

DESIGN INTENT

THE LANDSCAPE IS DESIGNED TO COMPLY WITH THE PRESCRIPTIVE COMPLIANCE OPTION OF THE LOCALLY ADOPTED STATE OF CALIFORNIA MODEL WATER EFFICIENT LANDSCAPE ORDINANCE ("WELO"). COMPLIANCE WITH MANDATORY ELEMENTS OF WELO MUST BE DOCUMENTED ON LANDSCAPE PLANS.

THE PLANS ARE DESIGNED TO DEMONSTRATE FIRE SAFER LANDSCAPING APPROACHES WITH LOWER, LESS WOODY PLANTS CLOSE TO BUILDINGS, AND TREES POSITIONED TO ALLOW MAINTENANCE OF BRANCHES 10' AWAY FROM BUILDINGS.

LOW IMPACT DEVELOPMENT ("LID") ELEMENTS SUCH AS PERMEABLE PAVING, AND DOWNSPOUTS DISCONNECTED FROM STORM SEWERS AND DRAINING TO RAINGARDENS OR LANDSCAPE STRIPS, ARE PROVIDED TO INFILTRATE MORE STORMWATER RUN-OFF ON SITE, INCREASE GROUNDWATER RECHARGE AND IMPROVE THE AMOUNT OF SOIL MOISTURE AVAILABLE TO PLANTS THEREBY REDUCING IRRIGATION NEEDS.

LANDSCAPE DESIGN REQUIREMENTS

THE PLANTINGS ARE DESIGNED TO COMPLY WITH THE APPENDIX D "PRESCRIPTIVE COMPLIANCE" OPTION OF WELO:

- 1. MEDIUM WATER USE PLANTINGS DO NOT EXCEED 25 PERCENT OF THE TOTAL PLANTED AND IRRIGATED AREA.
- 2. LOW WATER USE OR CLIMATE-ADAPTED SPECIES THAT REQUIRE LITTLE OR NO SUMMER WATER ARE SELECTED FOR AT LEAST 75 PERCENT OF THE PLANTED AND IRRIGATED AREA
- 3. PERMITTED LANDSCAPE AREA MUST BE SMALLER THAN 2500 SF OF PLANTED AND IRRIGATED AREA
- 4. PLANS ARE INTENDED FOR USE ON SITES WITH LESS THAN 8% SLOPES.

ADDITIONAL GUIDELINES FOR THE PLANTINGS:

- A. FIRE SAFER PLANTINGS ARE INDICATED ON PLANT LISTS AND USED WITHIN 5' OF HOMES.
- B. CONVENTIONAL TURF IS NOT PROVIDED DUE TO HIGH WATER USE.
- C. TREES ARE LOCATED FOR SHADE ON GARDEN AREAS AND TO PROVIDE SOLAR ACCESS FOR SOLAR PANELS ON ROOFS. TREES ARE LOCATED AWAY FROM BUILDING STRUCTURES SO THAT BRANCHES CAN BE MAINTAINED 10' FROM ROOFS AND CHIMNEYS.
- D. PLANTS ARE PLACED IN APPROPRIATE MICROCLIMATES BY EVALUATING THE DIRECTION THE FRONT YARD IS FACING AND NORTH ARROWS ARE INDICATED ON PLANS.
- E. PLANTS ARE GROUPED IN IRRIGATION ZONES ("HYDROZONES") BASED ON SIMILAR WATER NEEDS AS DEFINED BY THE STATE WATER USE CLASSIFICATIONS OF LANDSCAPE SPECIES IV ("WUCOLS IV") REGION 1 LIST
- F. RAINWATER AND STORMWATER ELEMENTS SHOULD BE REVIEWED WITH SITE DESIGN TEAM AND GENERAL CONTRACTOR PRIOR TO SITE GRADING
- G. PERVIOUS PAVING OPTIONS SHOULD BE REVIEWED WITH SITE DESIGN TEAM AND GENERAL CONTRACTOR
- H. SEE SONOMA- MARIN SAVING WATER PARTNERSHIP WEBSITE FOR FURTHER INFORMATION AND FAQ: <http://www.savingwaterpartnership.org/landscape-design-templates/>

IRRIGATION DESIGN REQUIREMENTS AND GUIDELINES

THE IRRIGATION SYSTEM IS DESIGNED TO COMPLY WITH THE PRESCRIPTIVE COMPLIANCE OPTION OF WELO:

- 1. INSTALL AN AUTOMATIC IRRIGATION CONTROLLER THAT DOES NOT LOSE PROGRAMMING DATA AFTER A POWER FAILURE (NON-VOLATILE MEMORY) AND UTILIZES EVAPOTRANSPIRATION OR SOIL MOISTURE SENSOR DATA.
- 2. INSTALL A RAIN SENSOR.

ADDITIONAL GUIDELINES FOR THE IRRIGATION SYSTEMS:

- 3. SYSTEM IS DESIGNED TO REDUCE WATER USE TO THE MINIMUM AMOUNT TO SUSTAIN HEALTHY PLANT GROWTH AND TO PREVENT RUNOFF.
- 4. A MANUAL SHUT-OFF VALVE IS INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF CONNECTION.
- 5. PRESSURE REGULATION IS PROVIDED TO ENSURE THE DYNAMIC PRESSURE OF THE SYSTEM IS WITHIN THE MANUFACTURERS RECOMMENDED PRESSURE RANGE FOR THE IRRIGATION COMPONENTS.
- 6. ALL IRRIGATION EMISSION DEVICES MUST MEET THE ANSI STANDARD, ASABE/ICC 802-2014 LANDSCAPE IRRIGATION SPRINKLER AND EMITTER STANDARD. SPRINKLER HEADS MUST DOCUMENT A DISTRIBUTION UNIFORMITY LOW QUARTER OF 0.65 OR HIGHER.
- 7. ALL AREAS UTILIZE DRIP IRRIGATION ASSEMBLIES TO ENABLE THE SCALING OF PLANS.
- 8. SPRAY IRRIGATION NOT ALLOWED.

TREE IRRIGATION:

- 9. ALLOW DEEP ROOT WATERING OF THE ENTIRE TREE ROOT SYSTEM WHICH EXTENDS WELL BEYOND THE DRIPLINE OF THE TREE CANOPY.
- 10. ALLOW FOR MOVING THE TREE IRRIGATION DISTRIBUTION LINES AWAY FROM TREE TRUNK AFTER ESTABLISHMENT AND EXPANDING THE LINE OUTWARD WITH ROOT DEVELOPMENT.
- 11. PROVIDE SEPARATE TREE VALVES SO THE TREE VALVE CAN BE LEFT ON DURING PERIODS OF DROUGHT.

SOIL MANAGEMENT REQUIREMENTS

SOIL MANAGEMENT IS DESIGNED TO COMPLY WITH THE PRESCRIPTIVE COMPLIANCE OPTION OF WELO:

- 1. INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR CUBIC YARDS PER 1,000 SQUARE FEET TO A DEPTH OF SIX INCHES INTO THE LANDSCAPE AREA.
- 2. AFTER PLANTING, A MINIMUM THREE INCH LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS.
- 3. MULCH CAN BE REDUCED FOR NATIVE GRASS AND/OR WILDFLOWER AREAS.

POST-CONSTRUCTION REQUIREMENTS

STEP 5: POST-CONSTRUCTION CERTIFICATION

TO BE SIGNED BY APPLICANT

I HAVE COMPLIED WITH THE REQUIREMENTS OF THE PRESCRIPTIVE COMPLIANCE OPTION OF THE WATER EFFICIENT LANDSCAPE ORDINANCE

APPLICANT NAME (PLEASE PRINT)

APPLICANT SIGNATURE DATE

STEP 6: WELO FINAL INSPECTION CHECKLIST

YES NO NA

- | | | | PLANTING |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | 1. ALL PLANTS INSTALLED ARE LISTED ON PLANS OR ON APPROVED PLANT SUBSTITUTION LIST |
| ☐ | ☐ | ☐ | 2. 75% OR MORE OF THE PLANTS ARE LOW WATER USE PER WUCOLS REGION 1 |
| ☐ | ☐ | ☐ | 3. NO STANDARD HIGH WATER USE TURF HAS BEEN INSTALLED |
| | | | SOIL |
| ☐ | ☐ | ☐ | 1. COMPOST HAS BEEN APPLIED AT A RATE OF AT LEAST FOUR (4) CUBIC YARDS PER ONE THOUSAND (1,000) SQUARE FEET AND HAS BEEN INCORPORATED TO A DEPTH OF SIX (6) INCHES INTO THE LANDSAPE AREA. |
| ☐ | ☐ | ☐ | 2. A THREE (3) INCH LAYER OF ORGANIC MULCH HAS BEEN APPLIED OVER ALL SHRUB PLANTING AREAS |
| | | | IRRIGATION |
| ☐ | ☐ | ☐ | 1. NO SPRAY IRRIGATION IS USED |
| ☐ | ☐ | ☐ | 2. STATIC AND DYNAMIC WATER PRESSURE NOTED AT THE POINT OF CONNECTION |
| ☐ | ☐ | ☐ | 3. WEATHER BASED SELF ADJUSTING CONTROLLER WITH NON-VOLATILE MEMORY IS INSTALLED PER MANUFACTURERS SPECIFICATIONS |
| ☐ | ☐ | ☐ | 4. RAINSENSOR AND WEATHER SENSOR (IF REQUIRED FOR WEATHER DATA) INSTALLED PER MANUFACTUERS SPECIFICATION AND IS FUNCTIONING |
| ☐ | ☐ | ☐ | 5. CONTROLLER IS ACURATELY PROGRAMMED |
| ☐ | ☐ | ☐ | 6. CONTROLLER CHART IS PLACED IN CONTROLLER HOUSING OR ADJACENT TO CONTROLLER |
| ☐ | ☐ | ☐ | 7. CONTROLLER CHART CLEARLY INDICATES STATIONS & VALVE ZONES |
| ☐ | ☐ | ☐ | 8. CONTROLLER CHART CLEARLY INDICATES JULY IRRIGATION SCHEDULE FOR EACH ZONE AND INCLUDES PROGRAMS, DAYS PER WEEK, START TIME, AND RUN TIMES |
| ☐ | ☐ | ☐ | 9. IRRIGATION SYSTEM SHUT OFF VALVE INSTALLED |
| ☐ | ☐ | ☐ | 10. IRRIGATION SYSTEM SHUT OFF VALVE LOCATION IS AS SHOWN ON PLAN OR ON AS-BUILT |
| ☐ | ☐ | ☐ | 11. DRIP IRRIGATION CONTROL ZONE ASSEMBLIES ARE INSTALLED AND FUNCTIONING |
| ☐ | ☐ | ☐ | 12. DRIP IRRIGATION LINES ARE INSTALLED AS SHOWN ON PLAN & DETAILS |
| ☐ | ☐ | ☐ | 13. DRIP FLUSHOUTS ARE INSTALLED LOWEST POINT OF EACH ZONE AND ARE FUNCTIONING |
| ☐ | ☐ | ☐ | 14. SYSTEM OPERATES WITHOUT LEAKS, BREAKS OR RUNOFF |
| ☐ | ☐ | ☐ | 15. EQUIPMENT INSTALLED IS AS SHOWN ON APPROVED IRRIGATION EQUIPMENT LIST, OR EQUAL |
| | | | GENERAL |
| ☐ | ☐ | ☐ | 1. CHANGES ARE NOTED ON AS-BUILT PLAN AND IS PROVIDED AT TIME OF INSPECTION |

SYMBOLS & DEFINITIONS

- 1. CLIMATE ADAPTIVE: NON-NATIVE PLANTS WHICH ARE ADAPTED TO LOCAL MICROCLIMATES.
- 2. INVASIVE PLANTS: CALIFORNIA INVASIVE PLANT COUNCIL ("Cal-IPC") DEFINES INVASIVE PLANTS AS: PLANTS THAT ARE NOT NATIVE TO AN ENVIRONMENT, AND ONCE INTRODUCED, THEY ESTABLISH, QUICKLY REPRODUCE AND SPREAD, AND CAUSE HARM TO THE ENVIRONMENT, ECONOMY, OR HUMAN HEALTH.
- 3. HYDROZONE: AN AREA OF THE LANDSCAPE HAVING PLANTS WITH SIMILAR WATER NEEDS AND ROOTING DEPTHS AND THE SAME MICRO-CLIMATE.
- 4. IRRIGATION CONTROLLER: SMART CONTROLLERS ARE REQUIRED. THESE ADJUST AUTOMATICALLY USING WEATHER OR SOIL MOISTURE DATA.
- 5. MICROCLIMATE: THE CLIMATE WITHIN EACH DIFFERENT SUB-AREA OF THE LANDSCAPE WHICH DEPENDS ON ITS SUN AND WIND EXPOSURE, PROXIMITY TO REFLECTIVE SURFACES, PLANT DENSITY AND OTHER FACTORS.
- 6. WELO: THE CALIFORNIA MODEL WATER EFFICIENT LANDSCAPE ORDINANCE THAT REQUIRES WATER CONSERVATION MEASURES TO BE IMPLEMENTED IN LANDSCAPES AND HAS BEEN IN EFFECT SINCE 1990.
- 7. PLANT WATER USE: AN ESTIMATE OF THE AMOUNT OF WATER NEEDED BY PLANTS TO THRIVE IN WARM/DRY PERIODS. PLANTS ARE GROUPED INTO VERY LOW, LOW, MODERATE AND HIGH WATER USE AND ARE ASSIGNED PLANT FACTOR VALUES.
- 8. TURF: A GROUND COVER SURFACE OF MOWED GRASS (CONVENTIONAL LAWN)
- 9. TURF ALTERNATIVE: A LOW WATER USE GRASS OR GROUNDCOVER PLANTING THAT SPREADS TO FORM A LOW COVER THAT CAN BE OCCASIONALLY WALKED UPON.
- 10. WEATHER SENSOR: SENSOR CONNECTED TO THE IRRIGATION CONTROLLER WHICH DETECTS RAIN, FREEZE, WIND ETC. AND SUSPENDS OR ADJUSTS IRRIGATION OPERATION.

