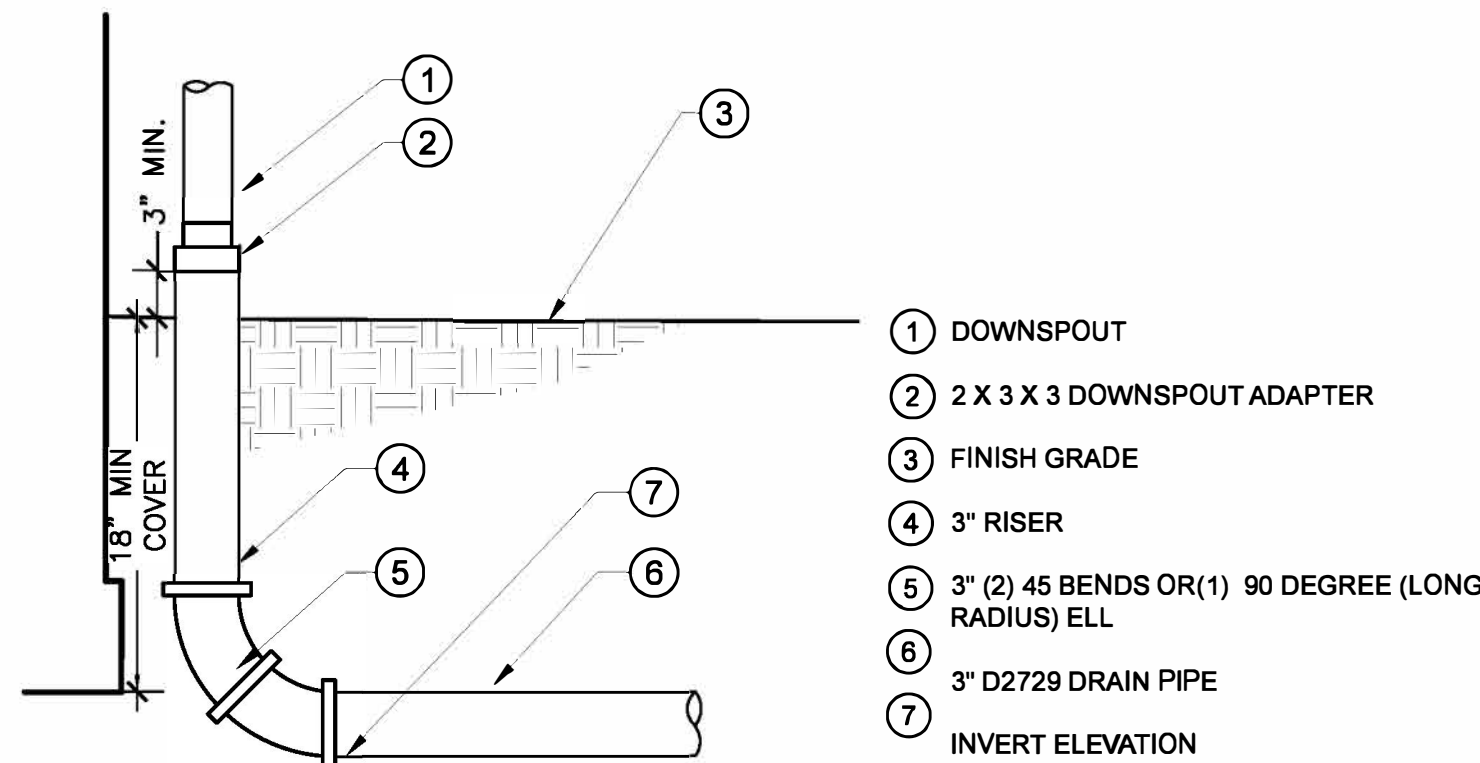
**11 RECTANGULAR DRAINAGE SLEEVE IN PATHS**  
SCALE: NOT TO SCALE

- GENERAL NOTES :**
- DESIGN STRATEGY: THESE DETAILS ARE PROVIDED TO CREATE OPTIONS FOR PERMEABLE PAVING, AND PAVING STRATEGIES THAT PROMOTE STORMWATER INFILTRATION IN LANDSCAPE SPACES. THESE STRATEGIES HELP CLEAN WATER, INFILTRATE RUN OFF INTO GROUNDWATER, AND PROVIDE MORE SOIL MOISTURE AVAILABILITY FOR LANDSCAPE PLANTINGS.
  - THESE DETAILS SHOULD BE EVALUATED BY THE SITE ENGINEER AND ADJUSTED TO SITE CONDITIONS.
  - PAVING DEPTH, DEPTH OF BASE GRAVEL, SUB-BASE PREPARATION AND CONCRETE REINFORCEMENT SHOULD ALL BE EVALUATED AND ADJUSTED AS NEEDED BY A GEOTECHNICAL ENGINEER.
  - SOIL TYPE AFFECTS THE PERFORMANCE OF THESE DETAILS. CLAY SOILS DO NOT INFILTRATE WELL, SO THERE IS A NEED TO EVALUATE WHETHER THE PERMEABLE/PERVIOUS PAVING DETAILS ARE APPROPRIATE FOR SPECIFIC SITES AND ADJUST THEM AS APPROPRIATE TO PROTECT BUILDINGS AND OTHER IMPROVEMENTS.
  - ACCESSIBLE PAVING IS SMOOTH, FIRM, AND HAS A CROSS SLOPE NOT TO EXCEED 2%. RUNNING SLOPE SHOULD BE 5% OR LESS UNLESS PAVING RAMP WITH HANDRAILS. SEE TITLE 24 OF CALIFORNIA CODE FOR ACCESSIBILITY REQUIREMENTS AND STANDARDS

