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 MWELO: THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE

MWELO 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) MWELO 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 MWELO.

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	GW-1.0
· L-1.0 LANDSCAPE DESIGN PLAN	GW-1.1
· L-2.0 IRRIGATION DESIGN PLAN	RW-1.0
· L-2.1 IRRIGATION DETAIL SHEET	
· L-3.0 PAVING DETAILS	
· L-3.1 L.I.D. DETAILS	
· L-3.2 PLANTING DETAILS	

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

ABLA
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625 2ND ST., STE 110
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RESIDENTIAL LANDSCAPE DESIGN TEMPLATE
SONOMA-MARIN SAVING WATER PARTNERSHIP
www.savingwaterpartnership.org

NAME:

SITE ADDRESS:

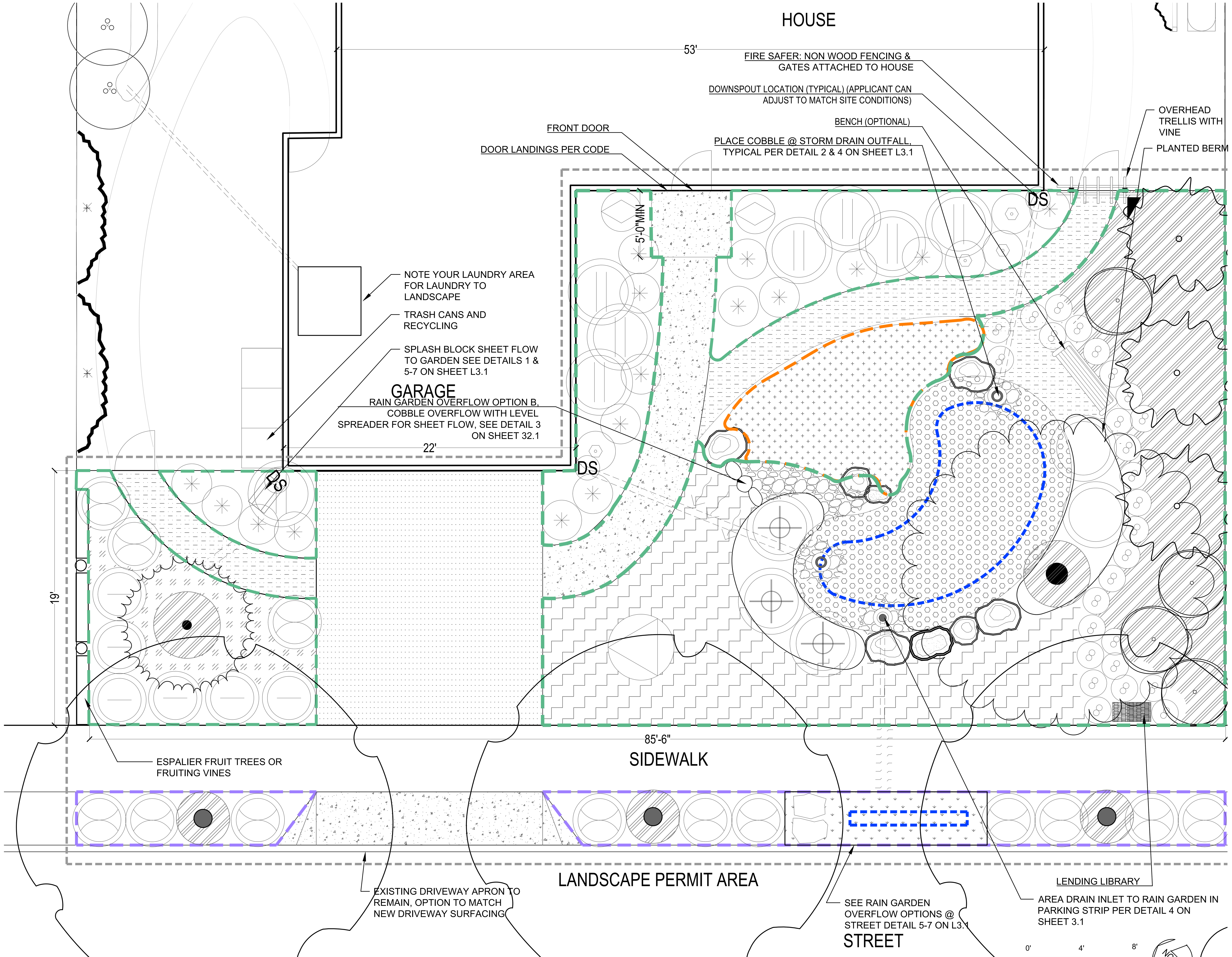
SONOMA - MARIN SAVING WATER PARTNERSHIP

SHEET TITLE:
RESIDENTIAL LANDSCAPE PERMIT COVER SHEET

DATE
PERMIT PLAN
SEPTEMBER 26, 2018

L-0.0

SHEET
OF



APPLICANT INSTRUCTIONS:

1. MEASURE ENTIRE FRONT YARD AREA. SUBTRACT HARDSCAPE AREAS TO GET THE TOTAL SQUARE FEET OF PLANTED AND IRRIGATED AREA. ENTER THIS NUMBER IN THE PLANT WATER USE TABLE ON THIS SHEET.
2. IF NEEDED USE A RED PEN TO ADJUST THE LAYOUT OF DRIVEWAY, PATHS AND PLANTING AREAS TO FIT YOUR YARD.
3. ADJUST ORIENTATION OF NORTH ARROW TO SITE CONDITION.
4. ADD ANY EXISTING TREES IN RED ON THE PLAN. ADJUST TREE LOCATIONS IF NEEDED TO FIT YOUR SITE.
5. FILL IN PLANT WATER USE TABLE.
6. INSURE LESS THAN 25% OF PLANTED AREA IS MEDIUM WATER USE PLANTINGS.
7. IN THE LEGEND, CIRCLE THE HARDSCAPE MATERIALS YOU WILL BE USING AND ON DETAIL SHEETS L3.0, L3.1 & L3.2.
8. INDICATE ANY SUBSTITUTIONS TO THE PLANTINGS BY CROSSING OUT THE LISTED PLANTS AND WRITING THE SUBSTITUTION BELOW IN RED INK. MAKE SURE THE PLANTS USED HAVE MATCHING WATER USE AND ARE ROUGHLY THE SAME SIZE (SEE SONOMA-MARIN SAVING WATER PARTNERSHIP http://www.savingwaterpartnership.org FOR SUBSTITUTIONS).
9. MOVE TO THE IRRIGATION PLAN AND FILL IN THE AREAS INDICATED ON THAT SHEET.

NOTE:

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 WONT 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.

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%)		

OPTIONAL MATERIALS LEGEND

	UNITS	PLAN QUANTITY	PERMIT QUANTITY (FILL IN)
VEHICULAR PAVING			
- STABILIZED AGGREGATE SEE DETAIL 10 ON SHEET L3.0	SF	325	
PEDESTRIAN PAVING			
- AGGREGATE PAVING, CHOOSE FROM DETAILS 1-5 ON SHEET L3.0	SF	160	
- CONCRETE	SF	146	
- MULCH SEE DETAIL 5 ON SHEET L3.2	SF		
STORM WATER ELEMENTS (OPTIONAL)			
- COBBLE SEE DETAIL 4 ON SHEET L3.1	SF	16	
- STORM DRAINAGE ACROSS/UNDER PATH, CHOOSE FROM DETAIL 5-7 ON SHEET L3.1	EA	1	
- STORM DRAIN PIPE SEE DETAIL 2 ON SHEET L3.1	LF	36	

*SEE SHEETS L3.0-3.2 FOR MATERIALS OPTIONS

PLANTING LEGEND

AREA / BOTANICAL NAME	SIZE	SPACING	PLAN QUANTITY	PERMIT QUANTITY (FILL IN)
PLANTING LOW WATER USE				
MEDIUM TREE: PRUNUS SALICINA 'SANTA ROSA' (SANTA ROSA PLUM)	15G	20-40' O.C.	1	
LARGE TREE: TILIA TOMENTOSA (SILVER LINDEN), ULMUS PARVIFOLIA (CHINESE ELM), QUERCUS X MOREHUS (ORACLE OAK)	15G	30-50' O.C.	3	
LARGE SHRUB/SMALL TREE: CEANOTHUS 'RAY HARTMAN' STD	5G	10-12' O.C.	1	
LARGE EDIBLE SHRUB: PRUNUS ARMENIACA (DWARF APRICOT), PRUNUS DOMESTICA (DWARF PLUM), PRUNUS PERSICA (DWARF PEACH), SAMBUCUS EBULUS (DWARF ELDERBERRY)	5G	10-15' O.C.	3	
GROUNDCOVER				
- MONARDELLA VILLOSA (COYOTE MINT)	4"	2' O.C.	27	
SHRUBS 1-3' SUN				
- FRANGULA CALIFORNICA 'SEAVIEW IMPROVED' (COFFEEBERRY)	1G	3' O.C.	4	
GROUNDCOVER				
- SATUREJA DOUGLASII (YERBA BUENA)	4"	18" O.C.	40	
ORNAMENTAL GRASSES				
- KOELERIA MACRANTHA (NATIVE JUNE GRASS) *SEED WITH NATIVE WILDFLOWERS, SEE MASTER PLANT LIST FOR OPTIONS http://www.savingwaterpartnership.org.	2" PLUGS	18"-24" O.C.	200-250	
PERENNIALS 2-4' SUN				
- CYNARA CARDUNCULUS	1G	4' O.C.	3	
- MUHLENBERGIA DUBIA (PINE MULY GRASS) *SEED WITH NATIVE WILDFLOWERS BETWEEN GRASSES, SEE MASTER PLANT LIST FOR OPTIONS http://www.savingwaterpartnership.org.	1G	3' O.C.	16	
SHRUBS 0-1' SUN				
- CEANOTHUS 'CENTENNIAL' (CENTENNIAL CEANOTHUS)	1G	5' O.C.	3	
ARCTOSTAPHYLOS EDMUNDSII 'ROSIE DAWN' (MANZANITA)	1G	4' O.C.	6	
SHRUBS 1-3' SUN				
ARCTOSTAPHYLOS 'SUNSET' (MANZANITA)	1G	5' O.C.	1	
- CISTUS 'LITTLE MISS SUNSHINE'	1G	3' O.C.	4	
LAVENDULA INTERMEDIA (FRENCH LAVENDER)	1G	5' O.C.	8	
SOLLYA HETEROPHYLLA (AUSTRALIAN BLUEBELL CREEPER)	1G	3' O.C.	13	
SHRUBS 3-6' SUN				
- TRICHOSTEMA 'MIDNIGHT MAGIC' (HYBRID BLUE CURLS)	1G	3' O.C.	2	
VINE PLANTING				
KIWI VINE	5G		1	
RAIN GARDEN (OPTIONAL)				
BOTTOM PERIMETER OF RAIN GARDEN				
- RAIN GARDEN: 3/8" GRAVEL MULCH OR PEA GRAVEL, SEE L3.1 FOR DETAILS				
*CAREX TUMULICOLA (50%) (PLANTED CLOSE TO TREES)	2" PLUGS	3'O.C.	71	
*JUNCUS PATENS (25%)	2" PLUGS	3' O.C.	36	
*SYSINCHIUM BELLUM (25%)	2" PLUGS	2' O.C.	53	
PLANTING MEDIUM WATER USE				
EDIBLE AND/OR CUTTING GARDEN				
- FRAGARIA X ANANASSA (STRAWBERRY 'TRISTAR')	4"		24	
- LEUCANTHEMUM X SUPERBUM (SHASTA DAISY)	4"		4	
- ALSTROEMERIA SPP. (PERUVIAN LILY)	4"		6	
- COSMOS BIPINNATUS (COSMOS)	4"		4	
- ECHINACEA PURPUREA (PURPLE CONEFLOWER)	4"		8	
- PAPAVER ORIENTALE (ORIENTAL POPPY)	SEED			
- COREOPSIS SPP. (TICKSEED)	4"		8	
- HELIANTHUS/RUDBECKIA (SUNFLOWER/BLACK EYED SUSAN)	4"		8	