REFERENCE

TITLE 23 CHAPTER 2.7 MWEL0: THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE

MWEL0 SECTIONS:

490.1 (c) & D 9 (a): APPLICABILITY
491 DEFINITIONS
D (b) (A-H): PROJECT INFORMATION
D (b) (H): LANDSCAPE DOCUMENTATION PACKAGE
D (b) (5): IRRIGATION DESIGN PLAN
D (b) (2) & (3) (B): SOIL MANAGEMENT
D(c) MWEL0 FINAL INSPECTION CHECKLIST
SECTION 492.7
(a)(1)(B) IRRIGATION CONTROLLER
(a)(1)(D) WEATHER SENSOR

PRE CONSTRUCTION - PERMIT APPLICATION BY OWNER - FILL IN AREAS BELOW

CONFIRM APPLICABILITY

THIS PLAN SHEET IS FOR USE FOR:
1) FRONT YARD LANDSCAPES UP TO 2,500 SF WHICH THE LOCAL JURISDICTION PERMIT AGENCY ALLOWS TO COMPLY WITH PRESCRIPTIVE COMPLIANCE MEASURES. SEE APPENDIX D OF MWEL0.

STEP 1: PROJECT INFORMATION

TO BE FILLED OUT BY APPLICANT

DATE: _____

PROJECT APPLICANT (NAME): _____

PROJECT ADDRESS: _____

TOTAL PROJECT LANDSCAPE AREA (≤ 2500): _____(SF)

MEDIUM WATER USE PLANT MATERIAL AREA (≤ 25%): _____(SF)

LOW TO VERY LOW NON-TURF PLANT MATERIAL AREA (≥ 75%): _____(SF)

PROJECT TYPE: NEW RESIDENTIAL

WATER SUPPLY TYPE : _____
(POTABLE/RECYCLED/WELL)

LOCAL WATER PURVEYOR: _____

STEP 2: SIGN PRE-CONSTRUCTION AGREEMENT

TO BY SIGNED BY APPLICANT

I AGREE TO COMPLY WITH THE REQUIREMENTS OF THE PRESCRIPTIVE COMPLIANCE OPTION OF THE WATER EFFICIENT LANDSCAPE ORDINANCE

APPLICANT NAME (PLEASE PRINT)

APPLICANT SIGNATURE DATE

STEP 3: PROVIDE PERMIT AGENCY REQUIRED PLANS

PLANS TO BE PROVIDED BY APPLICANT:	OPTIONAL PLANS
- L-0.0 PERMIT COVER SHEET - L-1.0 LANDSCAPE DESIGN PLAN - L-2.0 IRRIGATION DESIGN PLAN - L-2.1 IRRIGATION DETAIL SHEET - L-3.0 PAVING DETAILS - L-3.1 L.I.D. DETAILS - L-3.2 PLANTING DETAILS	- GW-1.0 - GW-1.1 - RW-1.0

STEP 4: SIGN DISCLAIMER

TO BE SIGNED BY APPLICANT

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 ROHNERT PARK, CITY OF PETALUMA, CITY OF COTATI, CITY OF SONOMA, VALLEY OF THE MOON WATER DISTRICT AND TOWN OF WINDSOR) 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 RESULTING FROM THE USE OF THIS LANDSCAPE PLAN. I UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT PLAN ELEMENTS ARE IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE STATUTES, RULES, REGULATIONS, ORDINANCES AND/OR CODES.

SONOMA-MARIN SAVING WATER PARTNERSHIP, ITS MEMBERS AND LANDSCAPE DESIGN CONSULTANTS MAKE NO REPRESENTATIONS AND GRANT NO WARRANTIES, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, BY STATUTE OR OTHERWISE, AND SONOMA-MARIN SAVING WATER PARTNERSHIP, ITS MEMBERS AND DESIGN CONSULTANTS EACH SPECIFICALLY DISCLAIM ANY OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, OR EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE OR ANY WARRANTY AS TO THE VALIDITY OF ANY PATENTS OR THE NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES.

APPLICANT NAME (PLEASE PRINT)

APPLICANT SIGNATURE DATE

AGENCY STAMP



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NAME: _____
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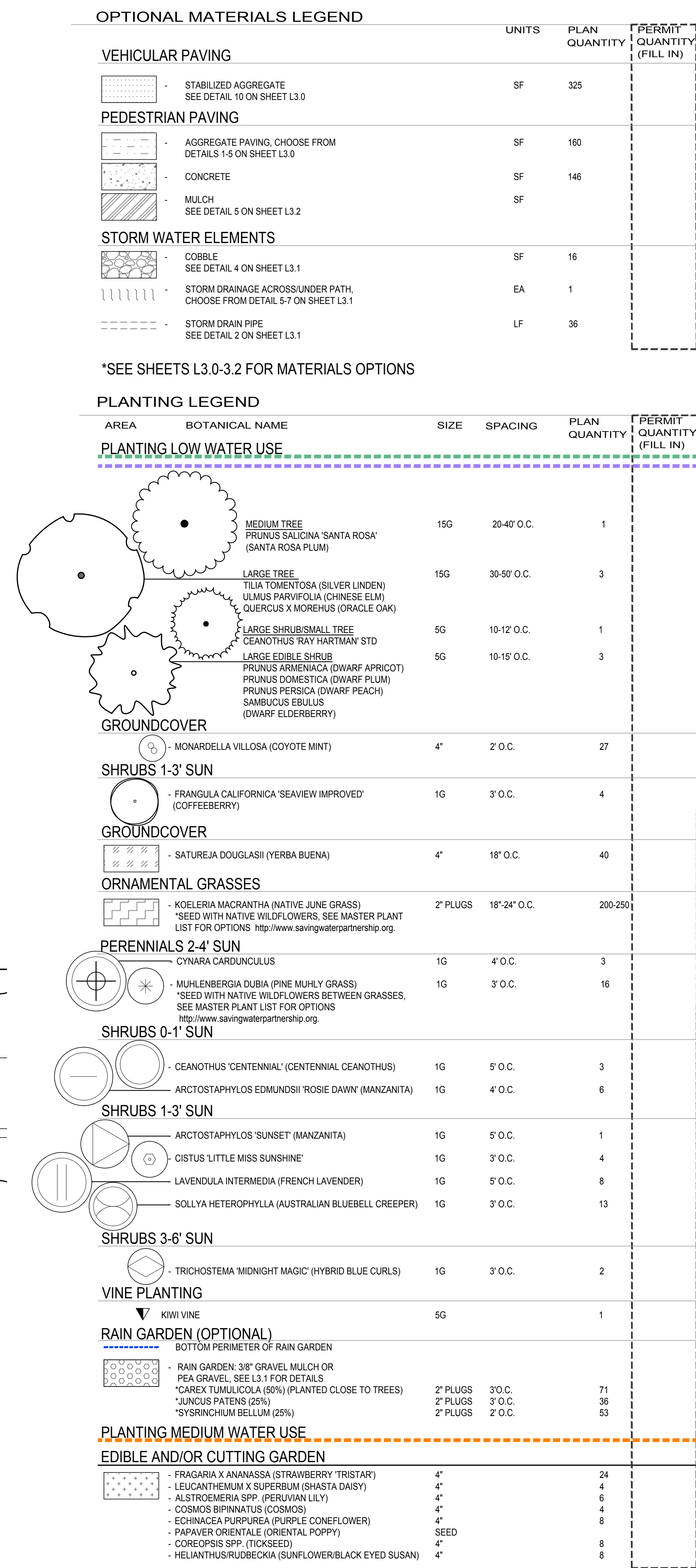


SHEET TITLE:
RESIDENTIAL
LANDSCAPE
PERMIT COVER
SHEET

DATE
PERMIT PLAN
SEPTEMBER 26, 2018

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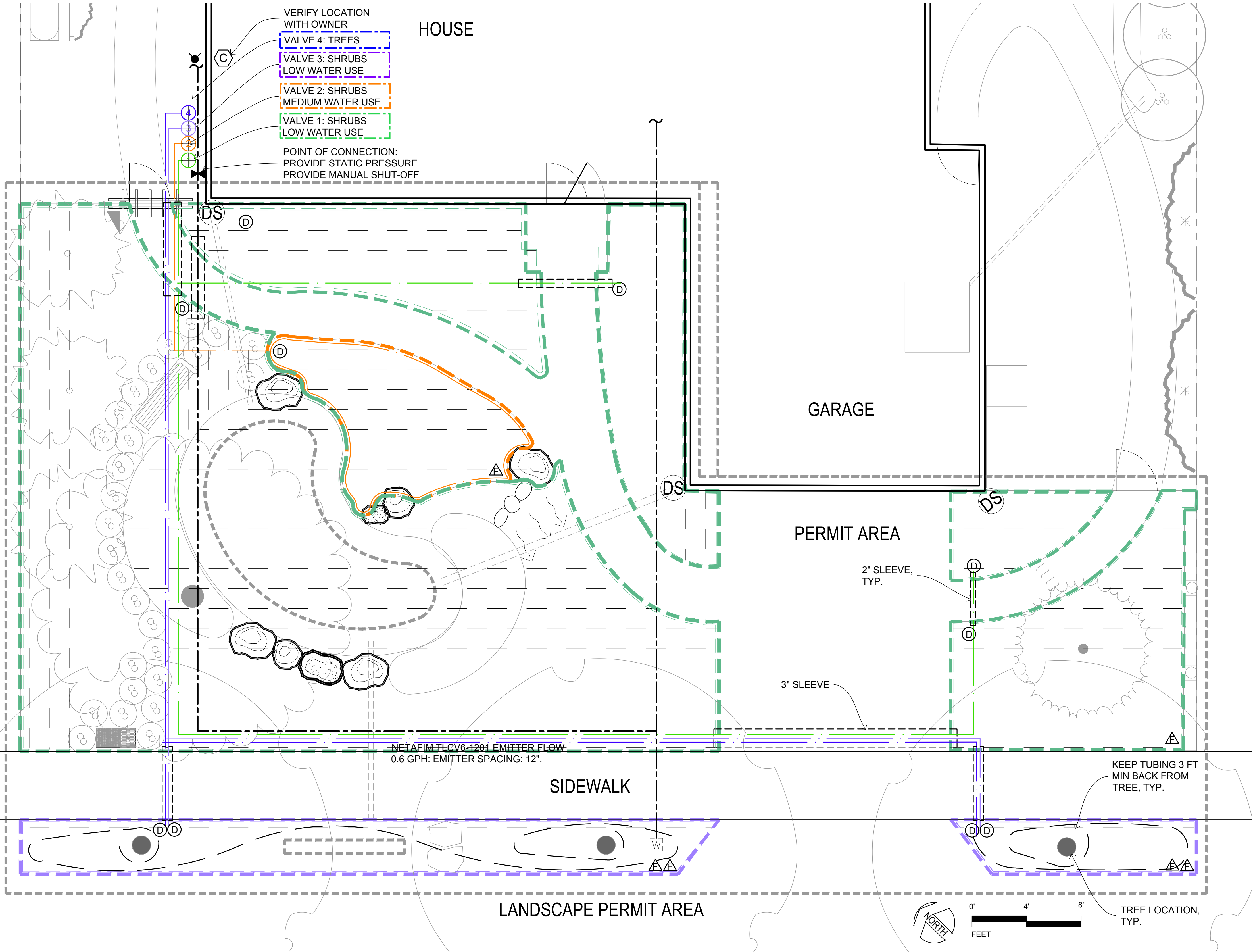
SHEET
OF



1. PLANTING DESIGN FOR FULL COVER WITHIN 3 YEARS.
2. THE GARDEN IS DESIGNED TO CAPTURE AND INFILTRATE SOME STORM WATER ON SITE. WHEN THE FLOW IS DIRECTED TO A SWALE OR RAIN GARDEN, IT NEEDS AN OVERFLOW OUTLET THAT WON'T ERODE. OPTIONS ARE PROVIDED ON THE DETAIL SHEETS. SPLASHBLOCKS AND OUTLETS IN PLANTING BEDS ARE MEANT TO SPREAD THE FLOW TO SHEETFLOW OVER PLANTING AREAS AND NO OVERFLOW DEVICE IS NEEDED.
3. REVIEW IRRIGATION SHEETS AND INSTALL SLEEVES UNDER PAVING SURFACES IN THEIR CORRECT LOCATION.