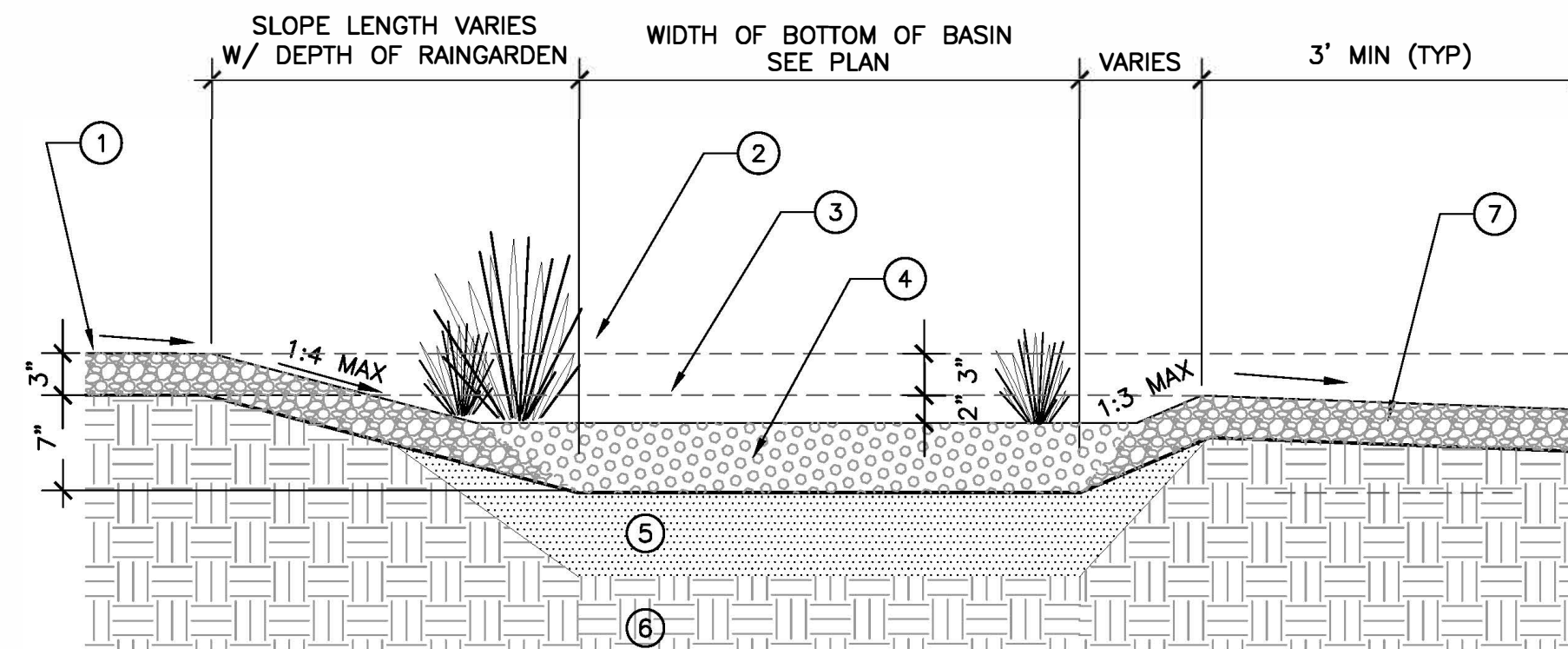




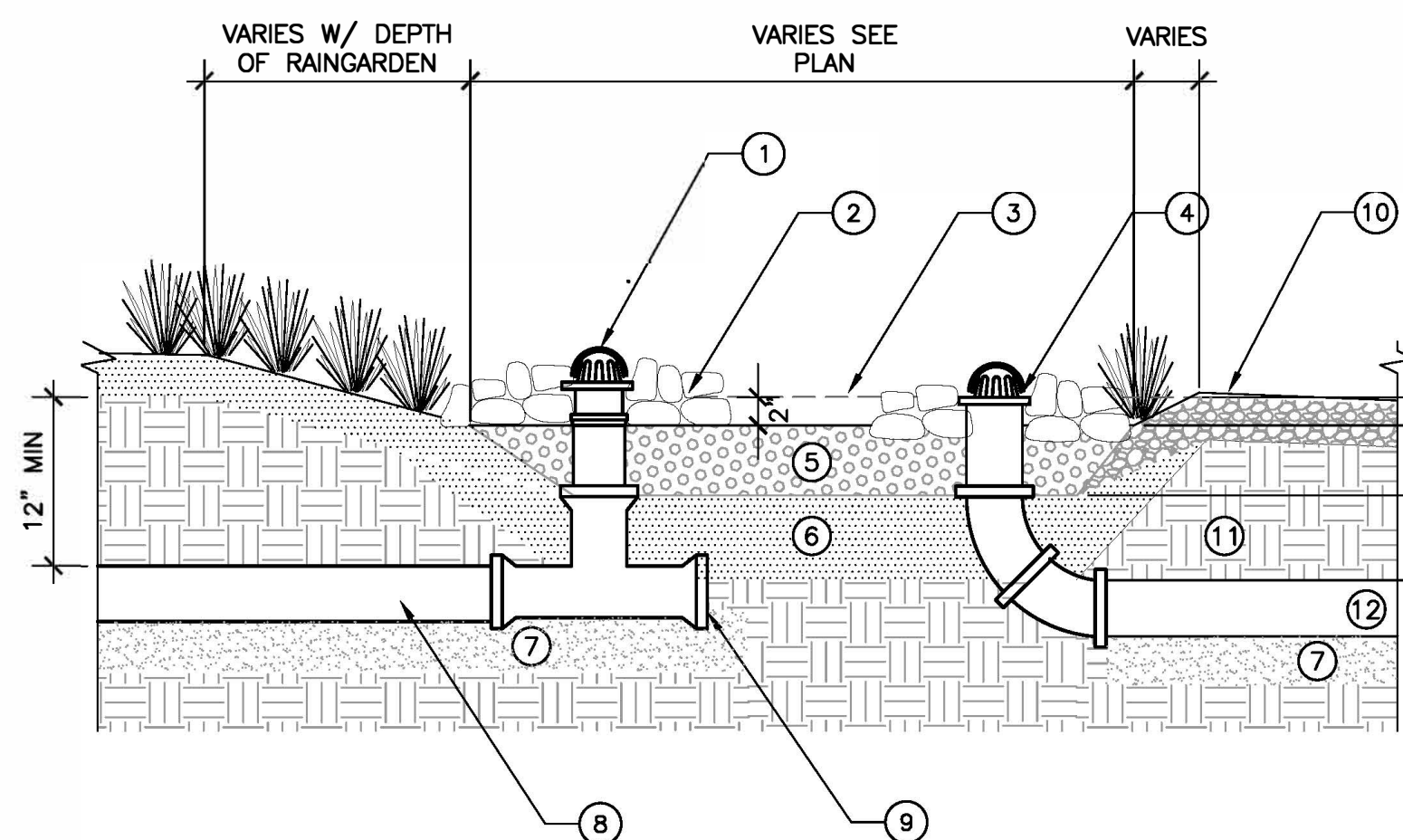
**1 DOWNSPOUT SPLASHBLOCK TO OVERLAND FLOW**  
SCALE: 1/2"=1'-0"



**2 DOWNSPOUT WITH PIPED OUTLET**  
SCALE: 1/2"=1'-0"

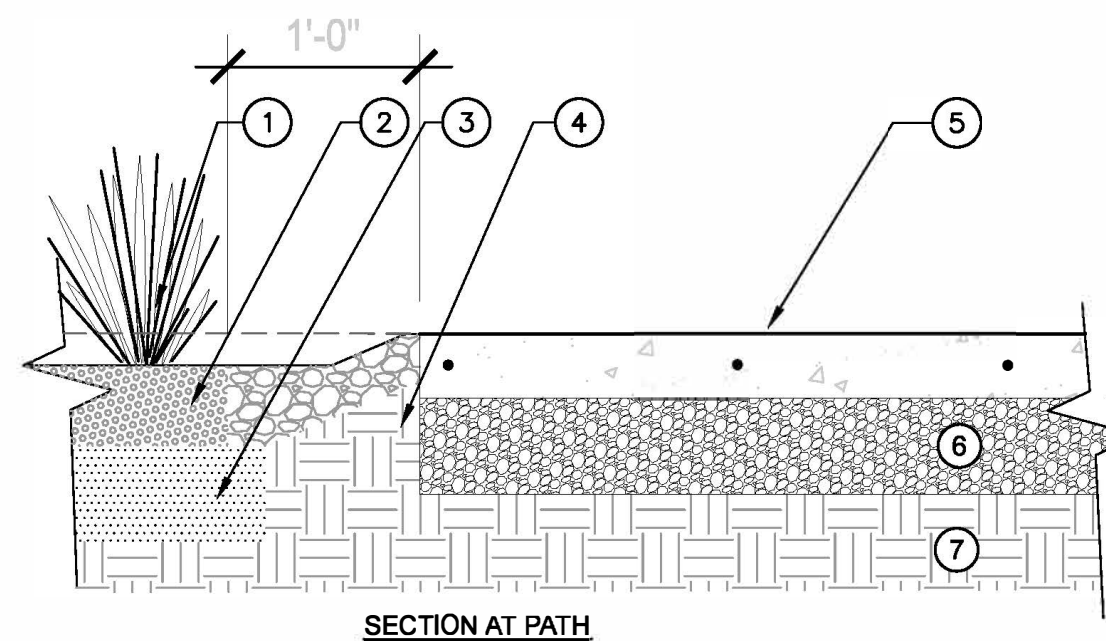


**3 VEGETATED RAINGARDEN W/ OVERLAND FLOW INLET & OUTLET**  
SCALE: 1/2"=1'-0"



**4 VEGETATED RAINGARDEN W/ PIPED INLET**  
SCALE: 1/2"=1'-0"

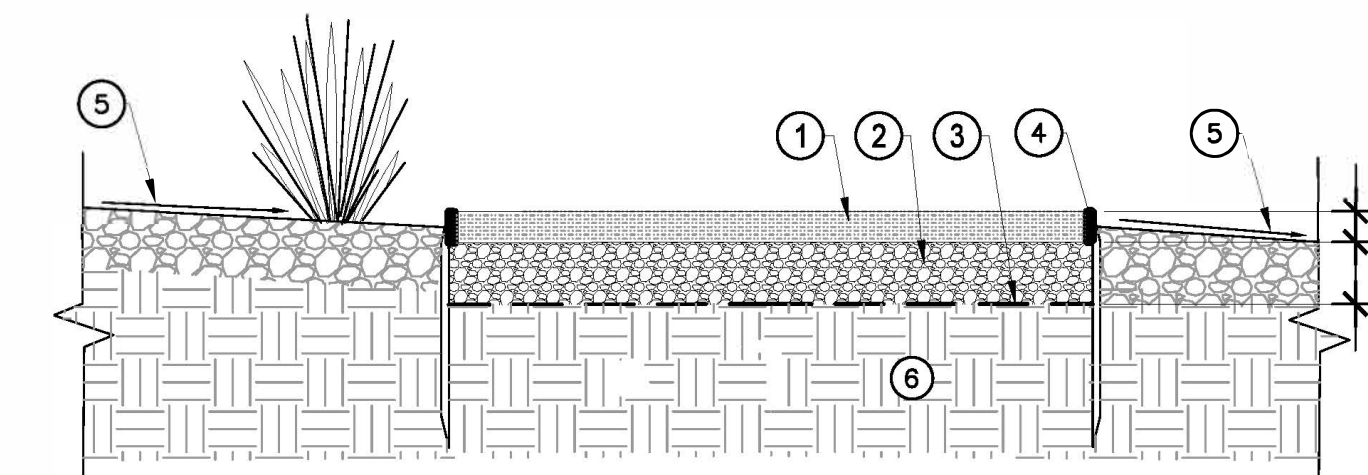
- 1 ATRIUM DRAIN GRATE ON OUTLET BUBBLER CONNECTED TO DOWNSPOUT; BY NDS OR EQUAL
  - 2 COBBLE AROUND OUTLET PIPE (TYP.)
  - 3 MAX WATER LEVEL 2" ABOVE PEA GRAVEL
  - 4 DRAIN INLET STRUCTURE AT TOP PONDING ELEVATION (2" ABOVE PEA GRAVEL). PIPE TO OUTLET.
  - 5 5" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL.
  - 6 SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN GARDEN
  - 7 6" SAND OR GRAVEL SETTING BED UNDER PIPE
  - 8 4" STORMDRAIN PIPE FROM ROOF DOWNSPOUT(S)
  - 9 END PLUG W/ (1) 3/4" WEEP HOLE 3/4" ABOVE PIPE INVERT, SET END OF PIPE IN 12"x12" GRAVEL TRENCH FOR DRAINAGE
  - 10 SECONDARY OVERFLOW SLIGHTLY HIGHER THAN PIPE INLET. COVER WITH 3" OF 1.5-6" RIVER COBBLE
  - 11 UNDISTURBED SUBGRADE
  - 12 OUTLET PIPE, OUTLET TO RAINWATER BASIN 6" MIN. DOWNSLOPE OR CONNECT TO EXISTING STORM DRAIN PIPE OR OUTLET AT CURB IF PRESENT.
- NOTES:  
1. RAINWATER GARDEN DESIGNED FOR CLAY SOILS. MAX DEPTH 7" OF WHICH 5" HAS A PEA GRAVEL MULCH.  
2. NO WOOD CHIP MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING STORM DRAINS. MAINTAIN GRAVEL MULCH THROUGHOUT SWALES AND RAINGARDENS TO SIDEWALK.