*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.

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NAME:

SITE ADDRESS:

SONOMA-MARIN SAVING WATER PARTNERSHIP

SHEET TITLE:

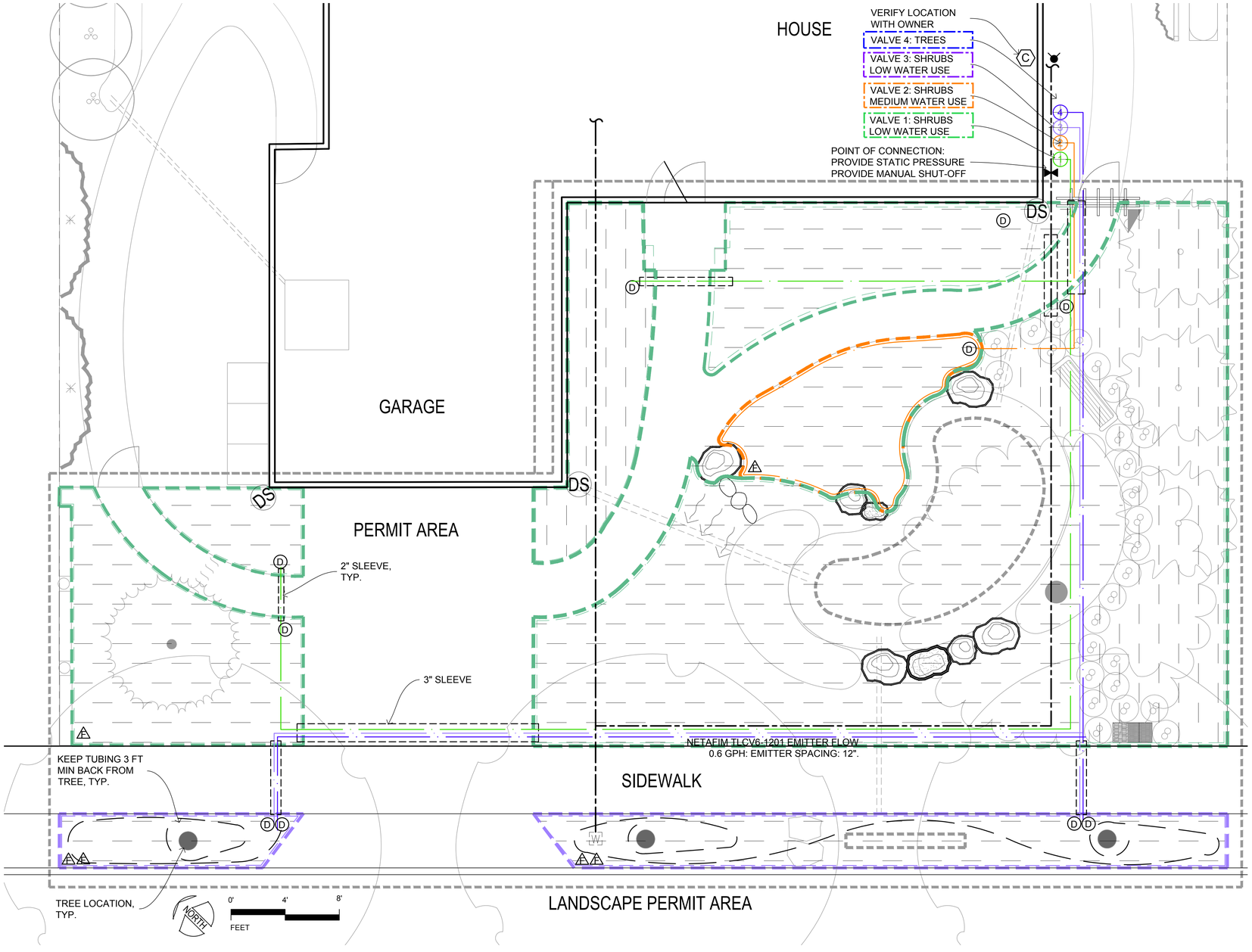
LAYOUT & PLANTING PLAN ECO EDIBLE B

DATE

PERMIT PLAN
APRIL 2, 2019

L-1.0

SHEET
OF



IRRIGATION LEGEND

APPLICANT CHECK-OFF COMPONENTS	SYMBOL	COMPONENT	MANUFAC - TURER	MODEL	NOTES / SIZE / COLOR
	W	EXISTING WATER METER			
	C	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
	D	TRANSITION TO DRIP ZONE			SEE DETAIL
	DRIP LAYOUT				
		PLANTING BEDS			
		TREES			NETAFIM TLCV6-1201 EMITTER FLOW 0.6 GPH: EMITTER SPACING: 12".
		INLINE EMITTER TUBING	NETAFIM	TLCV4-1801	**CLAY SOIL**: EMITTER FLOW: 0.4 GPH; EMITTER SPACING: 18"; ROW SPACING: 18"
				TLCV4-1801	**LOAM SOIL**: EMITTER FLOW: 0.4 GPH; EMITTER SPACING: 18"; ROW SPACING: 18"
				TLCV6-1201	**SANDY SOIL:** EMITTER FLOW: 0.6 GPH; EMITTER SPACING: 12"; ROW SPACING: 18"
	A	DRIP FLUSHOUT	NETAFIM	TLFIG8	
	SYMBOLS FOR COMPONENTS ARE LARGER THAN ACTUAL SIZE AND MAY BE SHOWN IN PAVED AREAS FOR GRAPHIC CLARITY. COORDINATE LOCATION OF EQUIPMENT WITH PLUMBER.				
	ALL PIPE RUNS UNDER PAVING ARE IN SLEEVES, INSTALL SLEEVES PRIOR TO POURING CONCRETE				

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							

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.

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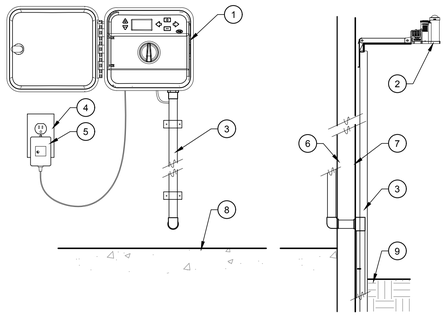
SHEET TITLE:
IRRIGATION PLAN
ECO EDIBLE B

DATE
PERMIT PLAN
APRIL 2, 2019

L-2.0

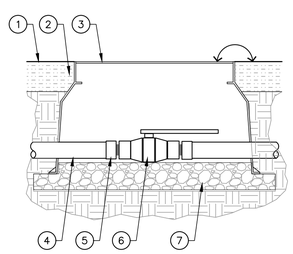
SHEET
OF



1. CONTROLLER MOUNTED ON INTERIOR WALL AT EYE LEVEL
2. SOLAR SYNC MOUNTED ON SUITABLE EXTERIOR POST, POLE OR GUTTER IN LOCATION WHERE SENSOR CAN RECEIVE UNOBSTRUCTED EXPOSURE TO SUN AND RAINFALL.
3. CONDUIT FOR VALVE CONTROL WIRE AND SOLAR SYNC COMMUNICATION WIRE. SIZE AND TYPE PER LOCAL CODES. MAX TOTAL WIRE DISTANCE 200 FT
4. EXISTING GROUNDED OUTLET
5. PLUG-IN TRANSFORMER
6. INTERIOR WALL
7. EXTERIOR WALL
8. FINISH GRADE INTERIOR FLOOR
9. FINISH GRADE EXTERIOR GRADE

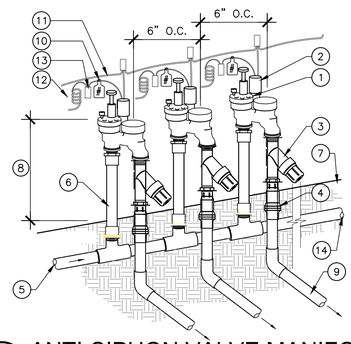
NOTES:
1. OWNER'S REPRESENTATIVE TO VERIFY LOCATION IN FIELD
2. ALL ELECTRICAL WORK MUST CONFORM TO LOCAL CODES
3. DETAIL IS GENERIC
4. INSTALL PER MANUFACTURER'S SPECIFICATIONS

1 SMART CONTROLLER-INTERIOR
SCALE: N.T.S.



1. FINISH GRADE
2. MULCH
3. VALVE BOX
4. MAIN LINE
5. MALE ADAPTERS
6. BRASS BALL VALVE, SIZED TO MATCH PIPE
7. FILL BOTTOM OF BOX WITH 3" DEPTH DRAIN ROCK

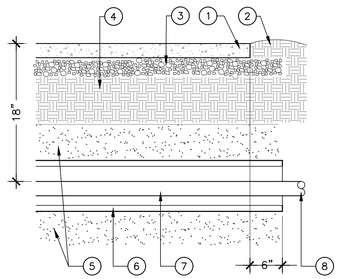
2 ISOLATION VALVE - BALL VALVE
SCALE: N.T.S.