EDIBLE AND/OR CUTTING GARDEN

1. REFER TO PLANTING DETAILS ON SHEET L3.2.

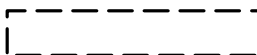
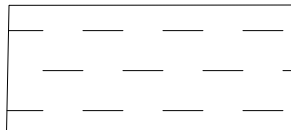


PLANT WATER USE TABLE			
WATER USE	PLAN SF (%)	PERMIT SF (FILL IN)	PERMIT % (FILL IN)
LOW	2,165 (94%)		
MED	137 (6%)		
TOTAL	2,302 (100%)		

IRRIGATION VALVE TABLE

HYDRO ZONE	WATER USE	VALVE	PLAN SF	SUB - ZONES	PERMIT SF (FILL IN)	SUB - ZONES (FILL IN)	SOIL TYPE (CLAY / LOAM / SAND) (FILL IN)
1	LOW	1	1888 SF	5			
2	MED	2	137 SF	1			
3	LOW	3	277 SF	2			
4	TREES	4	130 LF	2			
CLAY SOIL: DO NOT EXCEED 1100 SF / 3 GPM PER SUBZONE. IF TOTAL AREA OF ZONE EXCEEDS 2200 SF, ADD A VALVE.							
LOAM SOIL: DO NOT EXCEED 1100 SF / 3 GPM PER SUBZONE. IF TOTAL AREA OF ZONE EXCEEDS 2200 SF, ADD A VALVE.							
SANDY SOIL: DO NOT EXCEED 500 SF / 3 GPM PER SUBZONE. IF TOTAL AREA OF ZONE EXCEEDS 1000 SF, ADD A VALVE.							
TREE EMITTER TUBING 0.6 GPH PER LEGEND: MIN 20 LF PER VALVE; MAX 200 LF PER SUBZONE; MAX 400 LF PER VALVE							
FOR EMITTER FLOW, EMITTER SPACING & ROW SPACING PER SOIL TYPE SEE LEGEND							

IRRIGATION LEGEND

APPLICANT CHECK-OFF COMPONENTS	SYMBOL	COMPONENT	MANUFAC - TURER	MODEL	NOTES / SIZE / COLOR
		EXISTING WATER METER			
		CONTROLLER	HUNTER	PRO-C	INDOOR
		WEATHER SENSOR	HUNTER	SOLAR-SYNC -SEN	WIRED
		FULL PORT BALL VALVE	NIBCO	585	LINE SIZE
		SLEEVE		PVC SCH 40	
		MAINLINE		PVC SCH 40 WITH SCH 40 SOLVENT WELD FITTINGS	
		LATERAL PIPE (COLOR VARIES PER ZONE)		PVC SCH 40 WITH SCH 40 SOLVENT WELD FITTINGS	PIPE SIZE: 0-6 GPM: 3/4" PIPE; 7-12 GPM: 1" PIPE;
		DRIP IRRIGATION CONTROL VALVE ASSEMBLY TO INCLUDE:			
		ASSEMBLY	HUNTER	ACZ-075-40 DRIP CONTROL ZONE KIT	ALL-IN-ONE KIT INCLUDES BACKFLOW PREVENTION, FILTER AND PRESSURE REGULATOR
		ANTI-SIPHON VALVE (COLOR VARIES PER ZONE)		PGV-ASV, INCLUDED IN KIT	3/4 INCH ANTI-SIPHON VALVE PROVIDES BACKFLOW PREVENTION
		DRIP FILTER		INCLUDED IN KIT	150 MESH STAINLESS STEEL SCREEN
		PRESSURE REGULATION		INCLUDED IN KIT	40 PSI
		NIPPLE			PVC SCH 80 UV RESISTANT
		TRANSITION TO DRIP ZONE			SEE DETAIL
	DRIP LAYOUT				
		PLANTING BEDS			
		TREES			

APPLICANT INSTRUCTIONS:

1. ADJUST LAYOUT OF PLANTING BEDS IF CHANGED ON LAYOUT SHEET 1.0.
2. REVIEW IRRIGATION VALVE TABLE TO ADJUST SF AREAS OF VALVE ZONES.
3. IF AREAS EXCEED MAX SUBZONE FLOW (3 GPM) DIVIDE INTO ADDITIONAL SUBZONES AND ENTER UNDER SUBZONE COLUMN
4. IF AREAS EXCEED MAX ZONE FLOW (7 GPM) ADD A VALVE AND ENTER SF AREA NEXT TO NEW VALVE NUMBER ("B" OR "C")
5. DRAW OUT NEW SUBZONE AND/OR VALVE ZONE AREA ON PLAN IN NEW COLOR.
6. ADD VALVE AS NEEDED TO VALVE MANIFOLD.
7. REVIEW IRRIGATION LEGEND AND CHECK OFF THAT ALL COMPONENTS ARE SHOWN ON ADJUSTED PLAN.
8. NOTE ANY EQUIPMENT SUBSTITUTIONS.

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-SOLICAPAL WATER AGENCY, NORTH MARIN SAVING WATER PARTNERSHIP, ROSSINI PARK, CITY OF PETALUMA, CITY OF COTATI, CITY OF SONOMA, VALLEY OF THE MOYA WATER DISTRICT AND TOWN 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 OUT OF OR RESULTING FROM THE USE OF THESE LANDSCAPE PLANS. I UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT PLAN ELEMENTS ARE IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE STATUTES, RULES, ORDINANCES, AND STANDARDS.

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NAME: _____
SITE ADDRESS: _____

SHEET TITLE:
IRRIGATION
PLAN
ECO EDIBLE B

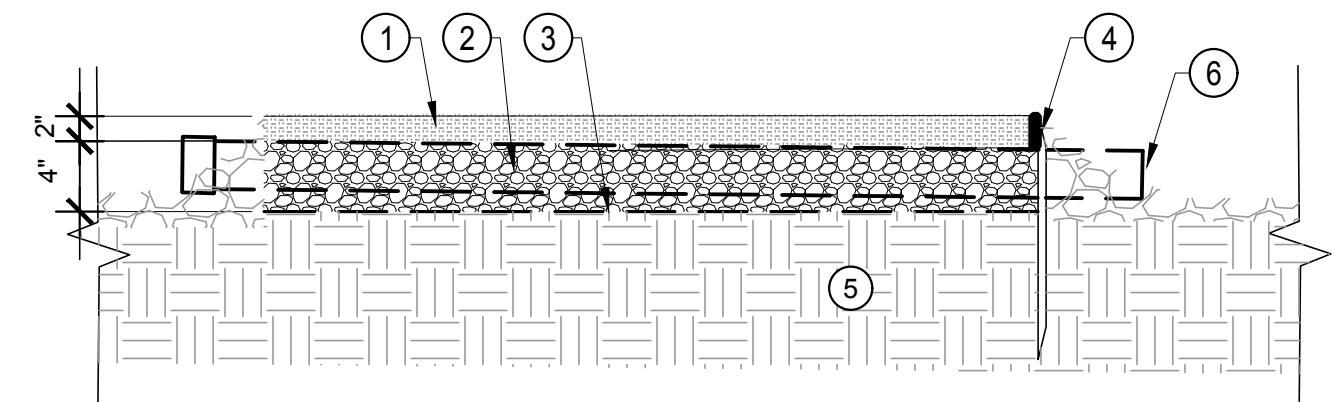
DATE
PERMIT PLAN
APRIL 2, 2019

L-2.0

SHEET
OF

- 1 2" THICK OF 3/8" OR SMALLER AGGREGATE (NO FINES)
- 2 4" CLASS II PERMEABLE AGGREGATE BASE ROCK, COMPACT TO 95%.
- 3 FILTER FABRIC (OPTIONAL)
- 4 EDGING AND STAKE (OPTIONAL)
- 5 UNDISTURBED SUBGRADE OR COMPACTED TO 90%
- 6 RECTANGULAR DRAINAGE SLEEVE THRU PATHWAY BASE (OPTIONAL) SEE DETAIL #11 THIS PAGE

NOTE: FOR CLAY SOILS, HOLD 10' AWAY FROM FOUNDATION, AND PROVIDE SUBDRAINAGE. REVIEW WITH GEOTECH. & CIVIL ENGINEER.

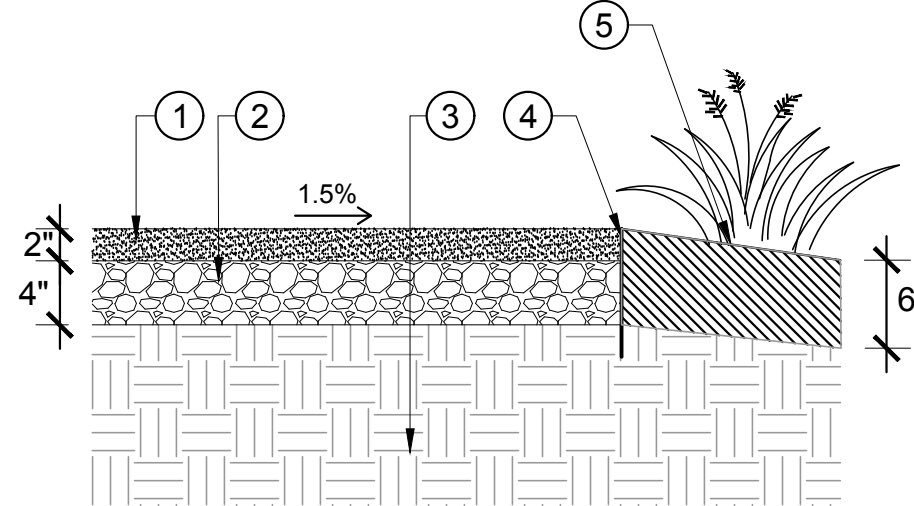


1 PERMEABLE AGGREGATE PAVING - PATH OR PATIO

SCALE: 1"=1'-0"

- 1 STABILIZED 3/8-" AGGREGATE; TERRAPAVE, ECO-PAVE OR EQUAL STABILIZING PRODUCT APPLIED PER MANUFACTURER SPECIFICATION. SLOPE TO PLANTINGS @ 1.5%.
- 2 CLASS II RECYCLED AGGREGATE BASE, COMPACT TO 95%
- 3 SUBGRADE; UNDISTURBED OR COMPACTED TO 95%
- 4 METAL EDGE, 1/8" X 4", ALUMINUM, STEEL OR ALTERNATE
- 5 AMENDED SOIL OF ADJACENT PLANTING; SLOPE AWAY FROM PATH 2% MIN.

NOTES:
1. THIS PAVING IS IMPERVIOUS AND SHOULD HAVE POSITIVE DRAINAGE AWAY FROM BUILDING FOUNDATIONS.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1

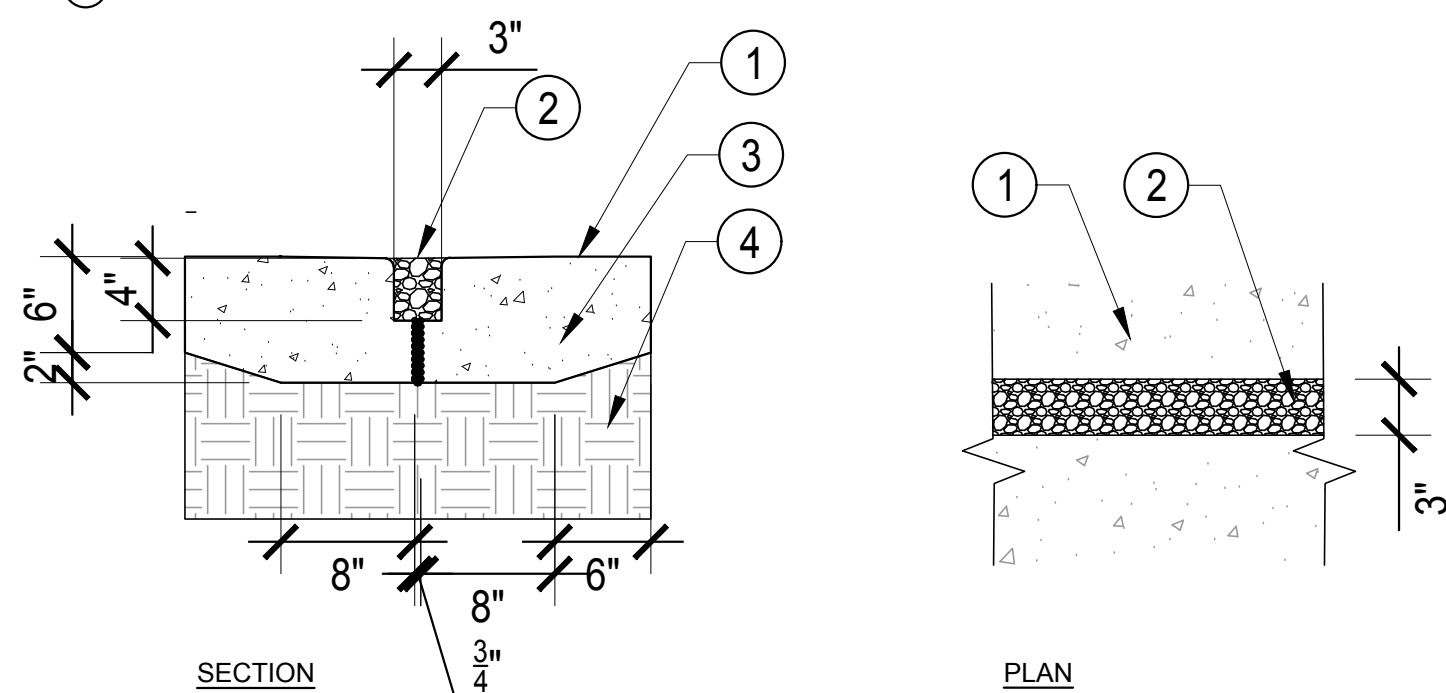


5 STABILIZED AGGREGATE - PATH OR PATIO

SCALE: 1"=1'-0"

- 1 CONCRETE DRIVEWAY - DESIGN BY OTHERS. SEE NOTE 1.
- 2 GRAVEL DRAINAGE SEAM
- 3 EXPANSION JOINT
- 4 COMPACTED SUBGRADE - DEPTH DETERMINED BY GEOTECH ENG.