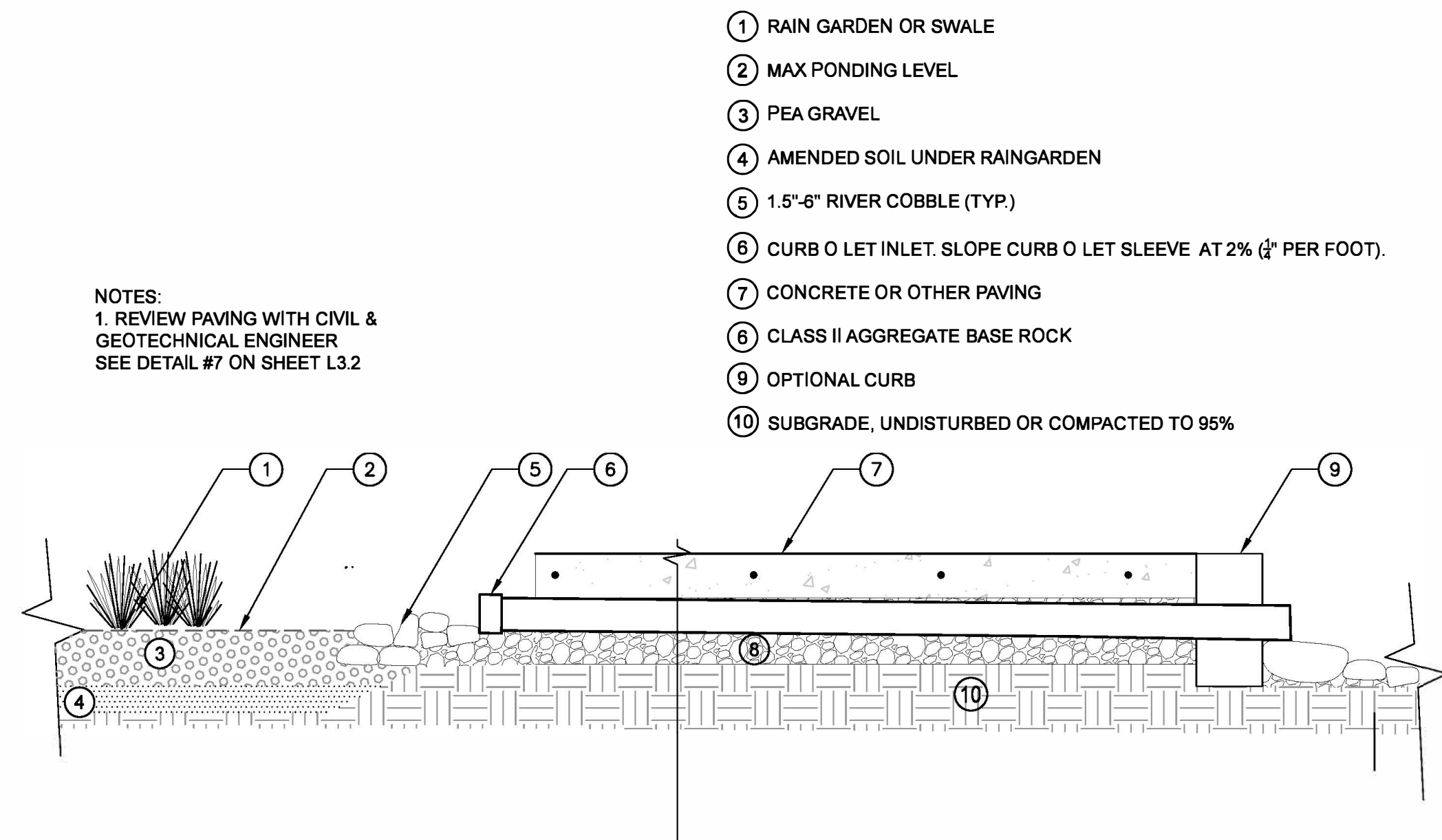
**5 RAINGARDEN OVERFLOWING OVER PAVEMENT SECTION**  
SCALE: 1/2"=1'-0"

- 1 PLANTING IN RAIN GARDEN.
  - 2 5" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7".
  - 3 RIVER COBBLE: 1.5-6" IN SIZE. FILL TO PAVEMENT EDGE
  - 4 SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN GARDEN.
  - 5 CONCRETE OR OTHER IMPERVIOUS WALKWAY
  - 6 CLASS II RECYCLED AGGREGATE BASE ROCK
  - 7 UNDISTURBED SUBGRADE.
- NOTES:  
1. ENSURE NO MULCH OR SOIL WASHES ON TO PATH. USE RIVER COBBLE TO MAINTAIN CLEAN EDGE.  
2. NO MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING STORM DRAINS.

- 1 PERMEABLE AGGREGATE PAVING: 2" THICK OF 3/8" OR SMALLER AGGREGATE (NO FINES)
  - 2 4" CLASS II PERMEABLE AGGREGATE BASE ROCK. COMPACT TO 95%.
  - 3 FILTER FABRIC
  - 4 EDGING AND STAKE (OPTIONAL)
  - 5 RAINWATER FLOWING WITHIN 4" OF 1.5-6" RIVER COBBLE FROM DOWNPOUT OR RAINGARDEN
  - 6 NATIVE SOIL. SCARIFY TOP 3" TO IMPROVE INFILTRATION UNDER COBBLE
- NOTE:  
1. REVIEW DETAIL WITH GEOTECH. & CIVIL ENGINEER  
2. SITE 10' AWAY FROM FOUNDATION.