1. ANTI-SIPHON VALVE
2. SOLENOID
3. FILTER FOR DRIP ZONE VALVE
4. PRESSURE REGULATOR FOR DRIP ZONE VALVES
5. MAINLINE FROM WATER SUPPLY
6. SCHEDULE 80 UV RESISTANT PVC NIPPLES
7. FINISH GRADE
8. 6-12 INCHES MIN ABOVE HIGHEST POINT OF DISCHARGE
9. PVC LATERALS TO ZONES
10. ID TAG WITH VALVE ZONE NUMBER MATCHED TO CONTROLLER STATION
11. WIRES TO CONTROLLER
12. 30" LENGTH OF COILED WIRE
13. WATERPROOF SPLICE
14. PROVIDE STUBOUT FOR FUTURE EXPANSION

NOTE: DETAIL IS GENERIC, SEE LEGEND FOR SPECIFIC EQUIPMENT.

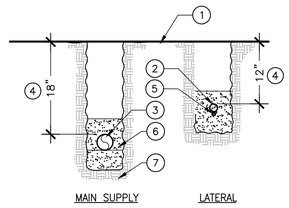
3 ANTI-SIPHON VALVE MANIFOLD
SCALE: N.T.S.



1. HARDSCAPE SURFACE
2. FINISH GRADE OF ADJACENT PLANTING AREA
3. AGGREGATE BASE
4. COMPACTED SUBGRADE
5. SAND ABOVE AND BELOW PIPE
6. IRRIGATION SLEEVE: PVC SCH 40
7. PVC LATERAL OR MAINLINE
8. TO DRIP TRANSITION

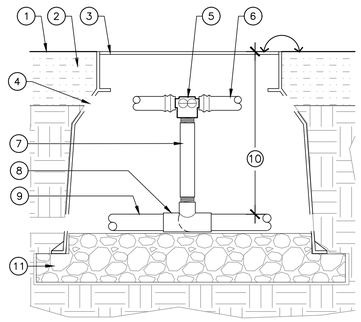
NOTES:
SIZE SLEEVE MIN 1.5X SIZE OF PIPES BEING SLEEVED

4 IRRIGATION SLEEVING
SCALE: N.T.S.



1. FINISH GRADE
2. LATERAL
3. MAINLINE SUPPLY
4. DEPTH OF PIPE COVER
5. WIRING, TYP.
6. 2" SAND SETTING BED ALL 4 SIDES
7. COMPACTED SOIL, TYP.

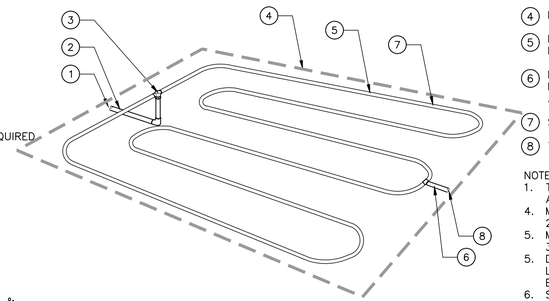
5 TRENCHING & PIPE COVER
SCALE: N.T.S.



1. FINISH GRADE
2. MULCH
3. 10 INCH ROUND VALVE BOX.
4. CUT HOLES FOR PIPES TO EXIT WITHOUT KINKING, TYP.
5. TEE: PVC TO POLY TUBING
6. INLINE EMITTER TUBING
7. NIPPLE: SCH 40 LENGTH AS REQUIRED
8. PVC TEE (SXSXT)
9. PVC LATERAL
10. PIPE COVER, SEE DETAIL
11. 3 INCH DEPTH DRAIN ROCK

NOTE:
1. DETAIL IS GENERIC, SEE LEGEND FOR SPECIFIC EQUIPMENT.
2. FOR MULCH DEPTH, PIPE COVER & PIPE SIZE SEE NOTES & LEGEND

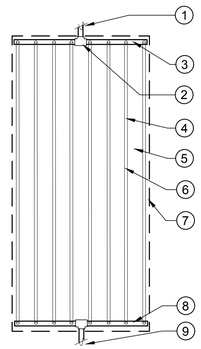
6 DRIP TRANSITION
SCALE: N.T.S.



1. TO VALVE MANIFOLD
2. PVC LATERAL
3. TRANSITION FROM LATERAL TO DRIP ZONE
4. DRIP ZONE
5. IN-LINE DRIP TUBING, INSTALL PERPENDICULAR TO SLOPE
6. BLANK DRIP TUBING, USE TO EXTEND FLUSH-OUT TO ACCESSIBLE LOCATION
7. STAKE TUBING EVERY 2 FT.
8. TO FLUSHOUT

NOTES:
1. THIS LAYOUT FOR SMALL AREAS & TREE SPIRALS.
4. MAXIMUM LENGTH OF TUBING: 200 LF
5. MAXIMUM FLOW PER SUBZONE: 3 GPM
5. DETAIL IS GENERIC, SEE LEGEND FOR SPECIFIC EQUIPMENT.
6. SEE IRRIGATION VALVE TABLE FOR AREA LIMITATIONS

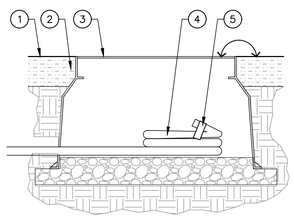
7 DRIP SUB-ZONE LAYOUT - SINGLE LINE
SCALE: N.T.S.



1. TO VALVE
2. DRIP TRANSITION, SEE DETAIL
3. SUPPLY HEADER
4. INDIVIDUAL LENGTHS OF TUBING
5. SEE LEGEND FOR EMITTER AND ROW SPACING
6. STAKE TUBING EVERY 2 FT.
7. AREA PERIMETER, VARIES
8. EXHAUST HEADER
9. FLUSHOUT, SEE DETAIL

NOTES:
1. THIS LAYOUT FOR MEDIUM AND LARGE AREAS.
2. INDIVIDUAL TUBING LENGTHS MAY NOT EXCEED 200 LF EACH
3. MAXIMUM FLOW PER SUBZONE: 3 GPM
4. DETAIL IS GENERIC, SEE LEGEND FOR SPECIFIC EQUIPMENT.
5. SEE IRRIGATION VALVE TABLE FOR AREA LIMITATIONS

8 DRIP SUBZONE LAYOUT - MULTI-LINE
SCALE: N.T.S.



1. FINISH GRADE
2. MULCH
3. VALVE BOX
4. BLANK TUBING FED FROM TECHLINE LATERAL COILED 18" TO 24" IN BOX
5. FIGURE 8 END FITTING, TLFIG8
6. FILL BOTTOM OF BOX WITH 3" DEPTH DRAIN ROCK

NOTE: DETAIL IS GENERIC, SEE LEGEND FOR SPECIFIC EQUIPMENT.

9 DRIP FLUSH VALVE
SCALE: N.T.S.

FOR LEGEND SEE IRRIGATION PLAN SHEET L2.0

FOR IRRIGATION VALVE TABLE SEE IRRIGATION PLAN SHEET L2.0

IRRIGATION NOTES

1. INSTALLATION TO 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 LIDS FOR EACH BOX.
21. INSTALL ALL WIRING IN ACCORDANCE WITH ALL APPLICABLE CODES.
22. 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.
23. 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.
24. ENSURE THAT ALL EQUIPMENT IS SIZED CORRECTLY BASED ON EXISTING SITE CONDITIONS AND HYDRAULICS.
25. VERIFY SOIL TYPE AND USE APPROPRIATE EMITTER SIZE AND SPACING.
26. INSTALL DRIP TUBING AS SHOWN IN DETAIL AND PER MANUFACTURER'S SPECIFICATIONS.
27. DO NOT USE SMALL DIAMETER DISTRIBUTION TUBING.
28. DO NOT INSTALL POST MANUFACTURED BUTTON EMITTERS INTO IN-LINE TUBING.
29. REVIEW DRIP LAYOUT WITH OWNER'S REPRESENTATIVE PRIOR TO COVERING WITH MULCH
30. STAKE DRIP TUBING IN PLACE @ 2 FT O.C. MAX
31. MAINTAIN A 3" MIN. DEPTH OF MULCH COVER OVER DRIP TUBING.
32. MAXIMUM LENGTH OF DRIP TUBING IS 200' IN ANY DIRECTION FROM WATER SOURCE.
33. OPEN LINE ENDS AND FLUSH THOROUGHLY BEFORE INSTALLATION OF END FLUSH CAPS.
34. FLUSH MAINLINES AFTER INSTALLING RISERS AND PRIOR TO INSTALLING OR RECONNECTING TO VALVES.
35. FLUSH LATERALS AFTER INSTALLING RISERS AND PRIOR TO INSTALLING TUBING.
36. PRESSURE TEST PRIOR TO BACKFILLING, PROVIDE RESULTS TO OWNER'S REP.
37. FILL ALL EXCAVATIONS WITH COMPACTED BACKFILL, IN TWO MECHANICALLY COMPACTED LIFTS. REPAIR ALL SETTLED TRENCHES.
38. PERFORM COVERAGE TEST. ADJUST SYSTEM AS NEEDED TO PROVIDE FULL COVERAGE AND TO AVOID RUNOFF.
39. AFTER COMPLETION PROVIDE AS-BUILT PLANS.
40. PROVIDE CONTROLLER SCHEDULE.
41. 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.
42. 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.
43. 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.
44. ENSURE THAT CONTROLLER SCHEDULE IS ADJUSTED SEASONALLY AT A MINIMUM
45. RUN SYSTEM TO CHECK FOR LEAKS AND REPAIR THEM SEASONALLY AT A MINIMUM.