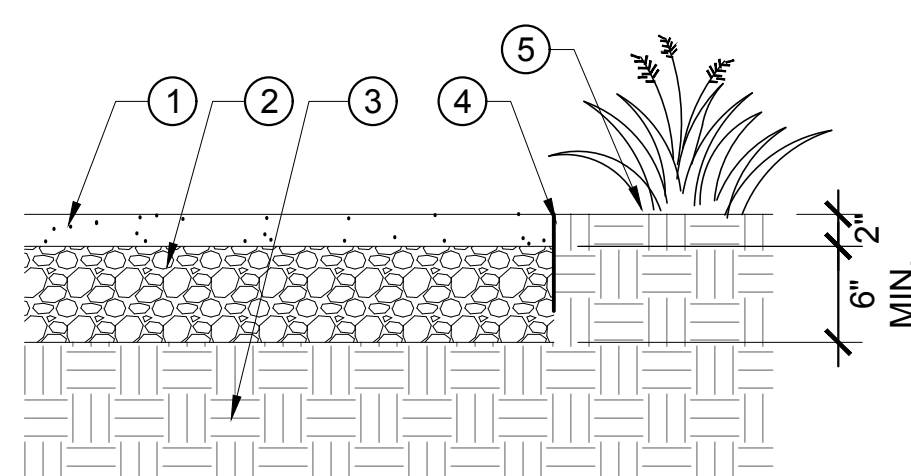
NOTES:
1. DRIVEWAY ENGINEERING BY OTHERS TO INSURE PROPER DESIGN FOR LOAD AND SOILS.
2. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT RECOMMENDED.



9 CONCRETE - VEHICLE - GRAVEL DRAINAGE SEAMS

SCALE: 1"=1'-0"

- 1 STABILIZED 3/8-" AGGREGATE, STABILIZER: ECO-PAVE OR EQUAL. CONTROL RUNNING AND CROSS SLOPES FOR ACCESSIBILITY.
- 2 RECYCLED CLASS II AGGREGATE BASE ROCK, COMPACT TO 95%. CONFIRM AGGREGATE DEPTH W/ GEOTECH. ENG.
- 3 SUBGRADE UNDISTURBED OR COMPACTED TO 95%. CONFIRM SUBGRADE TREATMENT W/ GEOTECH. ENG.
- 4 PAVEMENT EDGE, 1/4" X 6" STEEL OR ALUMINUM, OR CONCRETE CURB
- 5 ADJACENT PLANTING AREA, SLOPE AWAY FROM PAVING

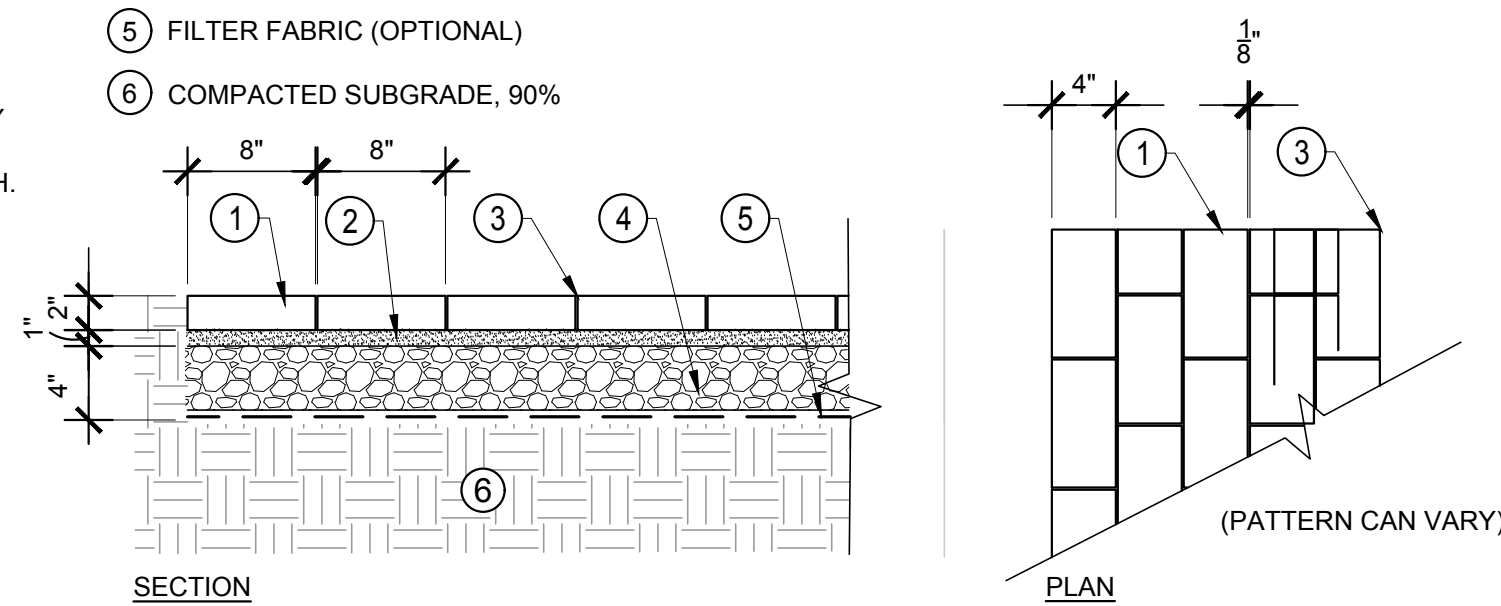


10 STABILIZED AGGREGATE - VEHICLE

SCALE: 1"=1'-0"

- 1 CONCRETE OR BRICK PAVERS (L" x W" x THK" VARIES). PAVERS CAN BE PERVIOUS OR PERMEABLE. SELECT PAVER PATTERN.
- 2 1" SAND SETTING BED PER MANUFACTURER, ASTM #8
- 3 JOINT FILL PER MANUFACTURER, ASTM #8
- 4 CLASS 2 PERMEABLE AGGREGATE BASE ROCK
- 5 FILTER FABRIC (OPTIONAL)
- 6 COMPACTED SUBGRADE, 90%

NOTE:
1. FOR CLAY SOILS, HOLD 10' AWAY FROM FOUNDATION, AND PROVIDE SUBDRAINAGE. REVIEW WITH GEOTECH. & CIVIL ENGINEER.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1

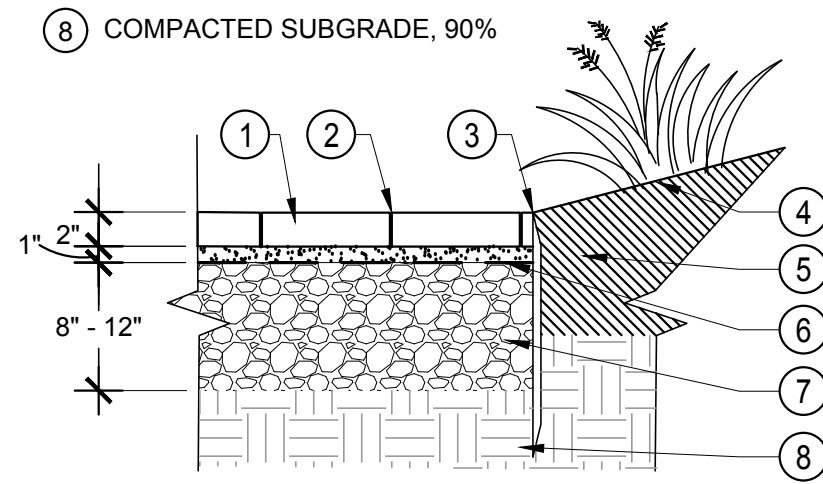


2 PERMEABLE PAVERS - PATH OR PATIO

SCALE: 1"=1'-0"

- 1 PERVIOUS PAVER OR PERVIOUS AGGREGATE
- 2 HANDTIGHT JOINTS, SAND SWEEP
- 3 METAL EDGING
- 4 AMENDED PLANTING BED; FINISH GRADE CAN SLOPE TOWARD PAVING TO INFILTRATE
- 5 1" SAND SETTING BED
- 6 FILTER FABRIC
- 7 CLASS II PERMEABLE AGGREGATE BASE ROCK, OR LARGER CRUSHED DRAIN ROCK
- 8 COMPACTED SUBGRADE, 90%

NOTES:
1. FOR CLAY SOILS, HOLD 10' AWAY FROM FOUNDATION, AND PROVIDE SUBDRAINAGE. REVIEW WITH GEOTECH & CIVIL ENGINEER.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1

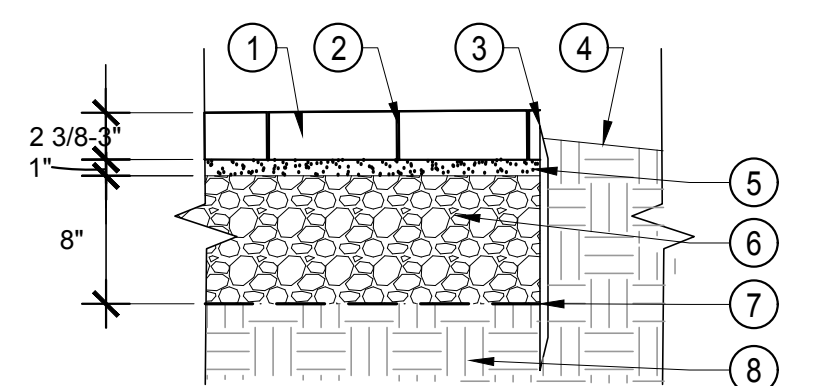


3 PERMEABLE INFILTRATION - PEDESTRIAN

SCALE: 1"=1'-0"

- 1 CONCRETE UNIT PAVER: SELECT PERVIOUS PAVERS OR PERMEABLE PAVERS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- 2 JOINTS PER MANUFACTURER'S INSTRUCTIONS.
- 3 METAL EDGING. OPTIONAL CONCRETE CURB.
- 4 SHOULDER, FINISH GRADE
- 5 SAND SETTING BED PER MANUFACTURER'S INSTRUCTIONS
- 6 PERMEABLE CLASS II AGGREGATE BASE ROCK, COMPACTED TO 95%
- 7 FILTER FABRIC
- 8 COMPACTED SUBGRADE TO 90%

NOTE: CONSULT WITH GEOTECHNICAL & CIVIL ENGINEER FOR AGGREGATE BASE DEPTH, PERFORMANCE IN CLAY SOILS AND NEED FOR SUBDRAINS

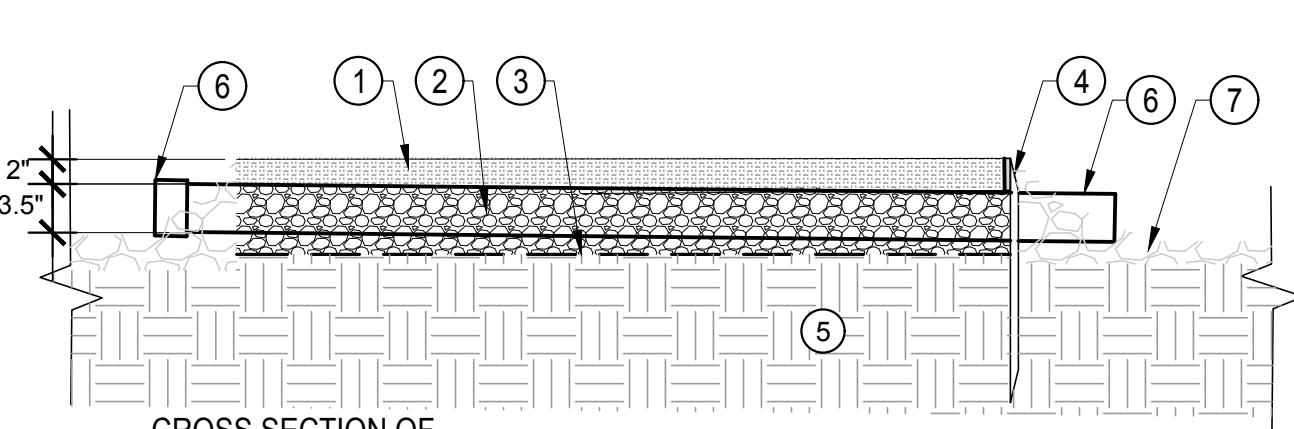


7 PERVIOUS OR PERMEABLE UNIT PAVER - VEHICLE

SCALE: 1"=1'-0"

- 1 PATHWAY PAVING MATERIAL, PROVIDE 2" SURFACING MATERIAL OVER CURB O LET SLEEVE.
- 2 AGGREGATE BASE ROCK MATERIAL PROVIDE MIN. .5" UNDER CURB O LET SLEEVE.
- 3 FILTER FABRIC (OPTIONAL)
- 4 EDGING AND STAKE (OPTIONAL)
- 5 UNDISTURBED SUBGRADE OR COMPACTED TO 90%
- 6 CURB O LET RECTANGULAR DRAINAGE SLEEVE THRU PATHWAY BASE OR EQUAL. SLOPE SLEEVE 1-2%.
- 7 PROTECT INLET AND OUTLET OF DRAINAGE SLEEVE WITH 1.5-6" RIVER COBBLE.

NOTE: MAINTAIN CHIP/BARK MULCH AWAY FROM RAINWATER SYSTEMS BY USING PEA GRAVEL AND COBBLE.