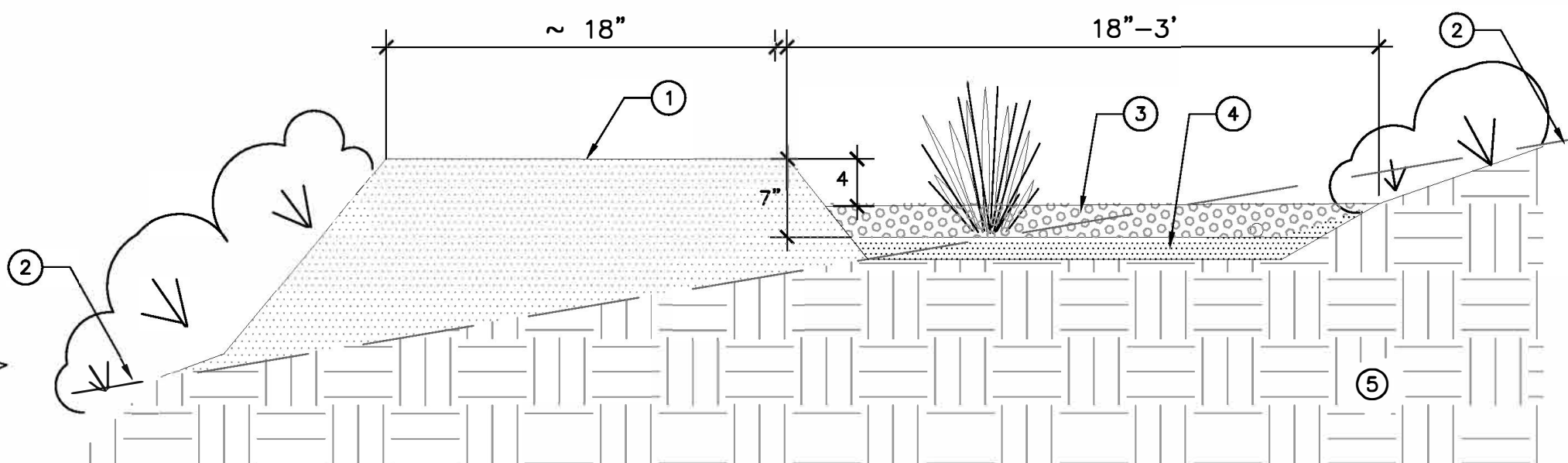


**6 RAINWATER FLOW THRU PERMEABLE PAVING SECTION**  
SCALE: 1"=1'-0"

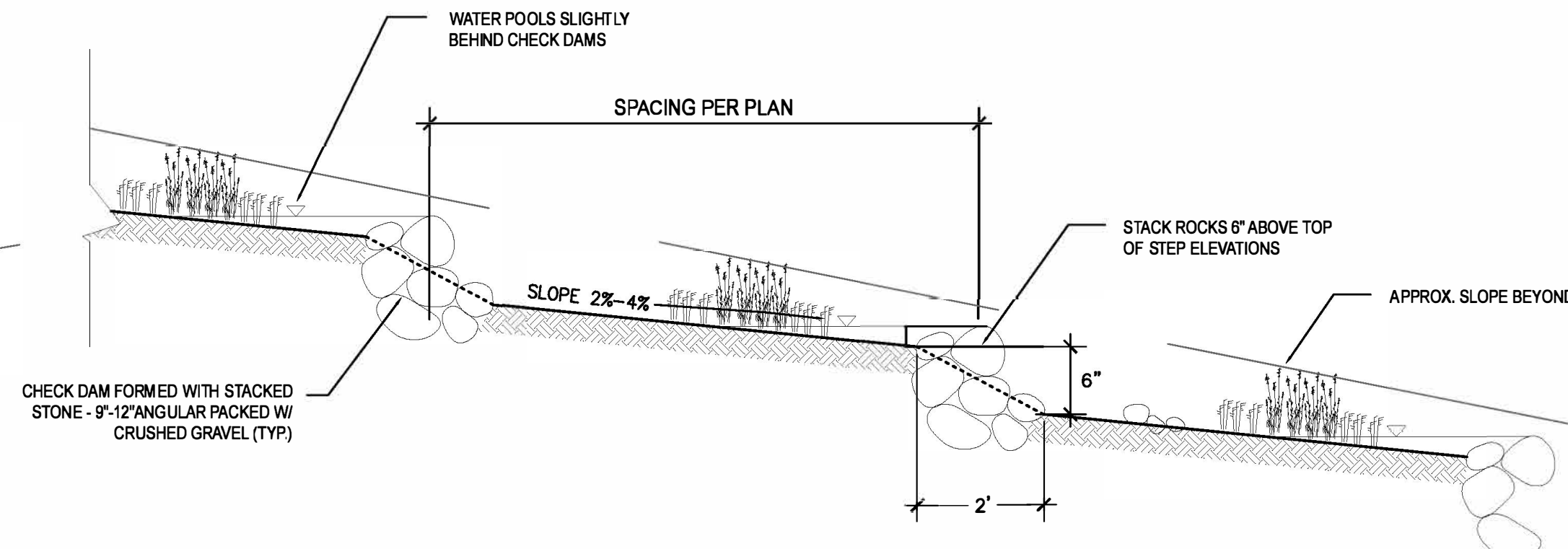


**7 DRAIN SLEEVE THRU PATH FROM RAINGARDEN**  
SCALE: 1/2"=1'-0"

- 1 BERM; CONSTRUCT WHILE DIGGING BASIN. CAN BE MADE WIDER TO BE A WALKING PATH
  - 2 EXISTING SLOPE 8% OR LESS
  - 3 3" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7". SEE DETAIL 9 FOR ROCK CHECK DAMS
  - 4 SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN GARDEN
  - 5 UNDISTURBED SUBGRADE
- NOTES:  
1. MINIMUM SLOPE IN THE DIRECTION OF FLOW TO BE 0.5%. IF SLOPE EXCEEDS 2% STEP DOWN IN CASCADE PER DETAIL # 9 THIS PAGE.  
2. NO WOOD CHIP OR BARK MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING STORM DRAINS.



**8 SWALE/CASCADE ON SLOPE - SECTION**  
1/2"=1'-0"



**9 SWALE/CASCADE ON SLOPE - LONGITUDINAL SECTION**  
1/2"=1'-0"

BY USING THESE PLANS, I AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE SONOMA-MARIN SAVING WATER PARTNERSHIP, ITS MEMBERS (SONOMA COUNTY WATER AGENCY, CITY OF SANTA ROSA, MARIN MUNICIPAL WATER DISTRICT, NORTH-MARIN WATER DISTRICT, CITY OF ROSS, CITY OF PETALUMA, CITY OF SOYAL, CITY OF SONOMA, VALLEY OF THE SOON, WATER DISTRICT, CITY OF WINDSOR) AND THEIR DIRECTORS, OFFICERS, AGENTS, EMPLOYEES AND LANDSCAPE DESIGN CONSULTANTS AGAINST ANY AND ALL LOSS, LIABILITY, EXPENSE, CLAIM, SUITS AND DAMAGES, INCLUDING ATTORNEY'S FEES, ARISING FROM OR RESULTING FROM THE USE OF THESE PLANS. I UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT PLAN ELEMENTS ARE IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE SOUTHERN CALIFORNIA PLANNING AND ZONING CODES.



ANN BAKER LANDSCAPE ARCHITECTURE  
825 2ND ST., STE 110  
PETALUMA, CA 94952  
TEL.: (707) 772-5082  
EMAIL: landarches@gmail.com



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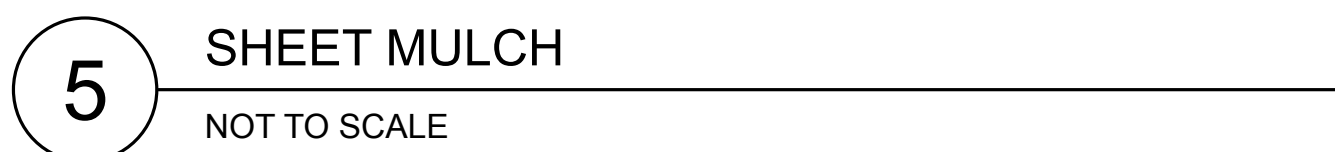
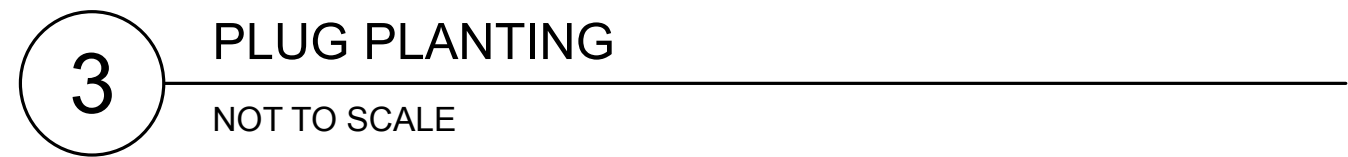
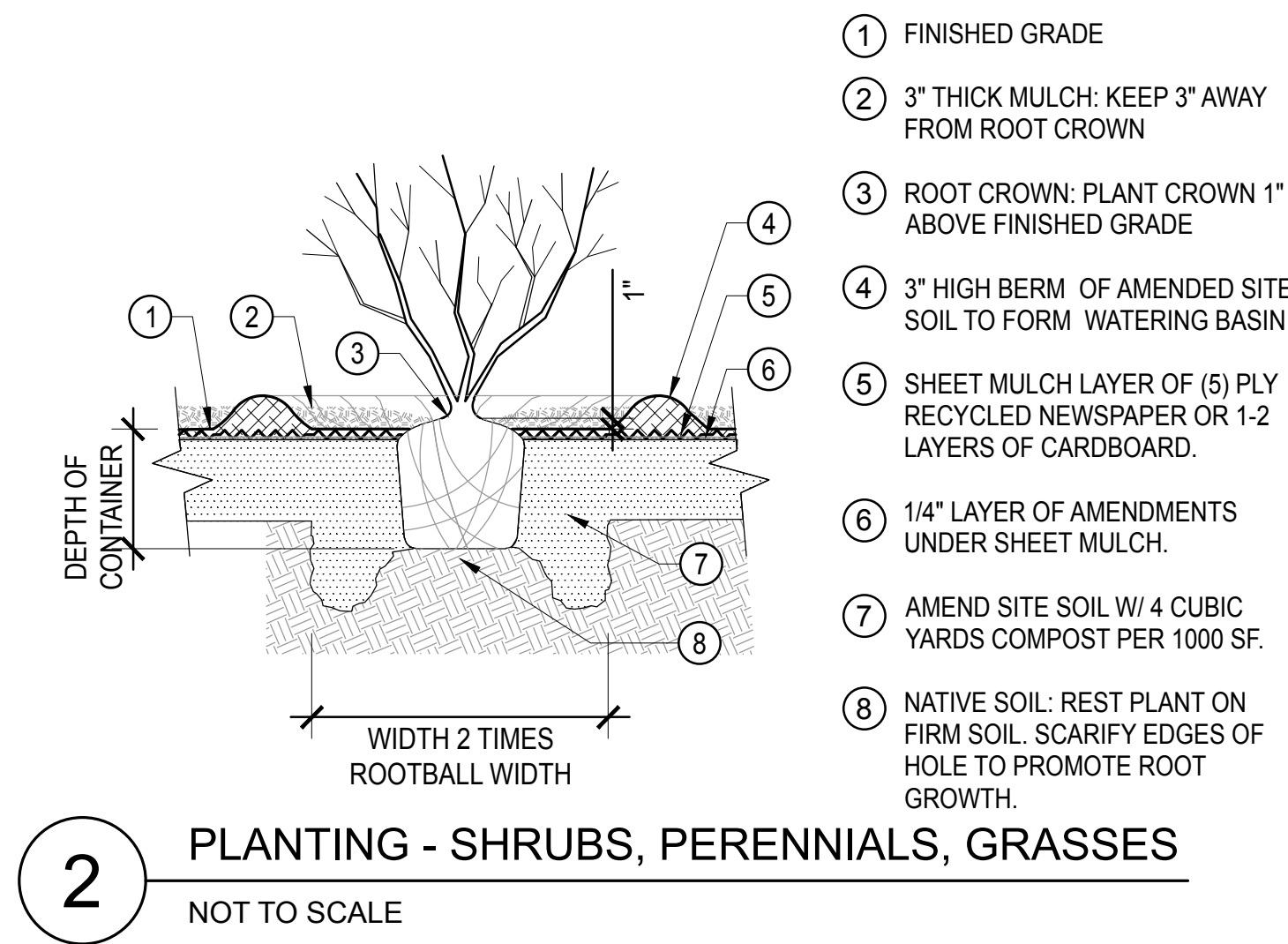
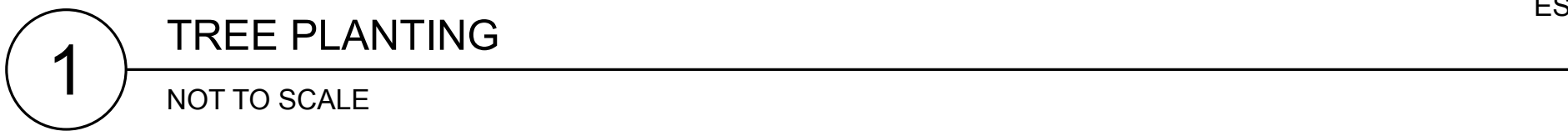