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SHEET TITLE:
IRRIGATION DETAILS & NOTES

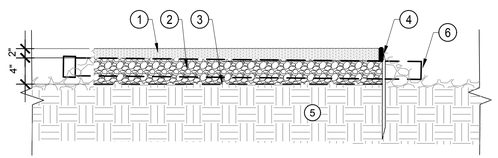
DATE
PERMIT PLAN
MAY 18, 2018

L-2.1

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

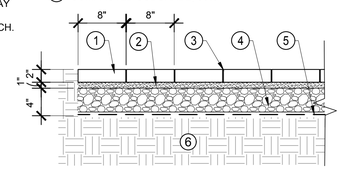
NOTE: FOR CLAY SOILS, HOLD 10' AWAY FROM FOUNDATION, AND PROVIDE SUBDRAINAGE. REVIEW WITH GEOTECH. & CIVIL ENGINEER.



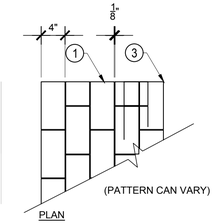
1 PERMEABLE AGGREGATE PAVING - PATH OR PATIO
SCALE: 1"=1'-0"

1. 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



SECTION

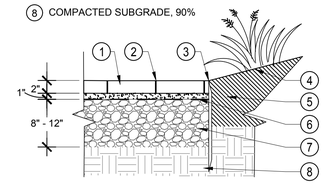


PLAN

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

1. PERVIOUS PAVER OR PERVIOUS AGGREGATE
2. HANDTIGHT JOINTS, SAND SWEPT
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%

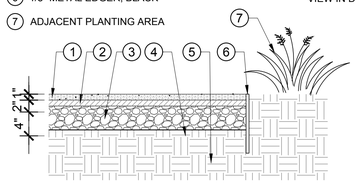
NOTES:
1. FOR CLAY SOILS, HOLD 10' AWAY FROM FOUNDATION, AND PROVIDE SUBDRAINAGE. REVIEW WITH GEOTECH & CIVIL ENGINEER.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1



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

1. 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

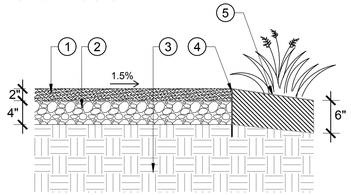


SECTION

4 AGGREGATE PAVING - PEDESTRIAN
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.

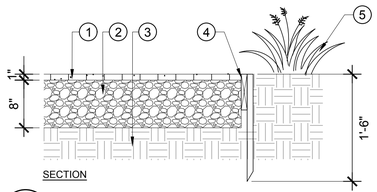
NOTES:
1. THIS PAVING IS IMPERVIOUS AND SHOULD HAVE POSITIVE DRAINAGE AWAY FROM BUILDING FOUNDATIONS.
2. FOR DRAINAGE THRU PATH SEE CURB O LET DETAIL #11 THIS PAGE AND SECTION VIEW IN DETAIL #1



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

1. GRAVEL PAVE XL PAVING SYSTEM. OR APPROVED EQUAL. AGGREGATE FILL SELECTED BY OWNER. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
2. PERMEABLE CLASS 2 AGGREGATE BASE ROCK. COMPACT TO 95%
3. SUBGRADE UNDISTURBED OR COMPACTED TO 90%
4. 2X6 RDW HEADER, 18" STAKES @ 6' O.C., SCAB AT OVERLAPPING ENDS AND STAKE AT 3' O.C OPTIONAL CONCRETE CURB.
5. ADJACENT PLANTING AREA

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

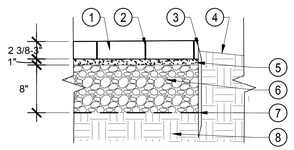


SECTION

6 GRAVELPAVE PAVING - VEHICLE
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%

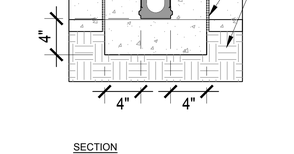
NOTE: CONSULT WITH GEOTECHNICAL & CIVIL ENGINEER FOR AGGREGATE BASE DEPTH, PERFORMANCE IN CLAY SOILS AND NEED FOR SUBDRAINS



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

1. 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.



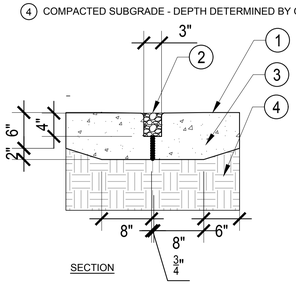
SECTION

PLAN

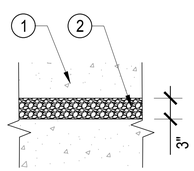
8 CONCRETE - VEHICLE - TRENCH DRAIN
SCALE: 1"=1'-0"

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.



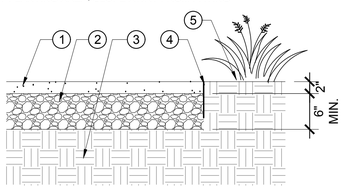
SECTION



PLAN

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

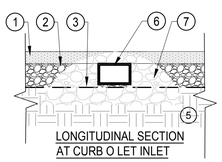
1. STABILIZED 3/8-" AGGREGATE, STABILIZER: ECO-PAVE OR EQUAL. CONTROL RUNNING AND CROSS SLOPES FOR ACCESSIBILITY.
2. RECYCLED CLASS II AGGREGATE BASE ROCK, COMPACT TO 95%. CONFIRM AGGREGATE DEPTH W/ GEOTECH. ENG.
3. SUBGRADE UNDISTURBED OR COMPACTED TO 95%, CONFIRM SUBGRADE TREATMENT W/ GEOTECH ENG.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



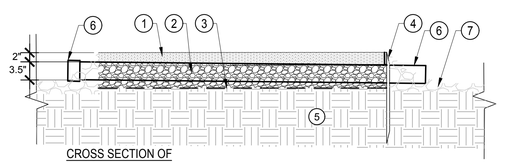
10 STABILIZED AGGREGATE - VEHICLE
SCALE: 1"=1'-0"

1. 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.



LONGITUDINAL SECTION AT CURB O LET INLET



CROSS SECTION OF PATH

11 RECTANGULAR DRAINAGE SLEEVE IN PATHS
SCALE: NOT TO SCALE

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

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SHEET TITLE:
L.I.D. PAVING DETAILS

DATE
PERMIT PLAN
MAY 18, 2018

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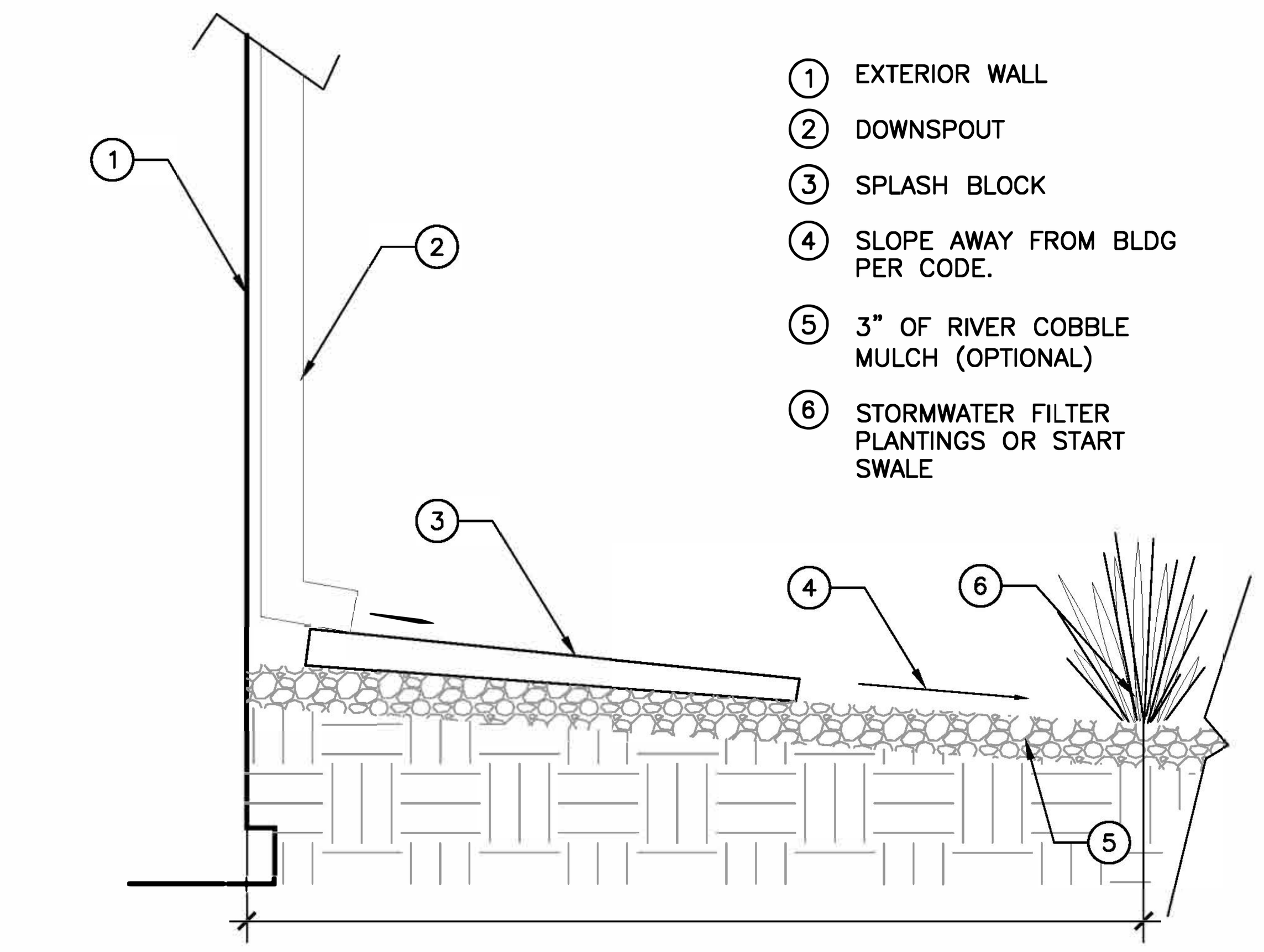
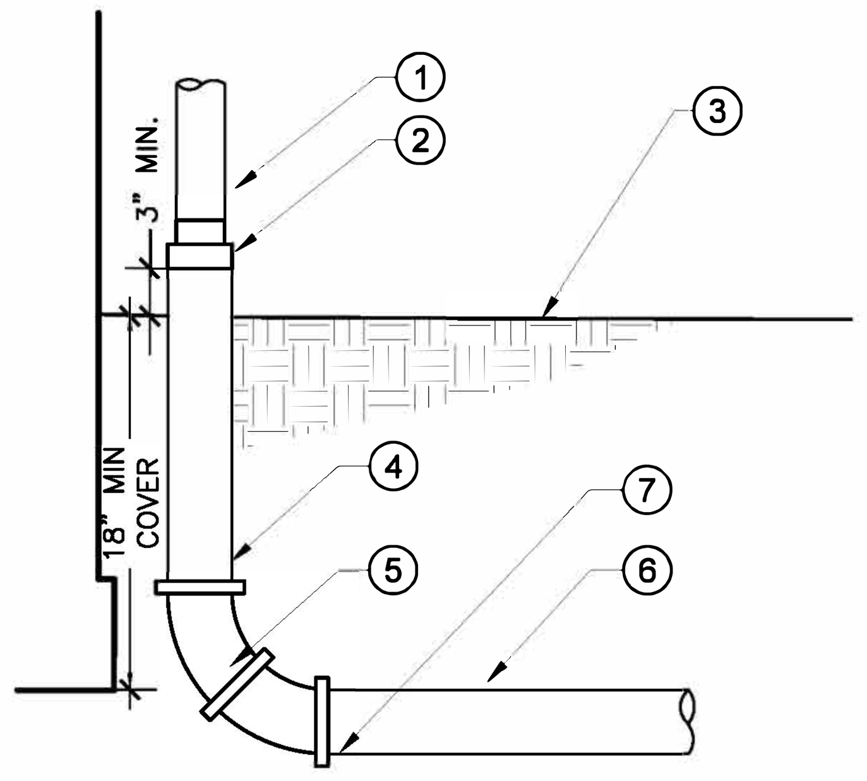
SHEET
OF