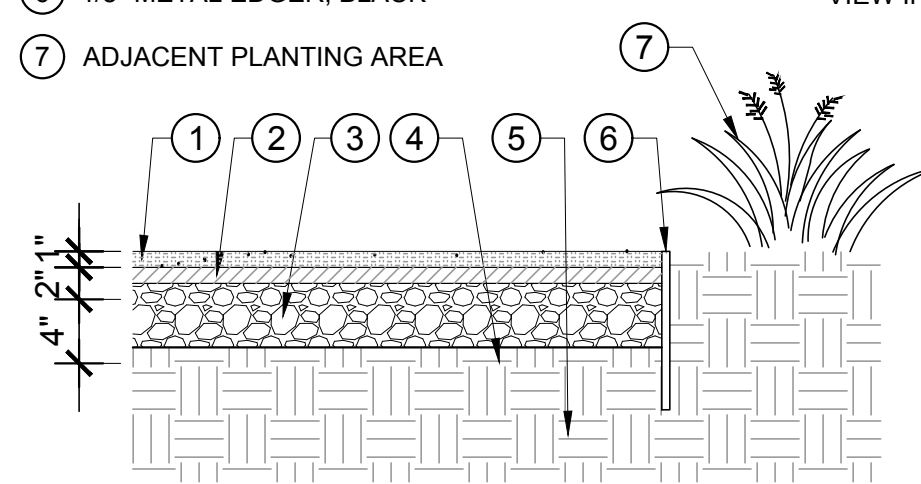


11 RECTANGULAR DRAINAGE SLEEVE IN PATHS

SCALE: NOT TO SCALE

- 1 1" OF 3/8" OR SMALLER PATHWAY AGGREGATE
- 2 1" OF DECOMPOSED GRANITE W/ STABILIZER PRODUCT
- 3 4" RECYCLED CLASS II AGGREGATE BASE ROCK. COMPACT TO 95%
- 4 FILTER FABRIC (OPTIONAL)
- 5 SUBGRADE UNDISTURBED OR COMPACTED TO 90%
- 6 1/8" METAL EDGER, BLACK
- 7 ADJACENT PLANTING AREA

NOTES:
1. THIS PAVING IS SEMI-PERVIOUS AND SHOULD HAVE POSITIVE DRAINAGE ON SURFACE OF BASE ROCK AWAY FROM BUILDING FOUNDATIONS.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1

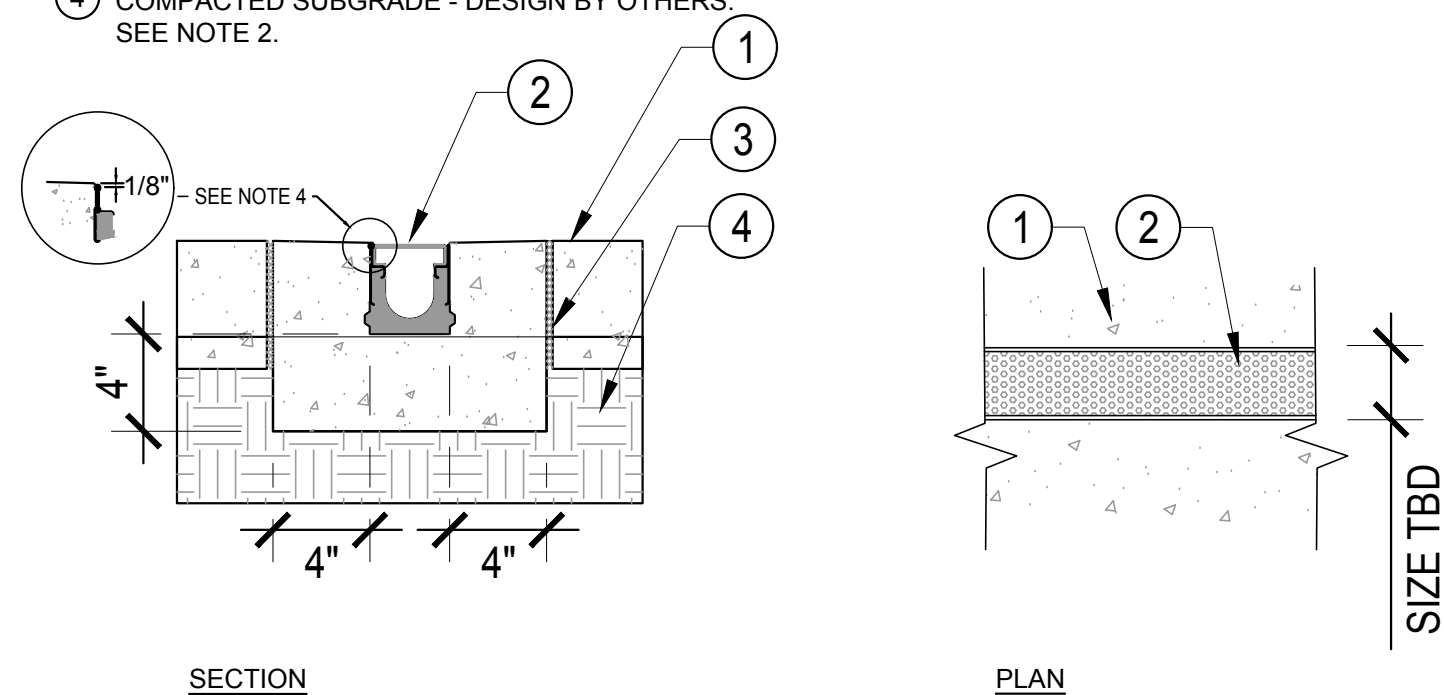


4 AGGREGATE PAVING - PEDESTRIAN

SCALE: 1"=1'-0"

- 1 CONCRETE DRIVEWAY - DESIGN BY OTHERS. SEE NOTE 2 AND GENERAL NOTES THIS PAGE.
- 2 TRENCH DRAIN, SIZE TBD BY OTHERS. SEE NOTE 1.
- 3 EXPANSION JOINT REQUIRED. SEE NOTE 2.
- 4 COMPACTED SUBGRADE - DESIGN BY OTHERS. SEE NOTE 2.

NOTES:
1. TRENCH DRAIN: K50 BY ACO POLYMER PRODUCTS, INC. OR EQUAL. REFER TO MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS FOR DETAILS.
2. DRIVEWAY ENGINEERING BY OTHERS. INSURE PROPER DESIGN FOR LOAD AND SOILS, PLACEMENT OF EXPANSION JOINTS AND REINFORCEMENT.



8 CONCRETE - VEHICLE - TRENCH DRAIN

SCALE: 1"=1'-0"

GENERAL NOTES :

1. 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.
2. THESE DETAILS SHOULD BE EVALUATED BY THE SITE ENGINEER AND ADJUSTED TO SITE CONDITIONS.
3. PAVING DEPTH, DEPTH OF BASE GRAVEL, SUB-BASE PREPARATION AND CONCRETE REINFORCEMENT SHOULD ALL BE EVALUATED AND ADJUSTED AS NEEDED BY A GEOTECHNICAL ENGINEER.
4. 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.
5. 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

BY USING THESE PLANS, I AGREE TO RELEASE, 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 BAY WATER DISTRICT, CITY OF SONOMA, CITY OF PETALUMA, CITY OF TIBURON, CITY OF SONOMA, VALLEY OF THE MOON WATER DISTRICT AND TOWN OF WINDSOR) 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 RESULTING FROM THE USE OF THIS LANDSCAPE PLAN, UNDERSTANDING THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THAT PLAN ELEMENTS ARE IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE STATUTES, RULES, REGULATIONS, ORDINANCES AND/OR CODES.

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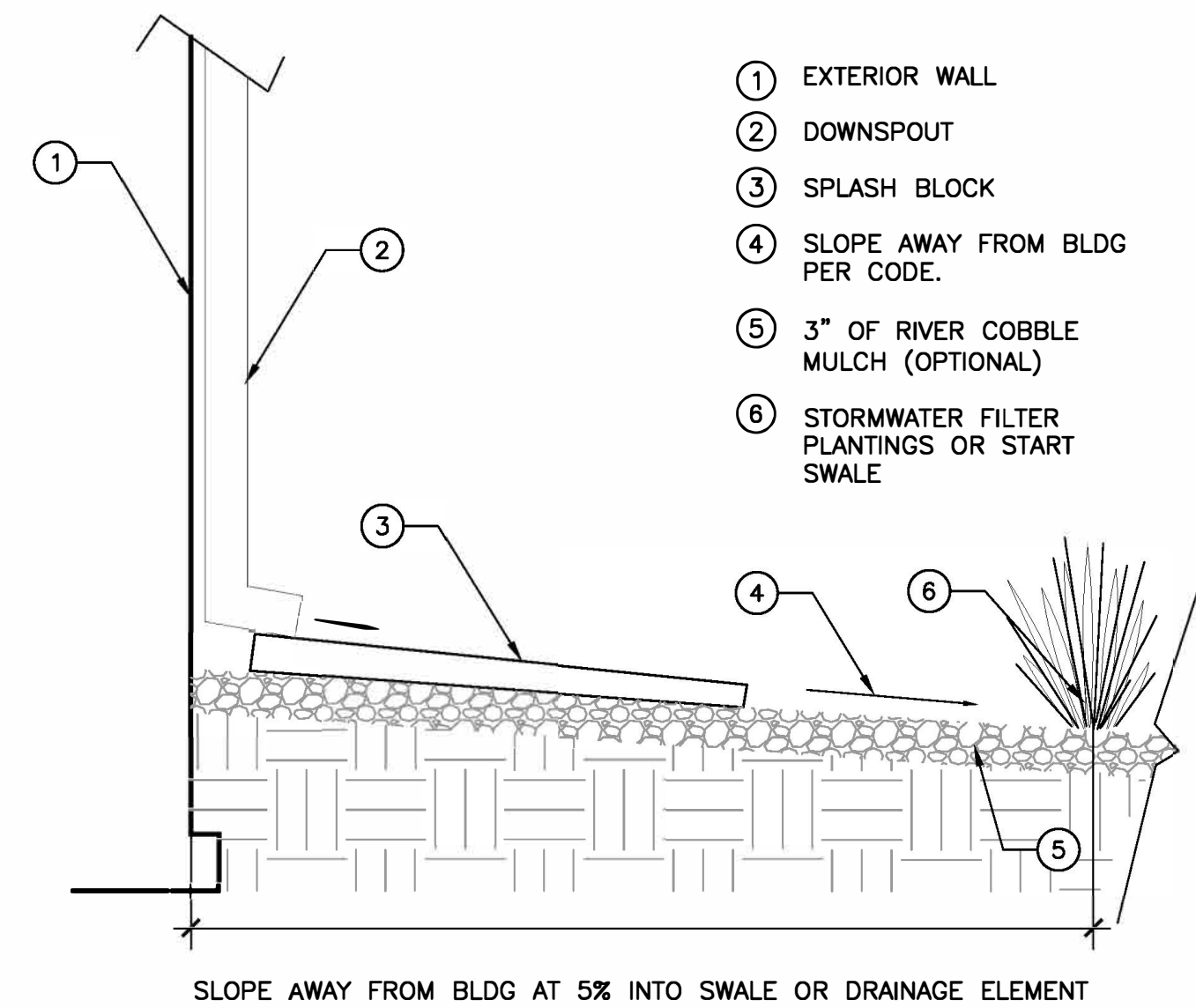
SONOMA-MARIN SAVING WATER PARTNERSHIP