SHEET TITLE:  
RAIN GARDENS  
& SWALE  
DETAILS

DATE  
PERMIT PLAN  
MAY 18, 2018

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OF





6 PLANT PIT AND WATERING BERM  
NOT TO SCALE



**APPLICANT INFORMATION:**

LANDSCAPE TO LAUNDRY SYSTEM OVERVIEW:  
 A LAUNDRY-TO-LANDSCAPE GRAYWATER SYSTEM CAPTURES LIGHTLY USED WATER FROM THE DISCHARGE HOSE OF YOUR WASHING MACHINE AND PUMPS IT OUT TO THE LANDSCAPE THROUGH 1-INCH TUBING. THE SYSTEM DOES NOT ALTER THE EXISTING PLUMBING AND THEREFORE DOES NOT REQUIRE A PERMIT. A THREE-WAY DIVERTER VALVE IS A NECESSARY COMPONENT, ALLOWING YOU TO SEND DISCHARGE WATER BACK TO THE SEWER SYSTEM WHEN NEEDED OR DURING THE RAINY SEASON.

INSTALLATION & DESIGN CONSIDERATIONS:  
 LAUNDRY TO LANDSCAPE GRAYWATER SYSTEMS ARE EASY TO INSTALL FOR THE DO-IT-YOURSELF OR A PROFESSIONAL, ESPECIALLY IF THE WASHING MACHINE IS LOCATED ON AN EXTERNAL WALL AND IS IN CLOSE PROXIMITY TO THE LANDSCAPE AREA BEING IRRIGATED. NOTE, THE WASHING MACHINE PUMP WILL PROVIDE SUFFICIENT PRESSURE THROUGH A 1-INCH IRRIGATION LINE FOR 100-FEET ON FLAT GROUND. IF THE SYSTEM IS DESIGNED TO IRRIGATE UPHILL FROM THE WASHING MACHINE, THE DISTANCE SHOULD BE REDUCED TO 30-50 FEET WITH NO MORE THAN A 5% SLOPE. IF THE SYSTEM IS DESIGNED TO IRRIGATE DOWNHILL FROM THE WASHING MACHINE, THE DISTANCE MAY INCREASE TO 150-FEET DEPENDING ON SLOPE.

**GRAYWATER REQUIREMENTS TO COMPLY WITH CALIFORNIA PLUMBING CODE ("CPC") STANDARDS:**

- o NOTIFY ENFORCING AGENCY
- o BE ABLE TO REDIRECT TO SEWER
- o NO POTABLE WATER CONNECTION
- o CONTAIN GRAYWATER ON SITE
- o DIRECT AND CONTAIN GRAYWATER WITHIN MULCH BASINS (IRRIGATION OR DISPOSAL FIELD) BELOW THE GROUND SURFACE
- o NO PONDING OR RUNOFF
- o OUTLETS COVERED BY AT LEAST 2-INCHES OF MULCH, ROCK, OR A SHIELD (E.G. VALVE BOX LID)
- o MINIMIZE CONTACT WITH HUMANS AND ANIMALS
- o DIVERT WATER TO THE SEWER IF IT CONTAINS DIAPERS, OIL, OTHER CHEMICALS
- o GRAYWATER DIVERTED TO LANDSCAPE SHALL NOT CONTAIN HAZARDOUS CHEMICALS
- o PERMIT EXEMPTION DOES NOT GRANT INSTALLATION THAT VIOLATES OTHER CODE OR LAWS
- o POST OPERATION AND MAINTENANCE MANUAL

CPC Table 1502.4 — LOCATION OF GREY WATER SYSTEM

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	SUBSURFACE AND SUBSOIL IRRIGATION FIELD AND MULCH BASIN (feet)
Building structures	2
Property line adjoining private property	1.5
Water supply wells	100
Streams and lakes	100
Sewage pits or cesspools	5
Sewage disposal field	4
Septic tank	5
On-site domestic water service line	0
Pressurized public water main	10

**CALCULATIONS SECTION**

1. Estimate Daily Graywater Production

Calculation Method (choose one and check box)

☐ California Plumbing Code Estimate (Assign 2 occupants to master bedroom and 1 occupant to each additional bedroom)

Laundry: \_\_\_\_\_ occupants x 15 gallons/day \_\_\_\_\_ gal/day

☐ Estimate of graywater produced from winter (Dec-Feb) water use records (reference utility bill)

Laundry: \_\_\_\_\_ (gallons/load\*) x \_\_\_\_\_ (loads/week) ÷ 7 (days/week) \_\_\_\_\_ gal/day

\*Typical gals/per load: Front loader 15, Top loader 40 **TOTAL** \_\_\_\_\_ gal/day

2. Determine Minimum Mulch Basin Size

Minimum Mulch Basin Size:

\_\_\_\_\_ (gal/day) ÷ \_\_\_\_\_ gal/ft<sup>2</sup>/day = \_\_\_\_\_ ft<sup>2</sup>  
 From 1 above Maximum Absorption Capacity (from column 3 in table below)

\*Dig mulch basin to a depth of 1 ft to ensure sufficient surge capacity for water leaving the laundry machine.