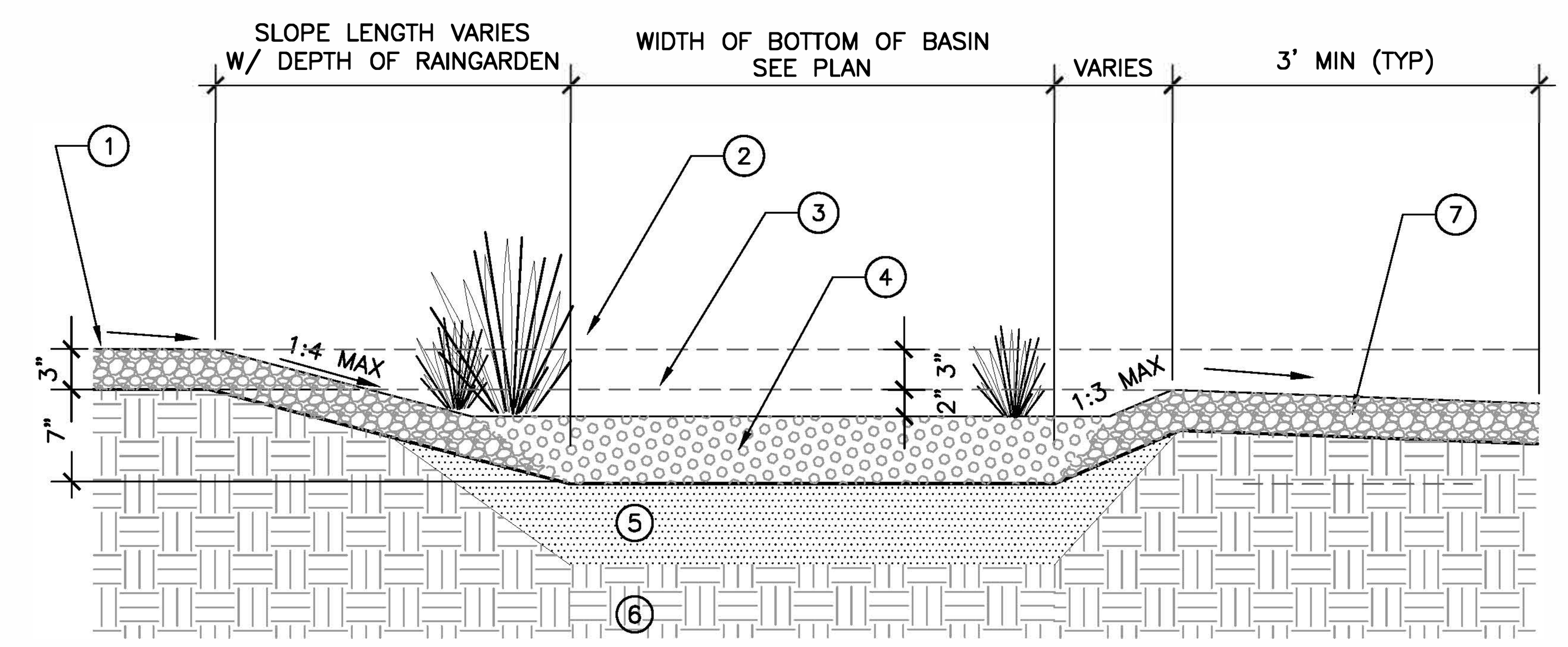
1 DOWNSPOUT SPLASHBLOCK TO OVERLAND FLOW

SCALE: 1/2"=1'-0"



2 DOWNSPOUT WITH PIPED OUTLET

SCALE: 1/2" = 1'-0"

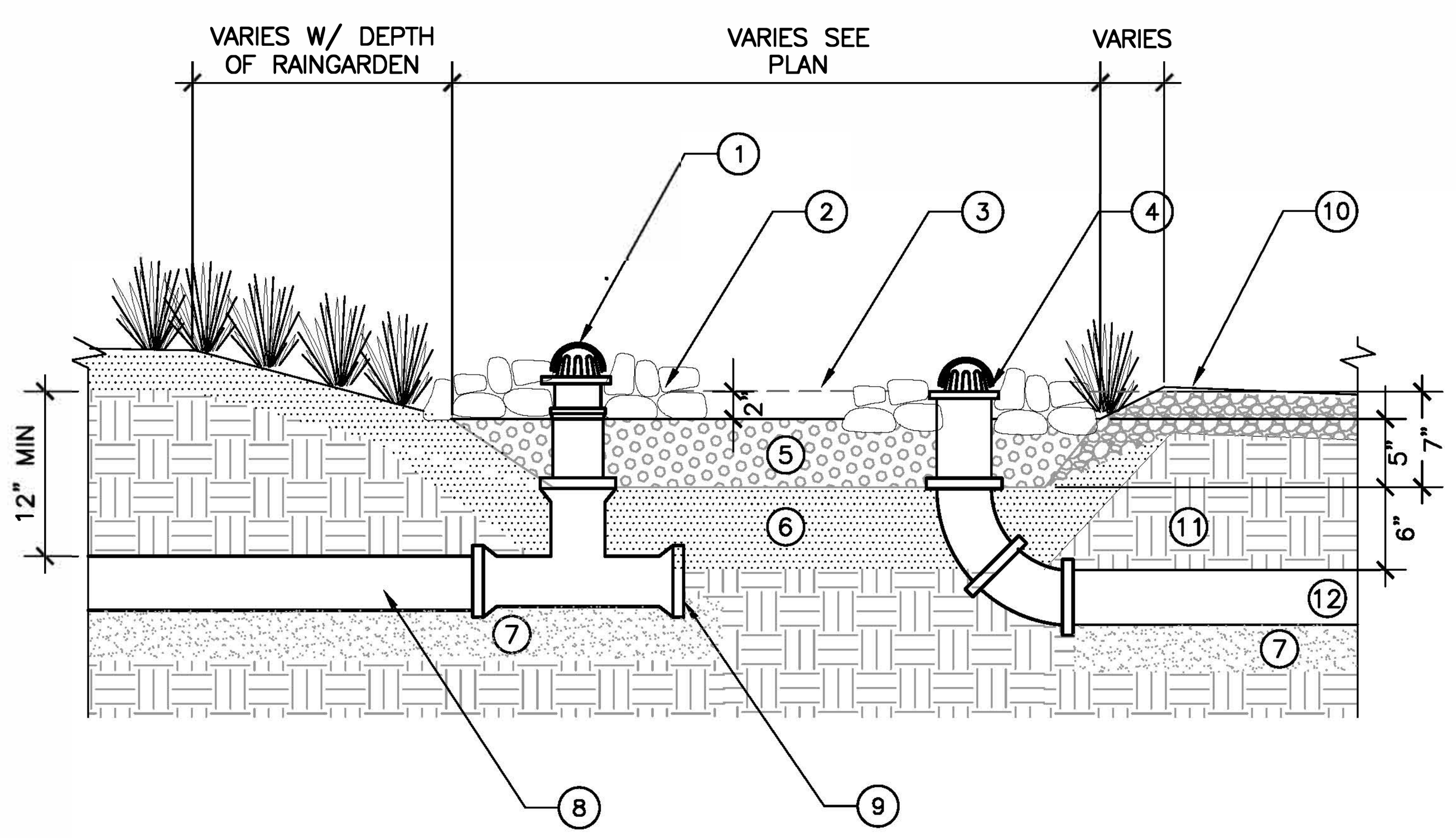


1. SWALE OR SHEET FLOW INTO RAIN GARDEN FROM DS OR PAVING AREA. COVER SOIL W/ 3" OF RIVER COBBLE 1.5"–6" IN SIZE.
2. TOP ELEVATION OF THE BERM AROUND RAIN GARDEN. 3" ABOVE MAX PONDING LEVEL.
3. ELEVATION OF MAX PONDING DURING STORM EVENT. PONDING OF 2" OF RAINWATER ABOVE PEA GRAVEL.
4. 5" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7".
5. SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN GARDEN.
6. UNDISTURBED SUBGRADE.
7. 3" THICK OF 1.5–6" RIVER COBBLE. EXTEND 3' DOWNSLOPE FROM RAINGARDEN. INSTALL LEVEL SPREADER TO RETURN TO SHEET FLOW AS NEEDED BY DESIGN.

NOTES:
1. RAINWATER GARDEN DESIGNED FOR CLAY SOILS. MAX DEPTH 7" OF WHICH 5" HAS A PEA GRAVEL MULCH.
2. NO WOOD CHIP OR BARK MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING STORM DRAINS DOWNSTREAM.