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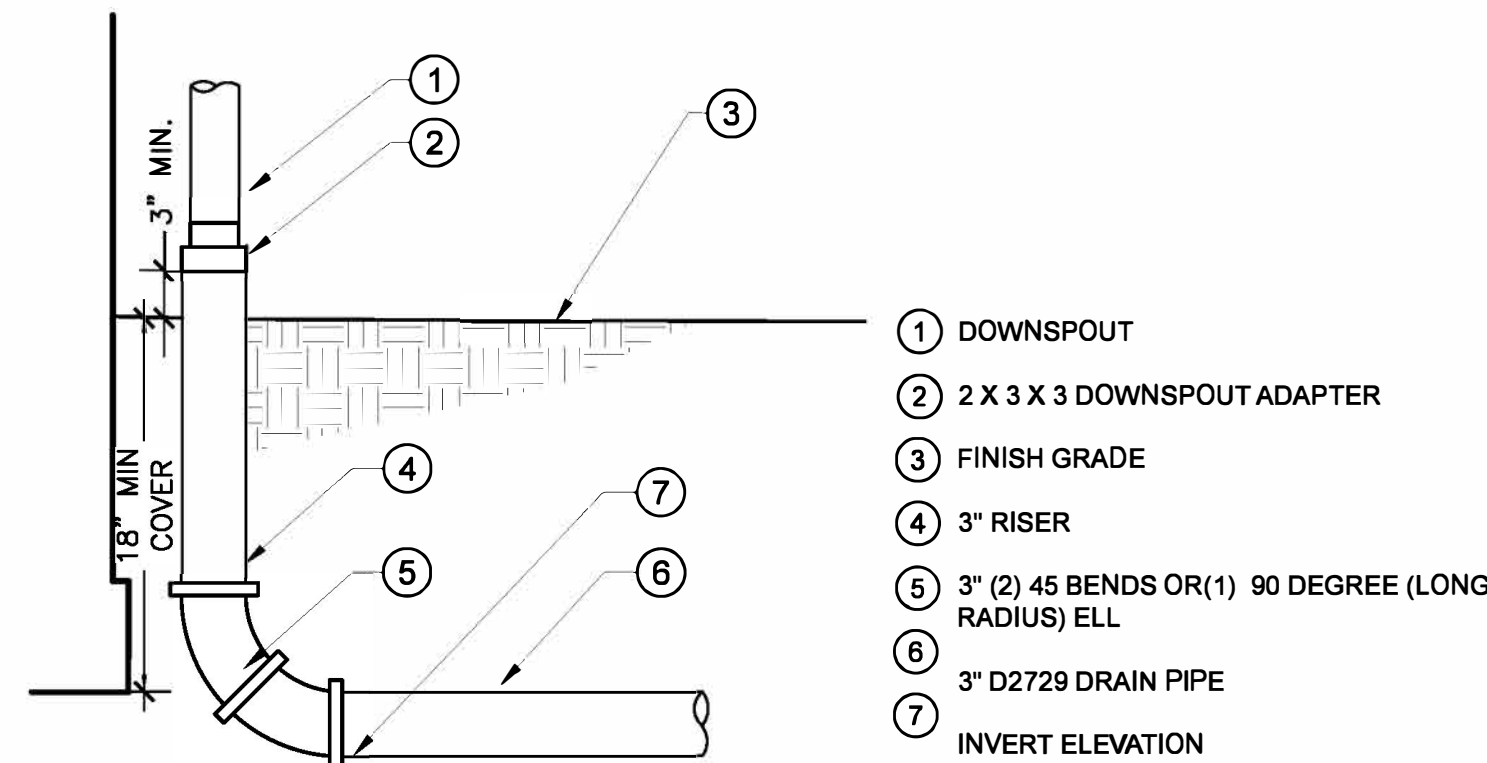
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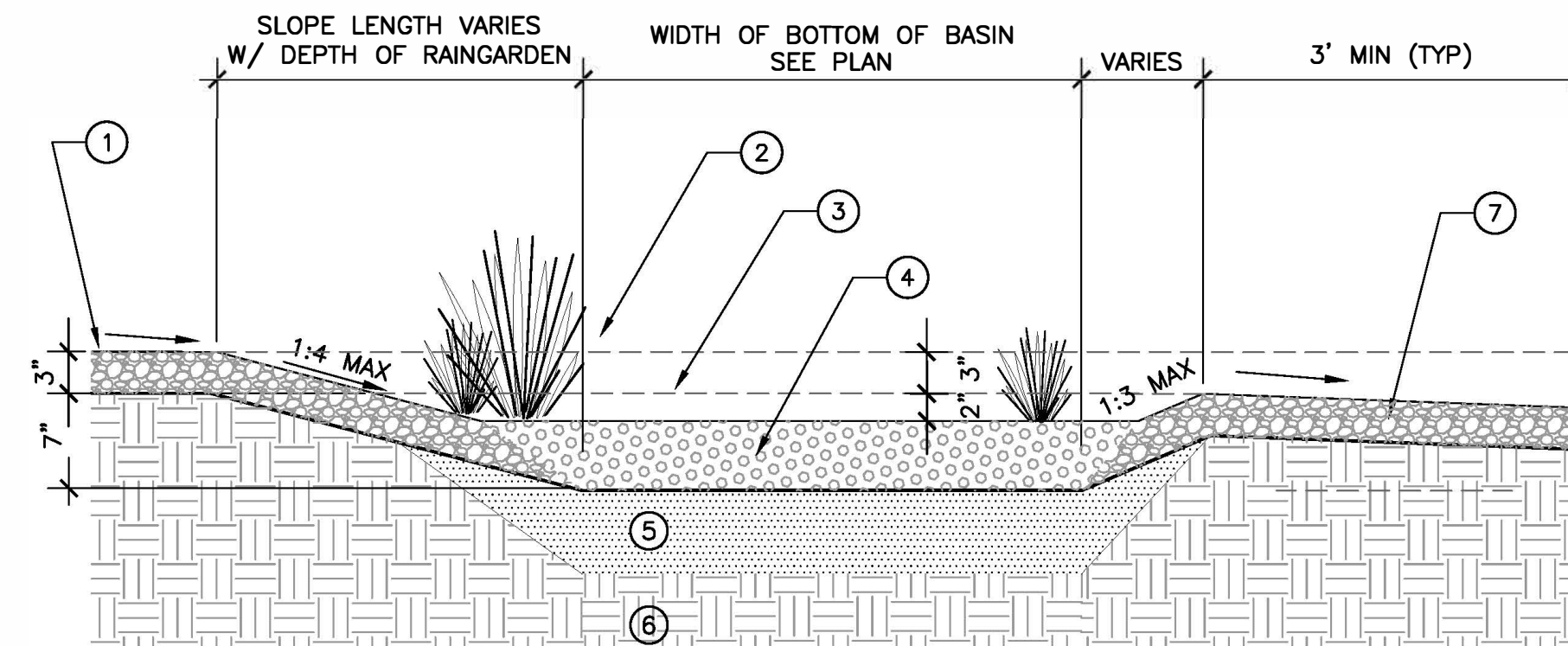
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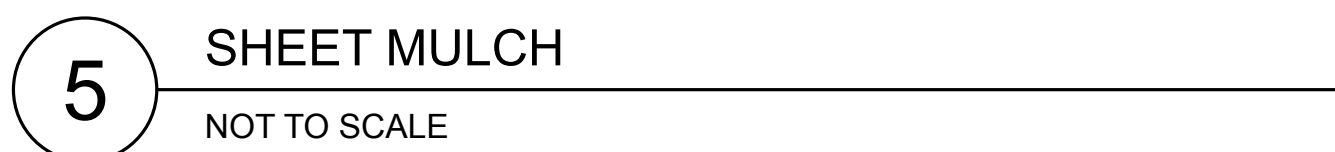
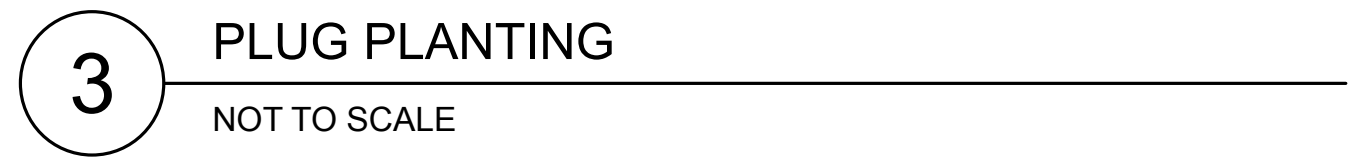
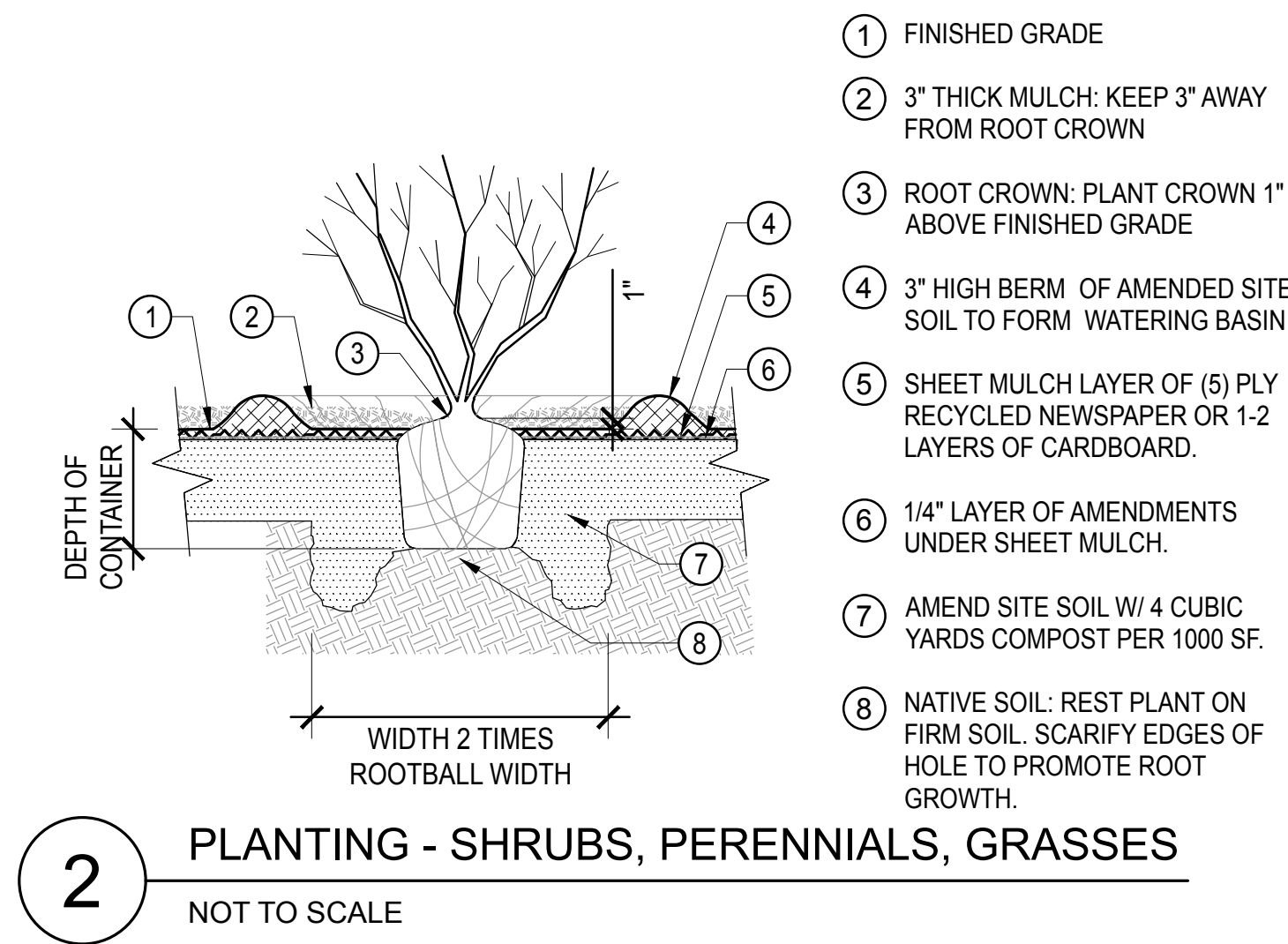
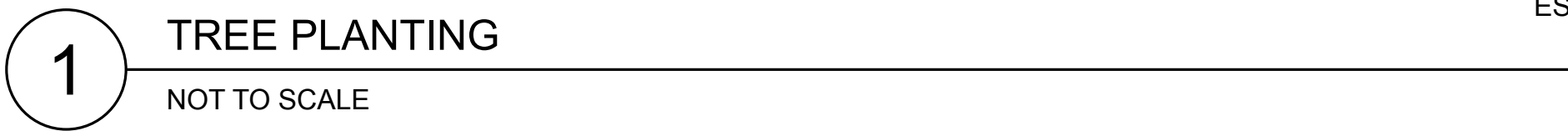


1 DOWNSPOUT SPLASHBLOCK TO OVERLAND FLOW
SCALE: 1/2"=1'-0"



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





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/ft²/day = _____ ft²
 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 ft²)

- Area = π r² = 3.14 x (canopy radius of existing plant)² 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..

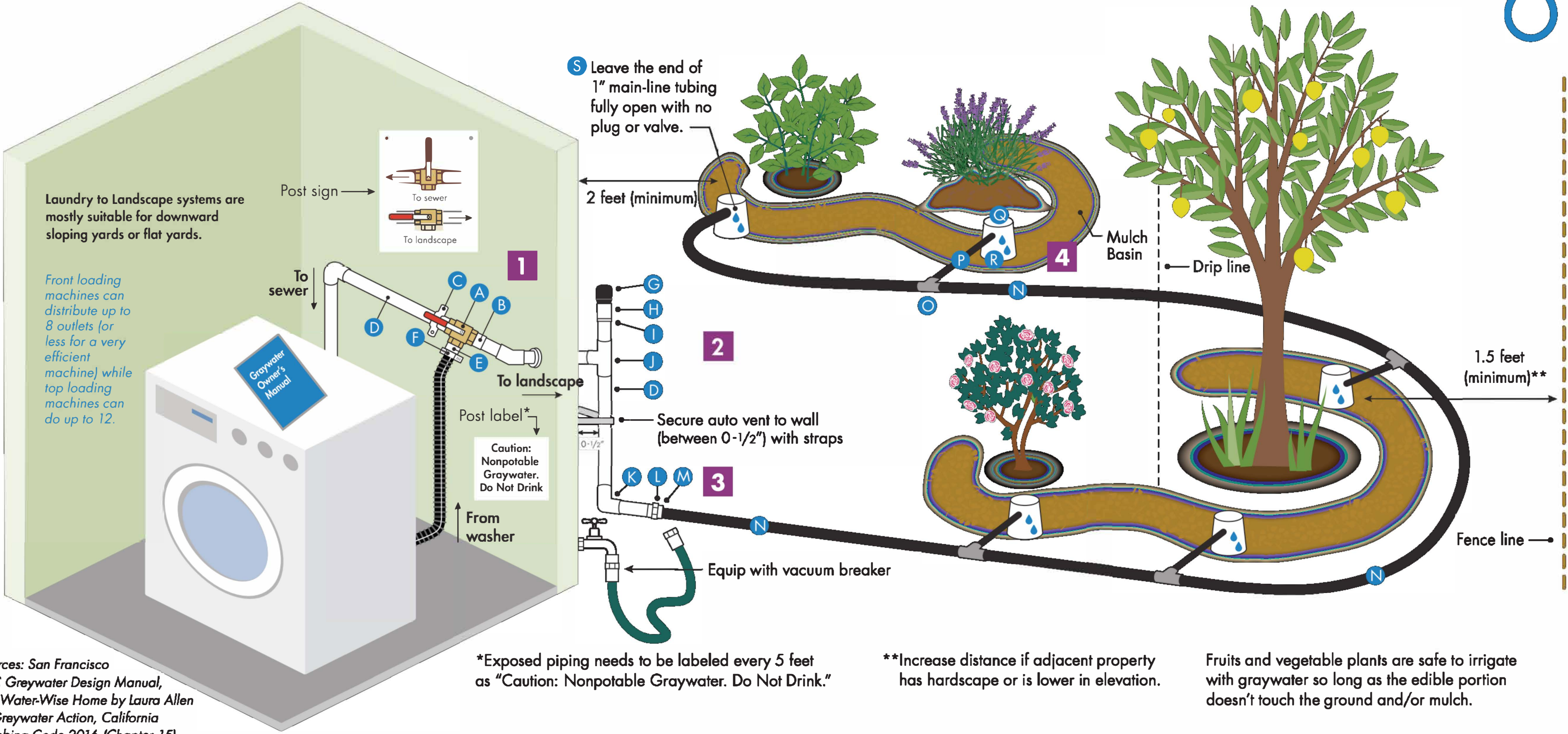
THE KEY TO PROPER IRRIGATION WITH GRAYWATER IS TO KNOW HOW MUCH THE CHOSEN PLANTS NEED GIVEN EVAPOTRANSPIRATION RATES, PLANT WATERING NEEDS, AND EXISTING CANOPY.