Design of Six Soil Types	Min SQ. FT. of Irrigation/ Leaching Area Per 100 Gallons of Estimated Graywater Discharge Per Day	Max Absorption Capacity in Gallons Per SQ. FT. of Irrigation/ Leaching Area for an 24-Hour Period
Coarse sand or gravel	30	5.0
Fine Sand	25	4.0
Sandy Loam	40	2.5
Sandy Clay	60	1.7
Clay with considerable sand or gravel	90	1.1
Clay with small amounts of sand or gravel	120	0.8

3. Determining Weekly Water Needs

Weekly Water needs = (0.62 x Area x Eto x Pf) / 4 weeks = \_\_\_\_\_ \*0.62 = (# of gal in 1" of water covering 1 ft<sup>2</sup>)

- Area = π r<sup>2</sup> = 3.14 x (canopy radius of existing plant)<sup>2</sup> OR = (Length x Width) for number of garden beds
- Evapotranspiration rates (Eto) - Choose Eto for hottest month - July = 6.51"/month for Santa Rosa
- Plant factor (Pf) = 0.3 (Low water use), 0.5 (Moderate water use) \*check landscape plan for water use of plants in the hydrozone

**ADDITIONAL INFORMATION**

GRAYWATER IS RECEIVED BEST BY TREES, BUSHES, SHRUBS, SMALL PERENNIALS AND LARGER ANNUALS, BUT IS PROHIBITED ON LAWN, RAISED BEDS, ROOT AND LEAFY VEGETABLES. MODERATE WATER USERS SUCH AS FRUIT TREES ARE ALSO AN IDEAL APPLICATION. GRAYWATER IS SOMEWHAT ALKALINE (HIGH pH) AND NOT RECOMMENDED FOR PLANTS THAT PREFER ACIDIC SOILS (LOW pH) LIKE BLUEBERRIES AND RHODEDENDRONS SOIL TYPE WILL DETERMINE BOTH HOW QUICKLY GRAYWATER IS ABSORBED IN YOUR LANDSCAPE AND THE SIZE OF THE MULCH BASINS NEEDED TO INFILTRATE THE GRAYWATER..

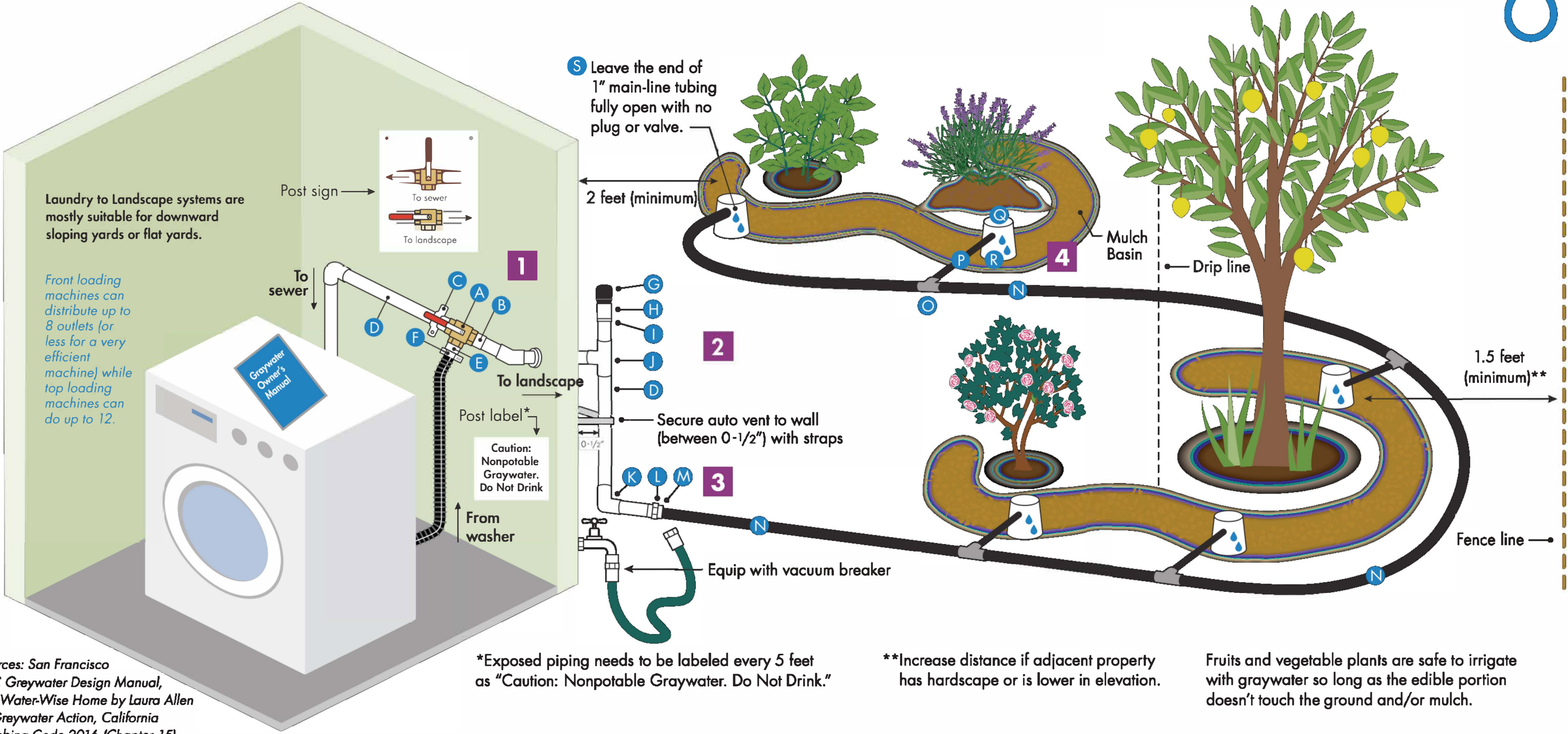
THE KEY TO PROPER IRRIGATION WITH GRAYWATER IS TO KNOW HOW MUCH THE CHOSEN PLANTS NEED GIVEN EVAPOTRANSPIRATION RATES, PLANT WATERING NEEDS, AND EXISTING CANOPY.

**RECOMMENDED DETERGENTS:**

TO ENSURE PLANT SURVIVAL AVOID SOAPS AND DETERGENTS THAT CONTAIN BORON, SODIUM AND CHLORINE COMPOUNDS. THE FOLLOWING LIST OF COMMERCIAL DETERGENTS ARE RECOMMENDED FOR USE WITH LAUNDRY TO LANDSCAPE GRAYWATER SYSTEMS.

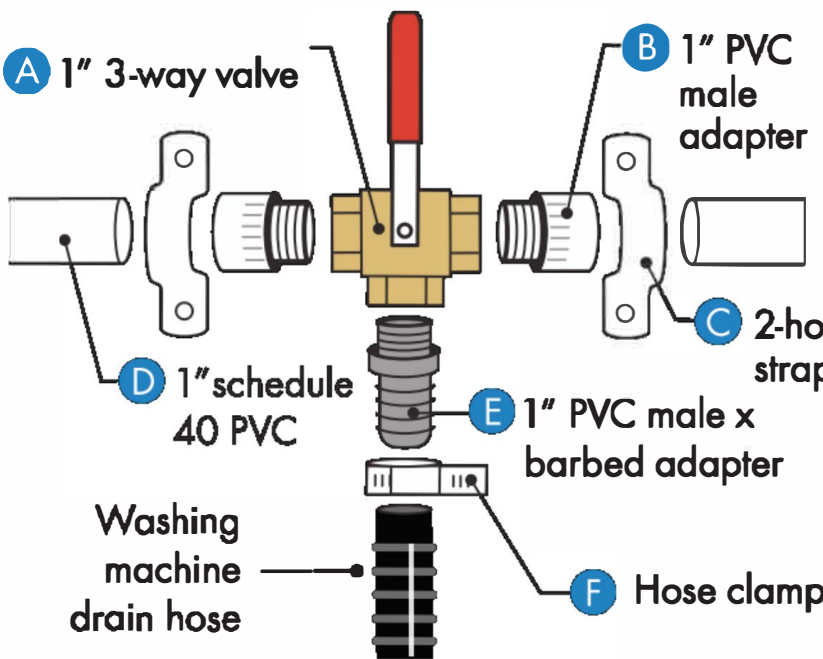
- OASIS LAUNDRY
- BIO PAC LAUNDRY LIQUID
- BIOKLEEN LAUNDRY LIQUID
- ECOVER LAUNDRY WASH (SOME SALT)
- LIQUID ECOS LIQUID DETERGENT
- LIFE TREE LAUNDRY LIQUID
- MOUNTAIN GREEN LAUNDRY DETERGENT
- VASKA HERBATERGENT

Laundry to Landscape: Graywater System Example

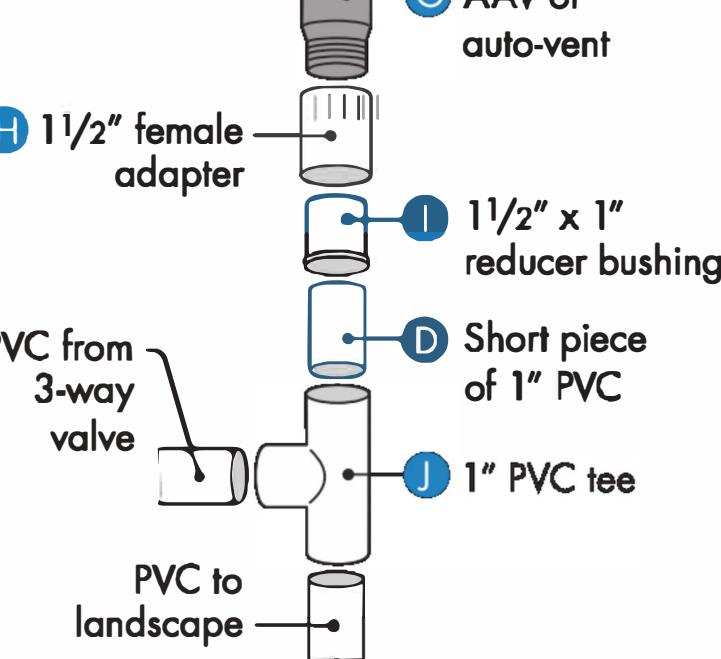


Sources: San Francisco PUC Greywater Design Manual, The Water-Wise Home by Laura Allen of Greywater Action, California Plumbing Code 2016 (Chapter 15)