3 VEGETATED RAINGARDEN W/ OVERLAND FLOW INLET & OUTLET

SCALE: 1/2"=1'-0"

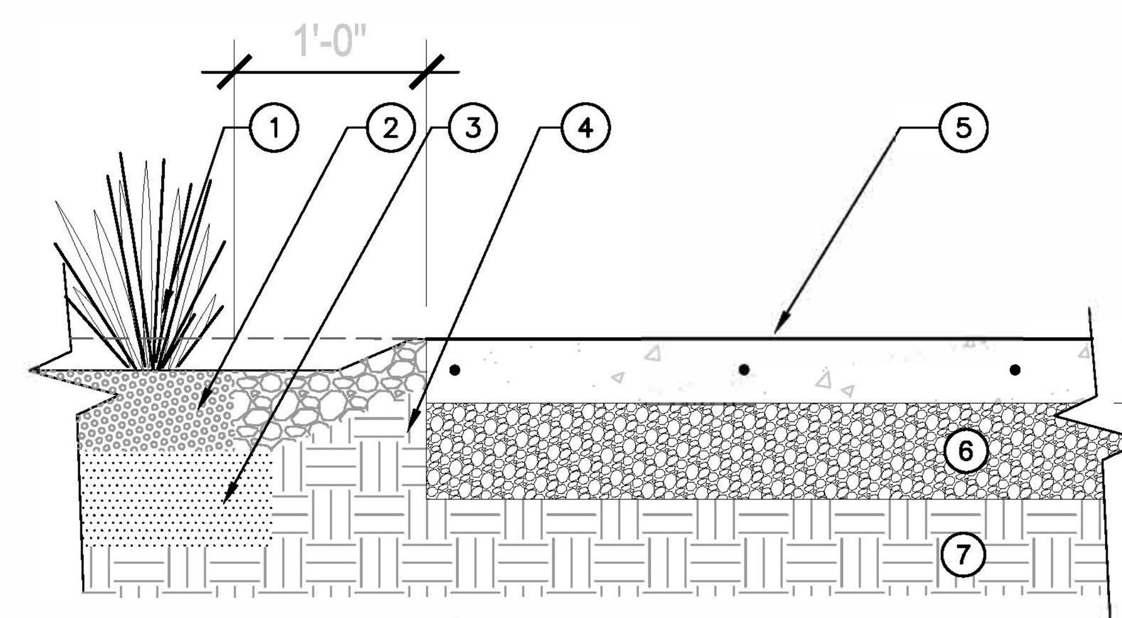


1. ATRIUM DRAIN GRATE ON OUTLET BUBBLER CONNECTED TO DOWNSPOUT; BY NDS OR EQUAL
2. COBBLE AROUND OUTLET PIPE (TYP.)
3. MAX WATER LEVEL 2" ABOVE PEA GRAVEL
4. DRAIN INLET STRUCTURE AT TOP PONDING ELEVATION (2" ABOVE PEA GRAVEL). PIPE TO OUTLET.
5. 5" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR 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) ½" WEEP HOLE ½" 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.

4 VEGETATED RAINGARDEN W/ PIPED INLET

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.

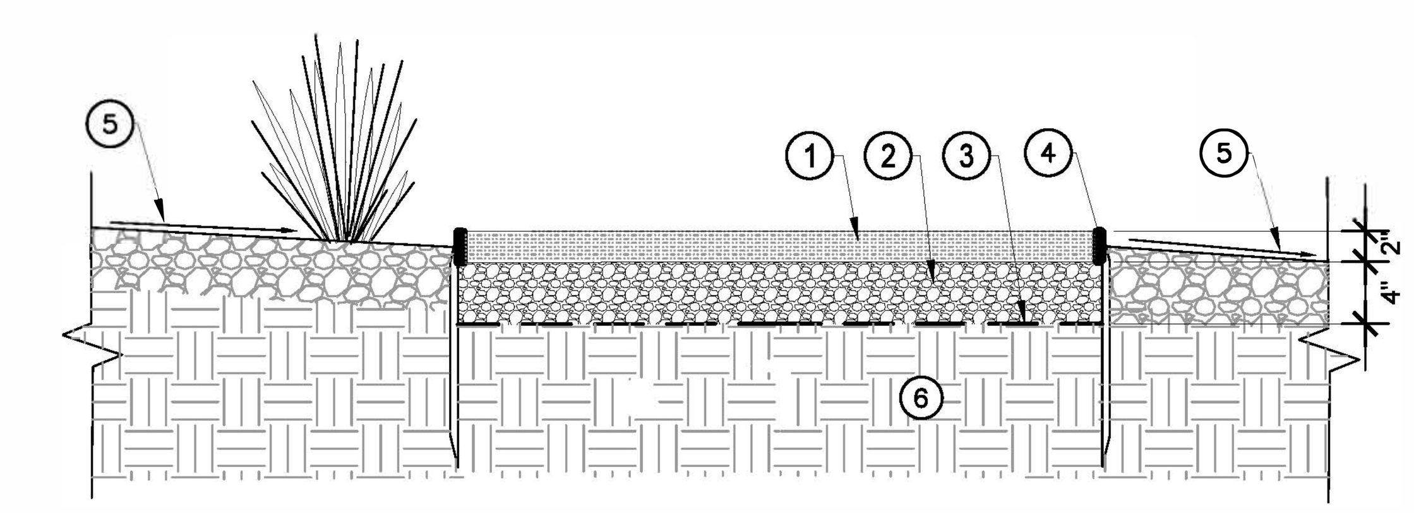
NOTES:
1. ENSURE NO MULCH OR SOIL WASHES ON TO PATH. USE RIVER COBBLE TO MAINTAIN CLEAN EDGE.
2. NO MULCH IN RAINWATER SYSTEMS TO AVOID CLOGGING STORM DRAINS.

5 RAINGARDEN OVERFLOWING OVER PAVEMENT SECTION

SCALE: 1/2"=1'-0"

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.

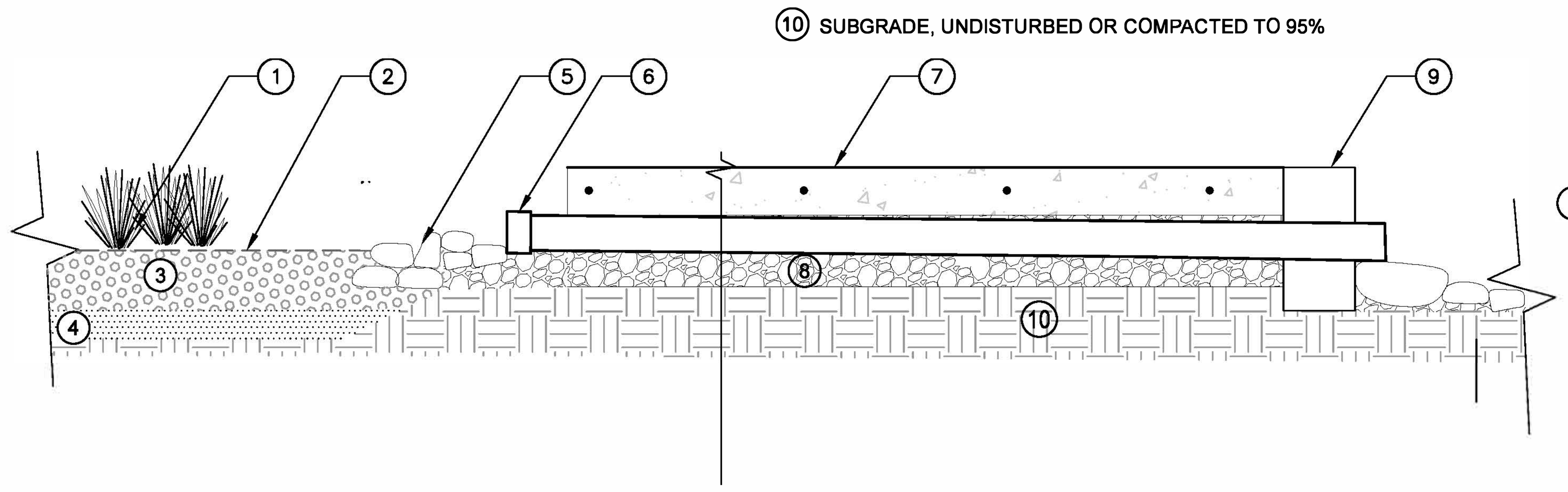


6 RAINWATER FLOW THRU PERMEABLE PAVING SECTION

SCALE: 1"=1'-0"

NOTES:
1. REVIEW PAVING WITH CIVIL & GEOTECHNICAL ENGINEER
SEE DETAIL #7 ON SHEET L3.2

1. RAIN GARDEN OR SWALE
2. MAX PONDING LEVEL
3. PEA GRAVEL
4. AMENDED SOIL UNDER RAINGARDEN
5. 1.5"-6" RIVER COBBLE (TYP.)
6. CURB O LET INLET. SLOPE CURB O LET SLEEVE AT 2% (¼" PER FOOT).
7. CONCRETE OR OTHER PAVING
8. CLASS II AGGREGATE BASE ROCK
9. OPTIONAL CURB
10. SUBGRADE, UNDISTURBED OR COMPACTED TO 95%

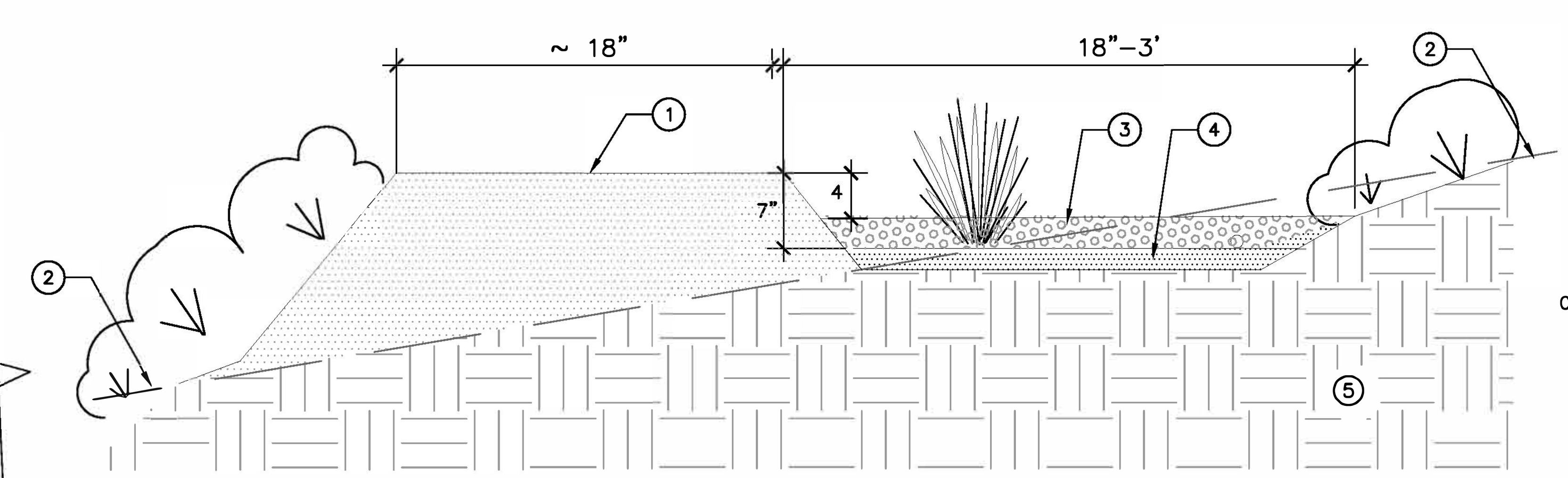


7 DRAIN SLEEVE THRU PATH FROM RAINGARDEN

SCALE: 1/2"=1'-0"