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.

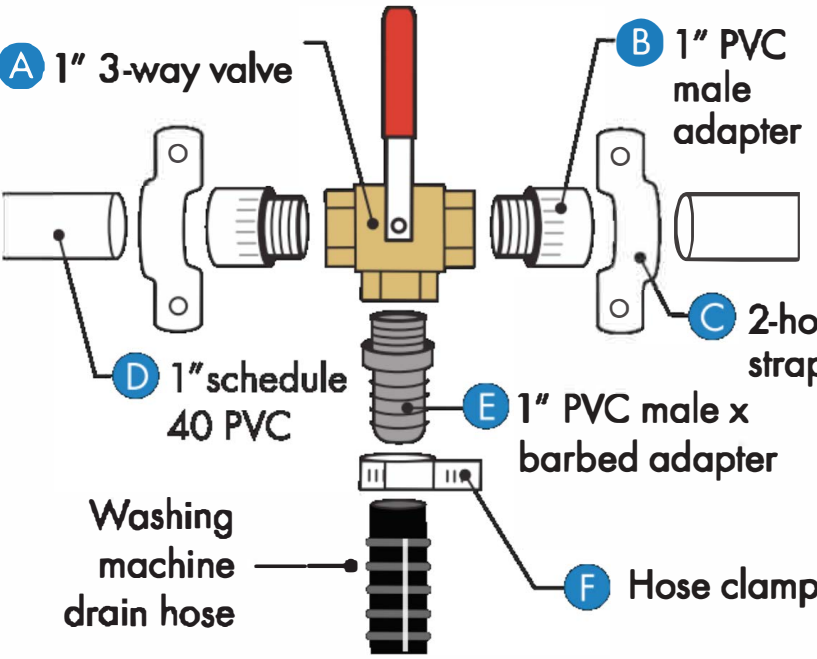
- OASIS LAUNDRY
- BIO PAC LAUNDRY LIQUID
- BIOKLEEN LAUNDRY LIQUID
- ECOVER LAUNDRY WASH (SOME SALT)
- LIQUID ECOS LIQUID DETERGENT
- LIFE TREE LAUNDRY LIQUID
- MOUNTAIN GREEN LAUNDRY DETERGENT
- VASKA HERBATERGENT

Laundry to Landscape: Graywater System Example

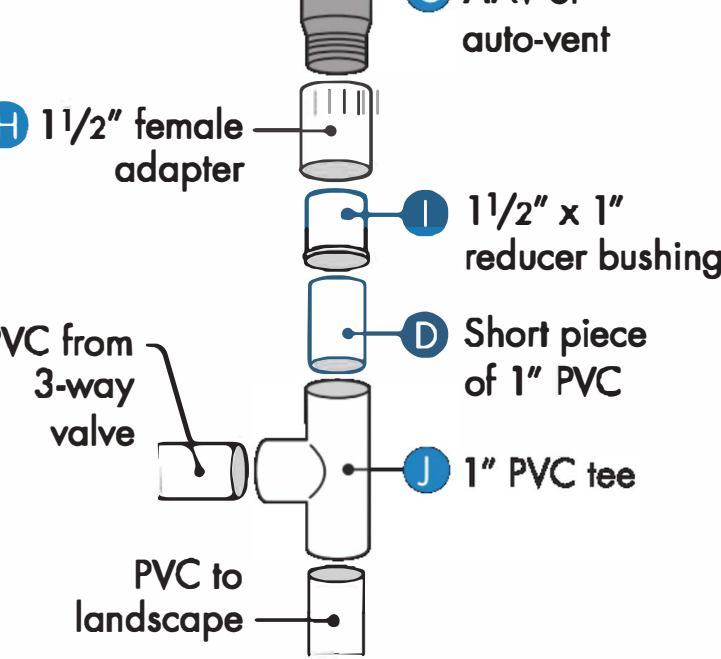


Sources: San Francisco PUC Greywater Design Manual, The Water-Wise Home by Laura Allen of Greywater Action, California Plumbing Code 2016 (Chapter 15)

1 Diverter (3-way) Valve

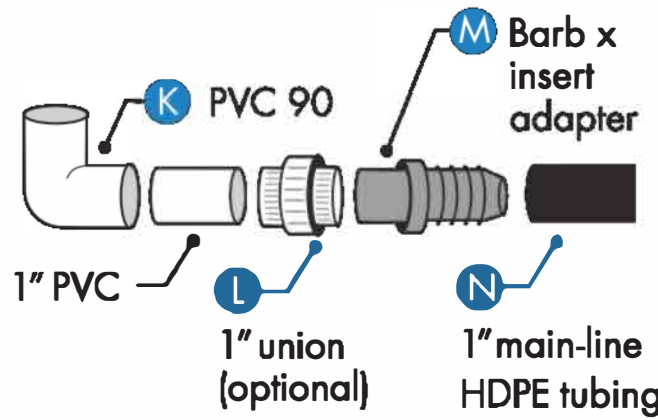


2 Auto Vent

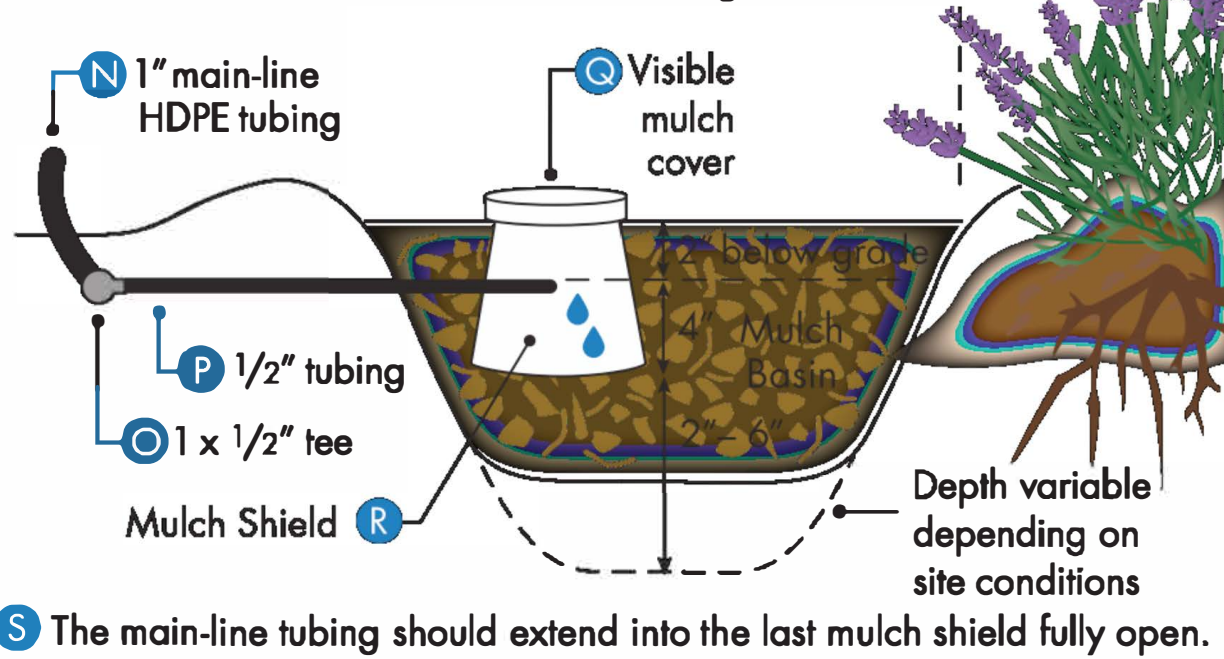


3 System Clean-out

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



4 Mulch Basin



This diagram is not drawn to scale and is provided for reference purposes only. It is your responsibility to properly design, install, maintain, and use your laundry to landscape graywater system (graywater system). If you are unsure of the intricacies of your plumbing system or how to properly design or install a graywater system, please consult with a professional. The District does not accept any liability and responsibility for any direct, special, indirect or consequential loss or damage whatsoever arising out of or in connection with providing you with access to this diagram.

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SHEET TITLE:
 GREYWATER - LAUNDRY TO LANDSCAPE

DATE
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 MAY 18, 2018

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APPLICANT INFORMATION:

BRANCHED DRAIN SYSTEM OVERVIEW:

A BRANCHED-DRAIN SYSTEM DISTRIBUTES GRAYWATER FROM SHOWERS AND/OR BATHROOM SINKS THROUGH A SERIES OF BRANCHING 1.5-INCH OR 2-INCH PIPES AND IS DISPERSED INTO THE LANDSCAPE VIA MULCH BASIN OUTLETS. PLUMBING FOR GRAYWATER SOURCES MUST BE SEPARATED FROM BLACK WATER SOURCES (TOILET, KITCHEN SINK). IF POSSIBLE DUE TO CLOSE PROXIMITY, A LAUNDRY MACHINE CAN ALSO BE ADDED INTO THE DISTRIBUTION PIPING. THIS SYSTEM IS DRIVEN BY GRAVITY FLOW AS NO PRESSURE IS PROVIDED BY A WASHING MACHINE PUMP OR ANY OTHER PUMP. AS THIS SYSTEM REQUIRES CUTTING INTO EXISTING SEWER PIPES FROM SHOWER DRAINS OR SINKS, IT DOES REQUIRE A SIMPLE OVER THE COUNTER PLUMBING PERMIT. IF INSTALLING AS PART OF NEW BUILDING CONSTRUCTION OR REMODEL, SHOW SEPERATED PLUMBING IN PLAN SETS AND STUB OUT PIPING FOR EXTERIOR GRAYWATER SYSTEM COMPONENTS DURING BUILDING CONSTRUCTION.

BRANCHED DRAIN GRAYWATER REQUIREMENTS TO COMPLY WITH CALIFORNIA PLUMBING CODE (CPC) STANDARDS:

- NOTIFY ENFORCING AGENCY AND SECURE PERMIT FOR INTERIOR PLUMBING COMPONENTS
- BE ABLE TO REDIRECT TO SEWER
- NO POTABLE WATER CONNECTION
- CONTAIN GRAYWATER ONSITE
- DIRECT AND CONTAIN GRAYWATER WITHIN MULCH BASINS (IRRIGATION OR DISPOSAL FIELD) BELOW THE GROUND SURFACE
- NO PONDING OR RUNOFF
- OUTLETS COVERED BY AT LEAST 2-INCHES OF MULCH, ROCK, OR A SHIELD (E.G. VALVE BOX LID)
- MINIMIZE CONTACT WITH HUMANS AND ANIMALS
- DIVERT WATER TO THE SEWER IF IT CONTAINS DIAPERS, OIL, OTHER CHEMICALS
- GRAYWATER DIVERTED TO LANDSCAPE SHALL NOT CONTAIN HAZARDOUS CHEMICALS
- FOLLOW ALL APPLICABLE CODE OR LAWS
- POST OPERATION AND MAINTENANCE MANUAL
- THE SYSTEM SHALL HAVE A DISCHARGE CAPACITY OF 250 GALLONS PER DAY OR LESS

INSTALLATION & DESIGN CONSIDERATIONS:

WITH A HIGHER POTENTIAL VOLUME OF WATER COMING FROM A SHOWER AND SINK, A BRANCHED DRAIN SYSTEM IS BEST SUITED FOR IRRIGATING TREES, BUSHES, SHRUBS, AND OTHER LARGER PERENNIAL PLANTS. THIS IS A SIMPLE SYSTEM AND DOES NOT REQUIRE ELECTRICITY OR A PUMP. HOWEVER, THE LANDSCAPE AREA MUST BE LOWER IN ELEVATION THAN THE GRAYWATER SOURCE,

AND THE ENTIRE SYSTEM MUST HAVE A DOWNWARD SLOPE OF 2 % (¼ INCH PER FOOT) TO ENSURE EVEN DISTRIBUTION. INSTALLATION DIFFICULTY DEPENDS ON THE EXISTING HOUSEHOLD PLUMBING, ACCESS TO PIPES AND THE SLOPE OF LANDSCAPE. WHILE OUTDOOR COMPONENTS CAN BE INSTALLED BY A HOMEOWNER, A PROFESSIONAL PLUMBER IS NEEDED FOR INSTALLATION OF 3-WAY DIVERTER VALVE ON THE SEWER LINE. THE HOMEOWNER HAS THE OPTION TO INSTALL AN ACTUATOR, WHICH ALLOWS EASY DIVERSION OF GRAYWATER BETWEEN LANDSCAPE AND THE SEWER LINE.