1 Diverter (3-way) Valve

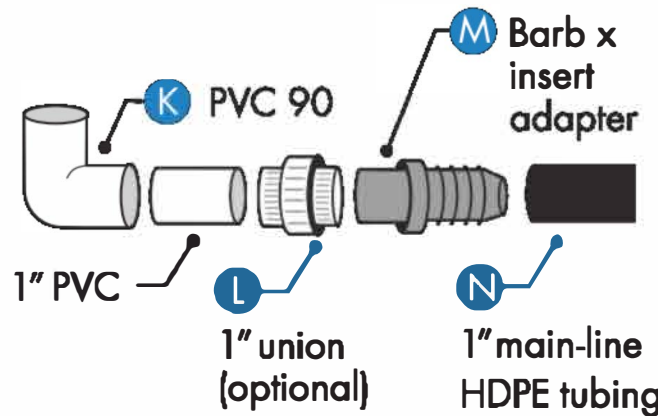


2 Auto Vent

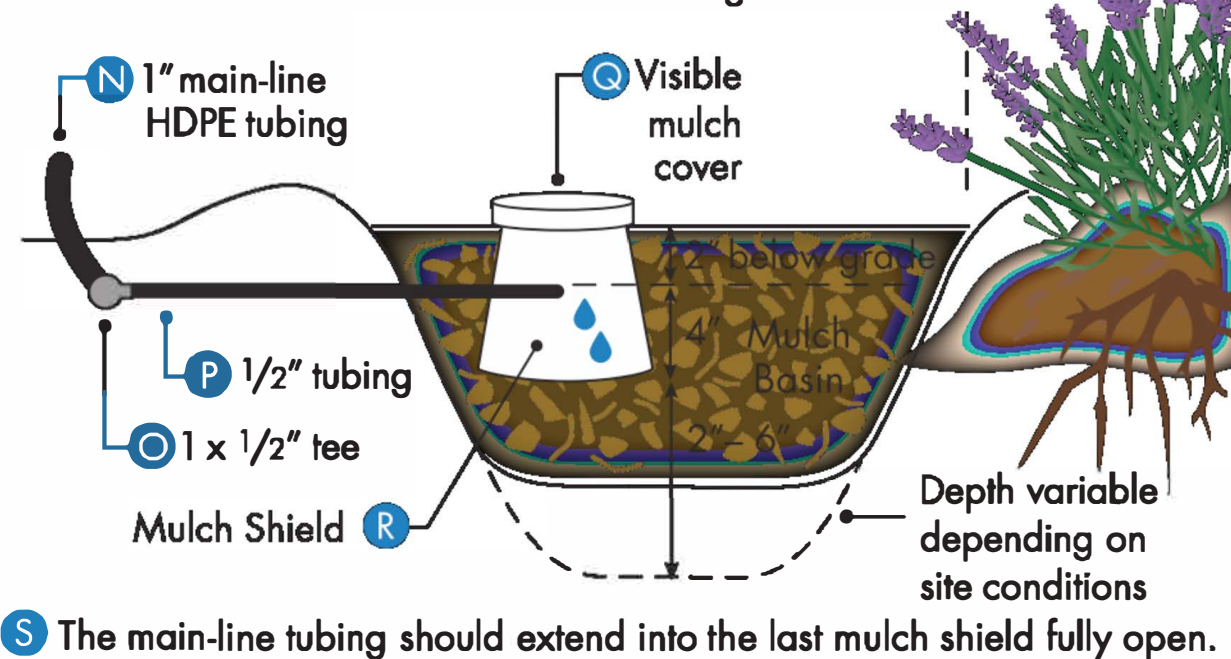


3 System Clean-out

This facilitates flushing clogs out of the landscape side of the system



4 Mulch Basin



BY USING THESE PLANS, I AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE SONOMA-MARTIN SAVING WATER PARTNERSHIP, ITS MEMBERS, AGENTS, EMPLOYEES, CONTRACTORS, SUBCONTRACTORS, AND OTHERS FROM AND AGAINST ALL LIABILITY, DAMAGES, LOSSES, AND EXPENSES, INCLUDING REASONABLE ATTORNEY'S FEES, ARISING OUT OF OR RESULTING FROM THE USE OF THESE PLANS. I UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT MY PLAN IS ELABORATE AND COMPLETED SAFELY AND ACCORDING TO ALL APPLICABLE RULES, REGULATIONS, ORDINANCES AND/OR CODES.

ABLA  
 ANN BAKER LANDSCAPE ARCHITECTURE  
 625 2ND ST., STE 110  
 PETALUMA, CA 94952  
 TEL.: (707) 772-5062  
 EMAIL: landarches@gmail.com

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RESIDENTIAL LANDSCAPE DESIGN TEMPLATE  
 SONOMA-MARTIN SAVING WATER PARTNERSHIP  
 www.savingwaterpartnership.org  
 NAME: \_\_\_\_\_  
 SITE ADDRESS: \_\_\_\_\_