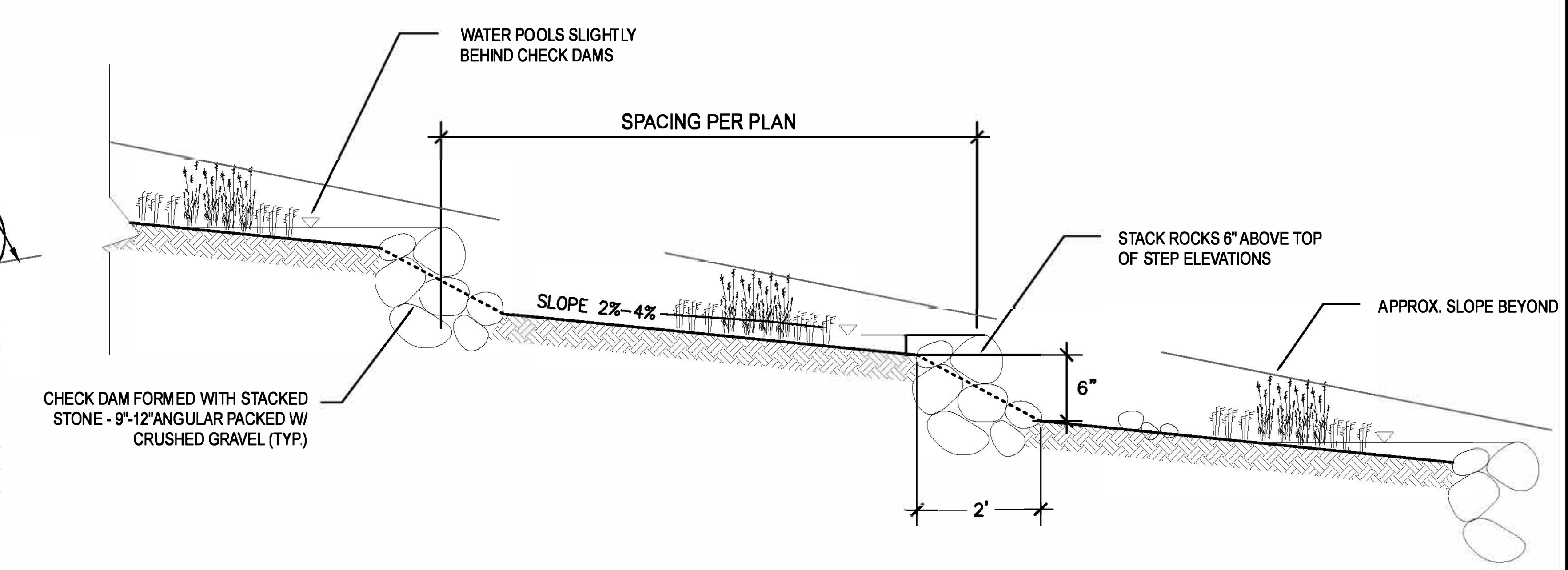
1. BERM; CONSTRUCT WHILE DIGGING BASIN. CAN BE MADE WIDER TO BE A WALKING PATH
2. EXISTING SLOPE 8% OR LESS
3. 3" PEA GRAVEL MULCH INSURES NO PONDING WITHIN 72 HRS FOR MOSQUITO CONTROL. TOTAL DEPTH INCLUDING PONDING IS 7". SEE DETAIL 9 FOR ROCK CHECK DAMS
4. SCARIFY & AMEND NATIVE SOIL AT BOTTOM OF RAIN 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"

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SHEET TITLE:
RAIN GARDENS & SWALE DETAILS

DATE
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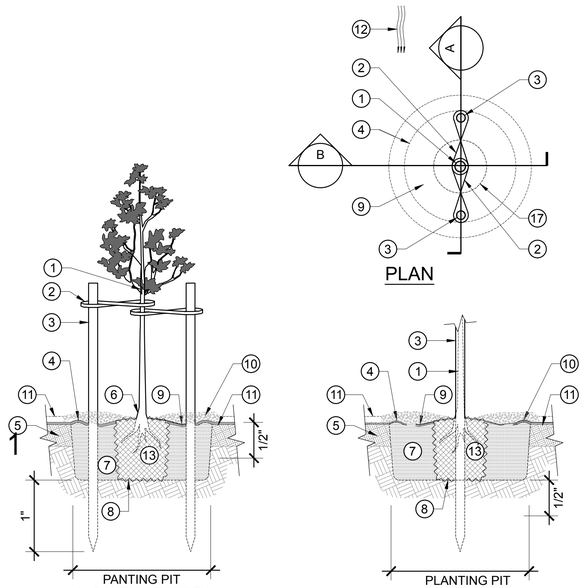


SECTION A

PLAN

SECTION B

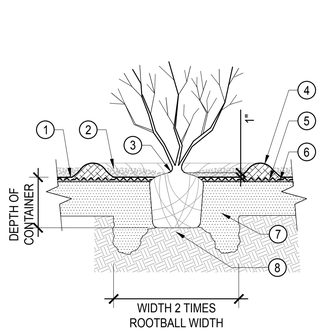
1. TREE, CENTRAL LEADER
2. SYNTHETIC STRAPPING, LOOP AROUND CENTRAL LEADER BELOW FIRST BRANCH, ONE STRAP PER STAKE, ATTACH TO STAKES W/ SHEET METAL SCREWS
3. WOOD STAKES, (2) PER TREE, SET PLUMB, OUTSIDE OF ROOTBALL, ON A LINE PARALLEL TO DIRECTION OF PREVAILING WIND, SET FAR ENOUGH FROM TREE THAT BRANCHES DO NOT TOUCH STAKES; STAKES SHALL BE SPACED AN EQUAL DISTANCE FROM THE CENTRAL LEADER.
4. WATERING BERM, 3"H
5. TOPSOIL, NATIVE. USE DIGGING FORK TO REMOVE COMPACTION, DO NOT TILL
6. CROWN OF ROOTBALL, SET 3" ABOVE FINISH GRADE
7. PLANTING PIT BACKFILL, PER SPECS
8. PLANTING PIT, SCARIFY EDGES, INSURE ROOT BALL RESTS ON FIRM SOIL AND WILL NOT SINK OVER TIME.
9. WATERING BASIN
10. MULCH, PER SPECS, 3" LAYER, KEEP 4" AWAY FROM TRUNK
11. SHEET MULCH: 2 LAYERS CARDBOARD, OR (5) LAYERS RECYCLED NEWSPAPER. ½" OF COMPOST UNDER PAPER.
12. DIRECTION OF PREVAILING WIND
13. ROOTBALL, SCARIFY OUTER 1"

NOTES:

1. MAKE STAKES AS SHORT AS POSSIBLE, BUT HIGH ENOUGH TO HOLD THE TREE UPRIGHT UNDER CALM CONDITIONS. THE TREE SHOULD RETURN TO VERTICAL AFTER THE WIND HAS BENT THE TOP.
2. SUPPORT THE TRUNK AT JUST ONE LEVEL, NEAR THE TOPS OF THE STAKES.
3. PROVIDE FLEXIBLE MOVEMENT AT THE POINT WHERE STRAPPING WRAPS LOOSLY AROUND THE CENTRAL LEADER OF THE TREE.
4. TAKE CARE NOT TO CAUSE RUBBING OR GIRDLING INJURIES.
5. STAKES ARE FOR PROTECTION OF THE TREE FOR A PERIOD AFTER PLANTING. REMOVE STAKES AS SOON AS TREE ESTABLISHES IT ROOT SYSTEM - WITHIN 18 MONTHS MAX.

1 TREE PLANTING

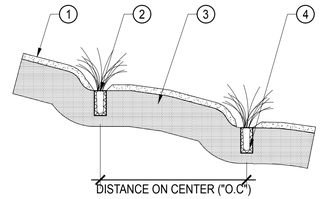
NOT TO SCALE



1. FINISHED GRADE
2. 3" THICK MULCH: KEEP 3" AWAY FROM ROOT CROWN
3. ROOT CROWN: PLANT CROWN 1" ABOVE FINISHED GRADE
4. 3" HIGH BERM OF AMENDED SITE SOIL TO FORM WATERING BASIN
5. SHEET MULCH LAYER OF (5) PLY RECYCLED NEWSPAPER OR 1-2 LAYERS OF CARDBOARD.
6. 1/4" LAYER OF AMENDMENTS UNDER SHEET MULCH.
7. AMEND SITE SOIL W/ 4 CUBIC YARDS COMPOST PER 1000 SF.
8. NATIVE SOIL: REST PLANT ON FIRM SOIL. SCARIFY EDGES OF HOLE TO PROMOTE ROOT GROWTH.