SYSTEM COSTS & REBATES: THE COSTS CAN RANGE FROM A THOUSAND DOLLARS WHEN PRIMARILY INSTALLED BY A HOMEOWNER TO SEVERAL THOUSAND IF INSTALLED BY A PROFESSIONAL. WHILE MORE COSTLY TO CONSTRUCT THAN A LAUNDRY TO LANDSCAPE SYSTEM, A BRANCHED DRAIN SYSTEM REQUIRES LITTLE MAINTENANCE AND LASTS A LONG TIME, SINCE IT HAS NO MOVING PARTS TO BREAK.

RECOMMENDED SOAPS:

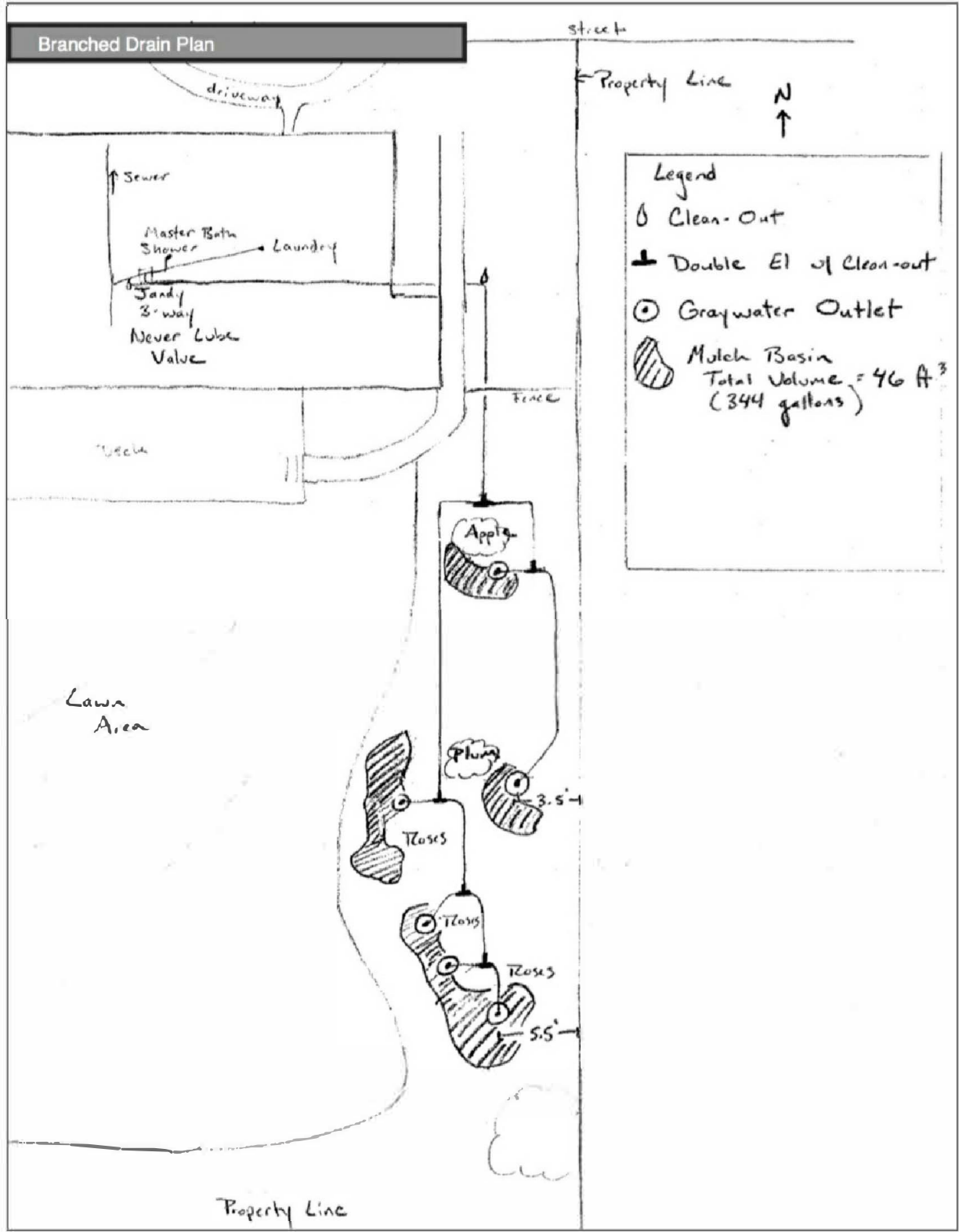
MORE SOAPS ARE COMING OUT ALL THE TIME, BUT IT IS ALWAYS IMPORTANT TO READ THE INGREDIENTS LIST. BELOW ARE SEVERAL THAT ARE KNOWN TO BE GRAYWATER COMPLIANT.

- OASIS - ALL-PURPOSE CLEANER FOR HAND-WASHING, BODY & SHAMPOO
- DR. BRONNER'S MAGIC SOAPS (LIQUID)
- AUBREY ORGANICS SHAMPOOS
-

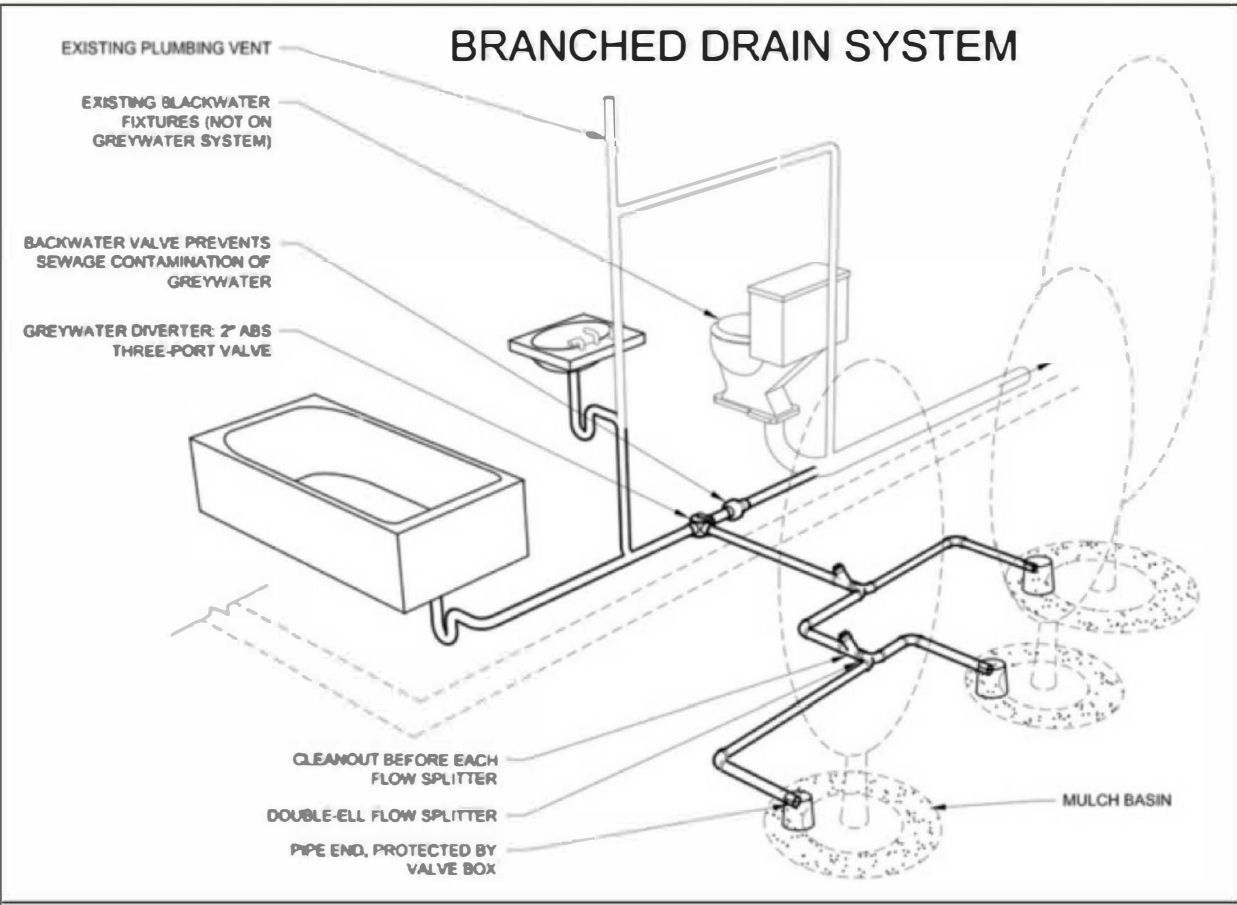
APPLICANT INSTRUCTIONS:

1. ESTIMATE YOUR GRAYWATER SUPPLY USING THE CALCULATION SECTION THIS SHEET.
2. ESTIMATE MULCH BASIN SIZES, AREA AND VOLUME USING TABLE 3.
3. DEVELOP A GRAYWATER SITE PLAN SHOWING THE SYSTEM LAYOUT FOR THE PERMIT APPLICATION. SHOW ALL THE PLAN ELEMENTS LISTED IN #4 -GRAYWATER PLAN BELOW. REVIEW THE SAMPLE PLAN SHOWN IN DETAIL #1 THIS SHEET. SHOW TREE AND PLANT LOCATIONS TO BENEFIT FROM GREYWATER.
4. SUBMIT FOR BUILDING PERMIT EITHER WITH FULL SITE DRAWINGS OR AS A SEPARATE SUBMITTAL.
5. REVIEW PIPE AND VALVE LOCATIONS WITH ARCHITECT, ENGINEER AND CONTRACTOR TO INSURE THERE ARE NO CONFLICTS WITH OTHER SITE ELEMENTS. CONFIRM COMPONENTS TO BE INSTALLED AT TIME OF FOUNDATION SYSTEM CONSTRUCTION, INCLUDING PIPE STUB OUT FOR EXTERIOR GRAYWATER SYSTEM DEVELOPMENT.

Example Greywater Irrigation Plan



1 BRANCHED DRAIN SAMPLE SITE PLAN NTS



2 BRANCHED DRAIN SYSTEM DIAGRAM AND INSTALL PHOTO NTS

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 _____ gals/day

Shower/Sink: _____ occupants x 25 gallons/day ÷ 7(days/week) _____ gals/day

TOTAL _____ gals/day

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

Laundry: Avg. water use +30 days _____ (gals/day) X .22 _____ (gals/day)

Shower: Avg. water use +30 days _____ (gals/day) X .17 _____ (gals/day)

Sink: Avg. water use +30 days _____ (gals/day) X .22 _____ (gals/day)

TOTAL _____ (gals/day)

2. Determine Minimum Mulch Basin Size

Minimum Mulch Basin Area:

_____ (gal/day) ÷ _____ gal/ft²/day = _____ ft²

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	20	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. Determine Mulch Basin Required Volume (Complete section below)

Gravity to Mulch Basins (Branched Drain)

Total mulch basin surge capacity: _____ gal/day ÷ 7.48 gal/ft³ ÷ 0.80 = _____ ft³

From Section 1

4. Graywater Plan

Using graph paper, or a copy of your site plan, draw a map and legend of graywater system components that shows the pathway of piping from the fixture(s) inside the building to the landscape/irrigation field. If graywater is directed to the front yard, show the street frontage and your driveway. In your drawing, include the location of all:

- Graywater valves
- Graywater pipes and fittings (indicate material and size)
- Clean-outs
- Graywater outlets and mulch basins
- Setback of graywater outlets to property lines and buildings*
- Setback of graywater outlets to onsite wastewater treatment system tanks and leachfields* (if applicable).
- Setback of greywater outlets to wells and drainages* (if applicable).

*See table below for required setbacks. See the California Plumbing Code for additional notes about setbacks.

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

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 SAN ANGELES, JAVIN HANSEN, WATER DISTRICT, NORTH BAY AREA WATER DISTRICT, CITY OF RICHMOND PARK, CITY OF PETAUMA, CITY OF COVIL, CITY OF SONOMA, WALES OF THE BAY AREA WATER DISTRICT, CITY OF SONOMA AND THEIR DIRECTORS, OFFICERS, AGENTS, EMPLOYEES AND LANDSCAPE DESIGN CONSULTANTS) AGAINST ANY AND ALL LOSS, LIABILITY, EXPENSE, CLAIM, SUIT AND DAMAGES, INCLUDING ATTORNEY'S FEES, ARISING OUT OF OR FROM THE USE OF THESE PLANS. I UNDERSTAND THAT IT IS MY RESPONSIBILITY AS THE PROJECT OWNER TO ENSURE THE PLANS ARE SAFELY AND IMPLEMENTED SAFELY AND ACCORDING TO APPLICABLE STATUTES, RULES, REGULATIONS, ORDINANCES AND/OR CODES.

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SONOMA-MARIN SAVING WATER PARTNERSHIP
www.savingwaterpartnership.org

NAME: _____

SITE ADDRESS: _____



SHEET TITLE:

GREYWATER -
BRANCHED
DRAIN SYSTEM

DATE

PERMIT PLAN
MAY 18, 2018

GW-1.1

SHEET
OF



- 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.