SONOMA-MARTIN SAVING WATER PARTNERSHIP

SHEET TITLE:  
 GREYWATER -  
 LAUNDRY TO  
 LANDSCAPE

DATE  
 PERMIT PLAN  
 MAY 18, 2018

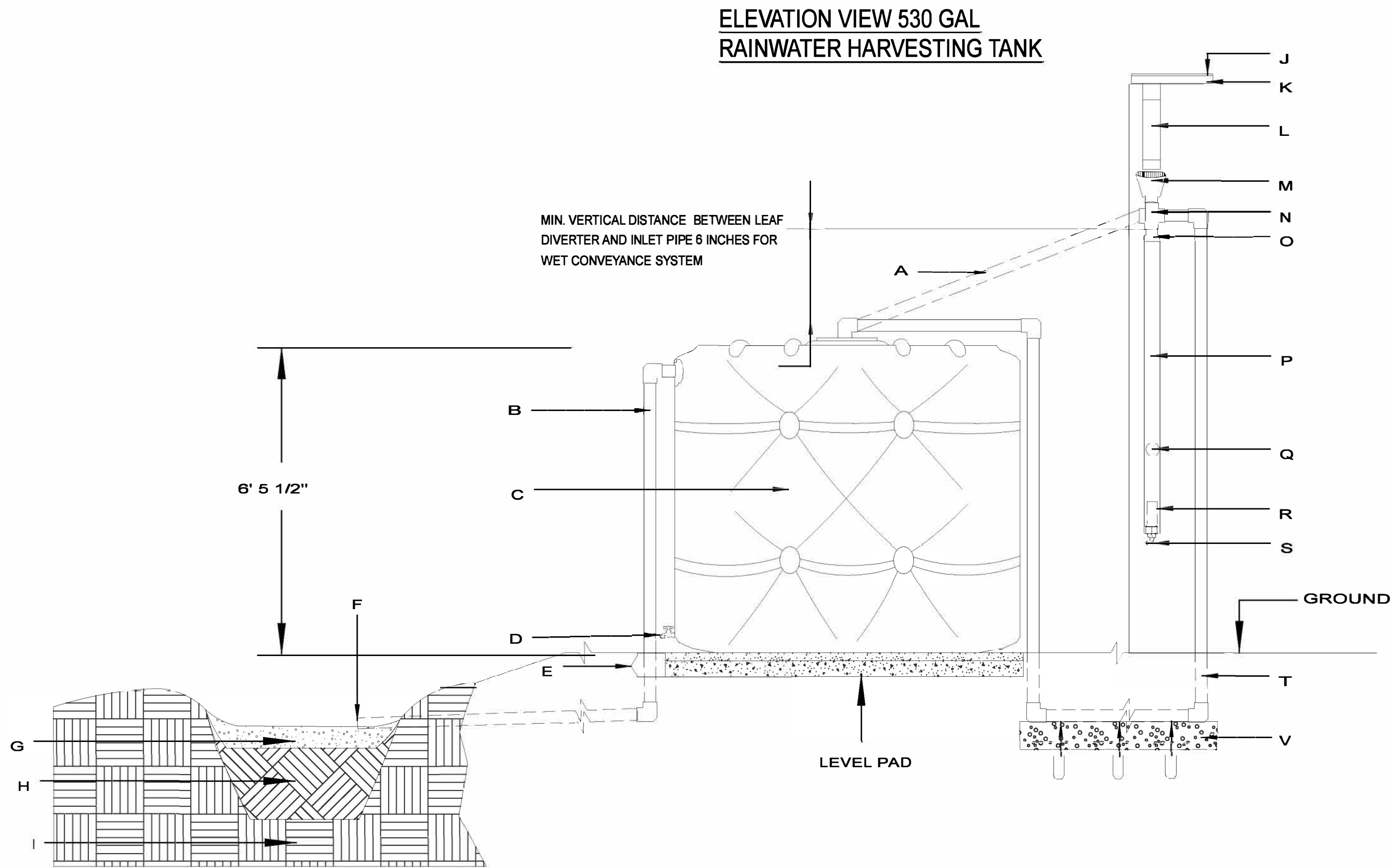
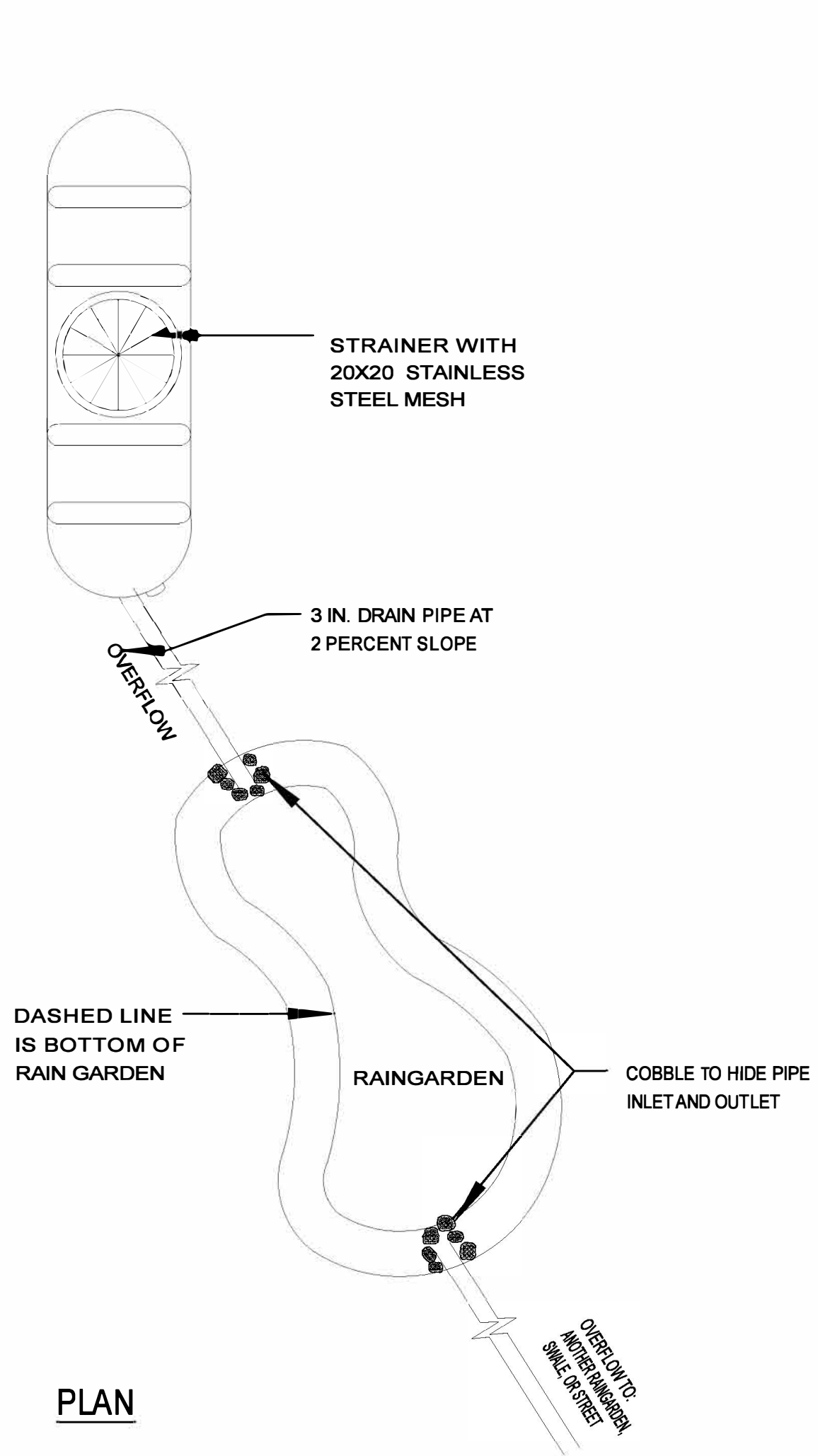
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SECTION VIEW RAIN GARDEN

- NOTES:
1. A RAINWATER CATCHMENT SYSTEM MAY NOT REQUIRE A BUILDING PERMIT PROVIDED ALL OF THE FOLLOWING ARE MET (CALIFORNIA PLUMBING CODE 1601.3 (1)):
    - WATER WILL BE USED FOR OUTDOOR NON-SPRAY IRRIGATION
    - MAXIMUM STORAGE CAPACITY OF 5,000 GALLONS
    - TANK IS SUPPORTED DIRECTLY UPON GRADE
    - RATIO OF HEIGHT TO DIAMETER OR WIDTH DOES NOT EXCEED 2 TO 1
    - DOES NOT REQUIRE ELECTRICAL POWER OR MAKEUP WATER SUPPLY CONNECTION (SEE NOTE 2 AND 3)
  2. ALL OTHER RAINWATER CATCHMENT SYSTEMS MUST BE SUBMITTED FOR BUILDING PERMIT.
  3. PUMP AND PRESSURE TANK LIKELY REQUIRE INEXPENSIVE, OVER-THE-COUNTER, ELECTRICAL PERMIT.
  4. IF CITY WATER PLUMBED TO TANK FOR MAKE UP USING FLOAT VALVE OR MANUALLY OPERATED VALVE, THEN A PERMIT IS REQUIRED AND AN AIR GAP IS REQUIRED BETWEEN RAINWATER HARVESTING SYSTEM AND DOMESTIC WATER SYSTEM.
  5. TANKS CAN BE DAISY CHAINED AT POINT "D" USING FLEXIBLE PIPE ONLY TO REDUCE CHANCE OF LEAKAGE IN EARTHQUAKES.
  6. THERE ARE NO REQUIRED SETBACKS FROM BUILDINGS OR SIDE/BACK PROPERTY LINES, THOUGH A CONVERSATION WITH YOUR NEIGHBOR COULD BE HELPFUL.

- A. PREFERRED DRY CONVEYANCE IF TANKS ARE NEXT TO DOWNSPOUT
- B. OVERFLOW: 3 IN. DRAINAGE PIPE: SLOPED 2 PERCENT FOR HORIZONTAL SECTIONS
- C. 530 GALLON BUSHMAN SLIMLINE RAIN HARVESTING TANK OR EQUIVALENT
- D. HOSE BIB OR OPTIONAL CONNECTION TO PUMP AND PRESSURE TANK (SEE NOTE 2)
- E. 4 INCHES COMPACTED BASEROCK WITH 2 INCHES OF PEA GRAVEL ON TOP
- F. OVERFLOW TO RAINGARDEN (SHOWN)/SWALE/SPLASHBLOCK
- G. 5 INCHES OF DECORATIVE GRAVEL WITH 2 INCHES OF PONDED WATER ABOVE
- H. 12 INCHES AMENDED SOIL: 1/2 COMPOST, 1/2 NATIVE SOIL
- I. UNDISTURBED NATIVE SOIL
- J. FIRE SAFER LEAF GUARD
- K. GUTTER
- L. NORMAL DOWNSPOUT
- M. OPTIONAL BUSHMAN LEAF DIVERTER (WITH 20X20 SCREEN IF USING WET CONVEYANCE) (REDUNDANT WITH LEAF GUARD ON GUTTERS)
- N. 3 IN. PVC DRAINAGE TEE
- O. 4 IN. TO 3 IN. PVC DRAINAGE REDUCER
- P. 4 IN. DRAINAGE PIPE FOR THE FIRST FLUSH (THIS REMOVES THE FIRST, DIRTY WATER FROM A RAINSTORM)
- Q. BUSHMAN FLOAT BALL
- R. BUSHMAN FIRST FLUSH FILTERS (TO KEEP EMITTER FROM CLOGGING)
- S. BUSHMAN DRIP EMITTER TO DRAIN DIRTY WATER BETWEEN STORMS
- T. "WET" CONVEYANCE 3 IN. DRAINAGE PIPE (WATER STAYS IN PIPE BETWEEN STORMS)
- U. THREE SEPARATE 3/32 INCH HOLES TO DRAIN WATER FOR MOSQUITO CONTROL
- V. CLEAN GRAVEL TO IMPROVE DRAINAGE FROM DRILLED HOLES