2 PLANTING - SHRUBS, PERENNIALS, GRASSES

NOT TO SCALE

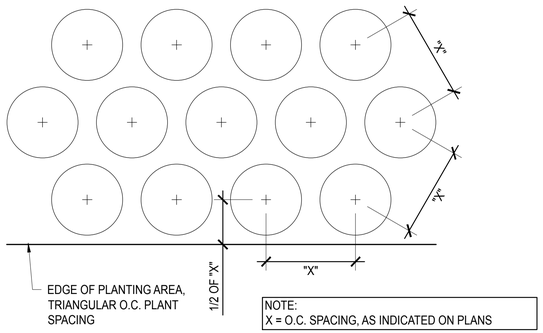


1. MULCH: 2" FOR GRASS PLUGS. IF APPLYING WILDFLOWER SEED MULCH WITH RICE STRAW OR 3/4" OF COMPOST.
2. 2" PLUG OR STUBBIE. PLANT CROWN 1" ABOVE FINISHED GRADE
3. 6" AMENDED SOIL PER WELO REQUIREMENTS.
4. PLANTING HOLE: USE DIBBLE TO CREATE A HOLE SLIGHTLY LARGER THAN PLUG. PLACE PLUG FIRMLY IN HOLE WITH CROWN AT OR SLIGHTLY ABOVE HEIGHT OF SURROUNDING HOLE. LEAVE NO AIR OR MULCH AROUND ROOTS. BACKFILL HOLE WITH GARDEN SOIL, NOT MULCH.

NOTES:
1. PLANT PLUG STRAIGHT UP (PLUMB), NOT AT AN ANGLE TO THE SLOPE.
2. GRASS PLUG PLANTINGS DO BETTER IN CERTIFIED WEED FREE STRAW MULCH OR 1-2" OF LESS WOODY MULCH.

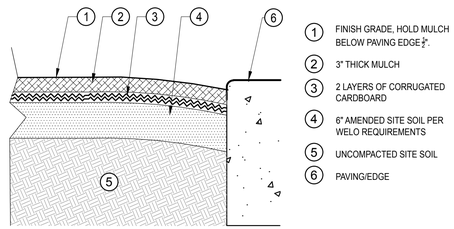
3 PLUG PLANTING

NOT TO SCALE



4 GROUNDCOVER PLANTING - TRI-SPACING

NOT TO SCALE



1. FINISH GRADE, HOLD MULCH BELOW PAVING EDGE ½".
2. 3" THICK MULCH
3. 2 LAYERS OF CORRUGATED CARDBOARD
4. 6" AMENDED SITE SOIL PER WELO REQUIREMENTS
5. UNCOMPACTED SITE SOIL
6. PAVING/EDGE

5 SHEET MULCH

NOT TO SCALE

PLANT PIT & WATERING BERM TABLE

CONTAINER SIZE	PLANT PIT DIAMETER	WATERING BERM HEIGHT	WATERING BERM DIAMETER
1 GAL CAN	18" MIN	3" MIN	18" MIN
5 GAL CAN	30" MIN	4" MIN	30" MIN
15 GAL CAN	3' MIN	5" MIN	3' MIN
24" BOX	5' MIN	6" MIN	5' MIN

6 PLANT PIT AND WATERING BERM

NOT TO SCALE

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SHEET TITLE:
PLANTING DETAILS

DATE
PERMIT PLAN
MAY 18, 2018

L-3.2

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OF

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-YOURSELFER 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^2/day = ______ft^2

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. 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^2)

- **Area** = πr^2 = 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*

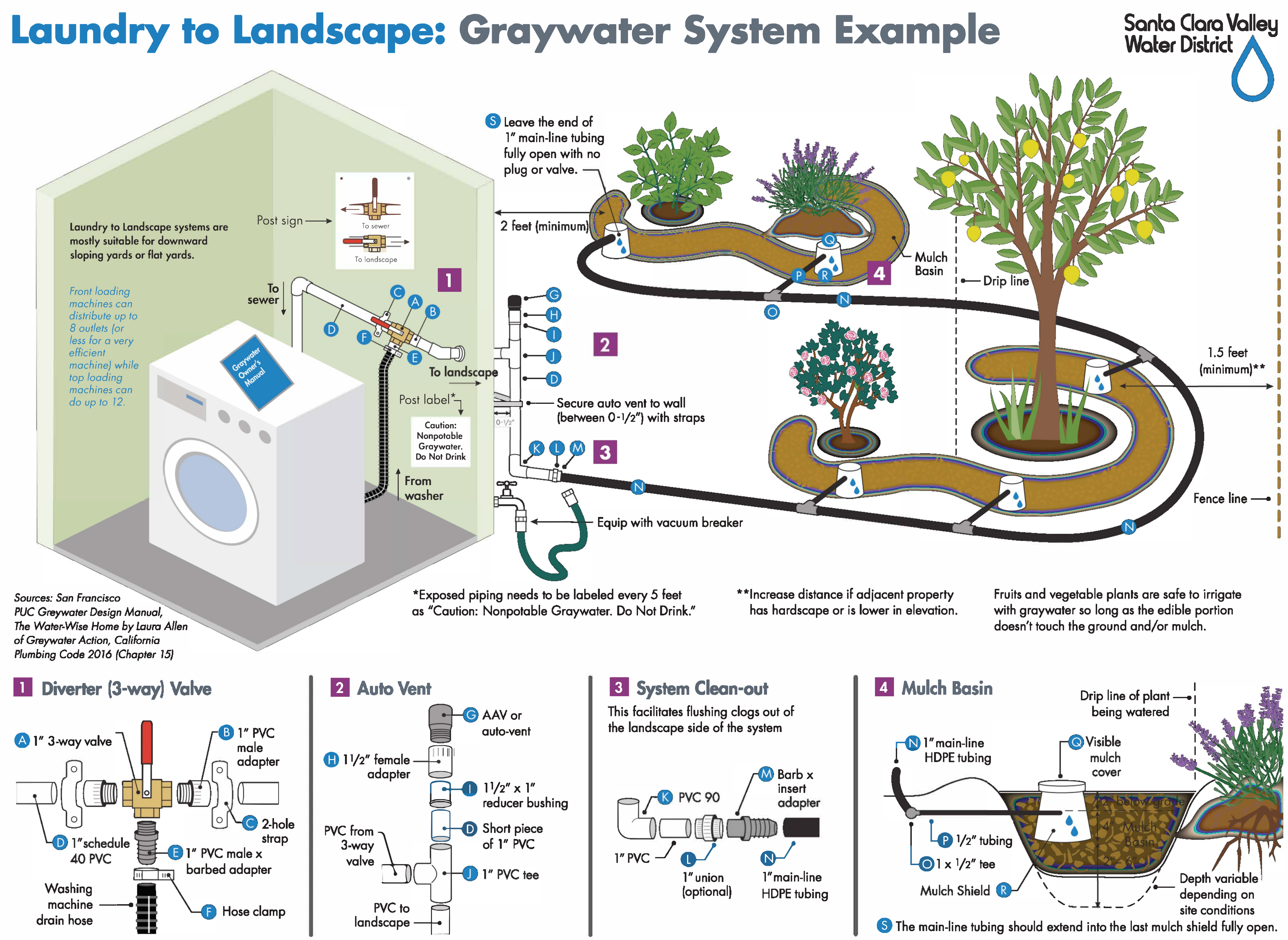
ADDITIONAL INFORMATION

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



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.

1 LAUNDRY TO LANDSCAPE DETAIL
NTS

APPLICANT INSTRUCTIONS:

1. ESTIMATE YOUR GRAYWATER SUPPLY USING THE CALCULATION PROCESS IN CALCULATIONS SECTION BELOW.
2. COMPLETE CALCULATIONS TO DETERMINE THE MINIMUM REQUIRED MULCH BASIN SIZE PER YOUR SOIL TYPE.
3. MEASURE ACTUAL IRRIGATION FIELD AREA(S) ON SITE AND DEVELOP NUMBER AND SIZE OF MULCH BASINS TO USE THIS VOLUME THAT FIT IN THE LANDSCAPE AREAS.
4. REVIEW REQUIRED SETBACKS SHOWN IN CPC TABLE 1502.4 THIS SHEET.
5. DEVELOP A SITE PLAN ILLUSTRATING THE FOLLOWING: REQUIRED SETBACKS, PROPOSED MULCH BASINS, VALVE LOCATIONS, PIPING DIAGRAM, AND TREE AND PLANT LOCATIONS TO BENEFIT FROM GRAYWATER.
6. IF IN BUILDING DESIGN AND/OR CONSTRUCTION PROCESS REVIEW PLAN WITH ARCHITECT (FOR LOCATION OF LAUNDRY NEAR GRAYWATER SUPPLIED LANDSCAPE AREA), CIVIL ENGINEER (FOR ANY POTENTIAL CONFLICTS WITH STORMWATER DRAINAGE), AND GENERAL & LANDSCAPE CONTRACTORS TO REVIEW THREE WAY VALVE LOCATION AND SUPPLY PIPE LOCATION.

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DATE
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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:

- O NOTIFY ENFORCING AGENCY AND SECURE PERMIT FOR INTERIOR PLUMBING COMPONENTS
- O BE ABLE TO REDIRECT TO SEWER
- O NO POTABLE WATER CONNECTION
- O CONTAIN GRAYWATER ONSITE
- 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 FOLLOW ALL APPLICABLE CODE OR LAWS
- O POST OPERATION AND MAINTENANCE MANUAL
- O 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.

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:

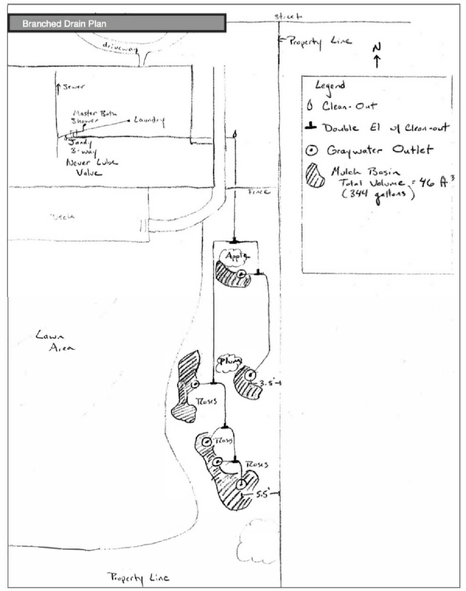
- Graywater valves
- Graywater pipes and fittings *(indicate material and size)*
- Clean-outs
- Graywater outlets and mulch basins
- Setback of graywater outlets to property lines and buildings*
- Setback of graywater outlets to onsite wastewater treatment system tanks and leachfields* *(if applicable).*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

Example Greywater Irrigation Plan



1 BRANCHED DRAIN SAMPLE SITE PLAN
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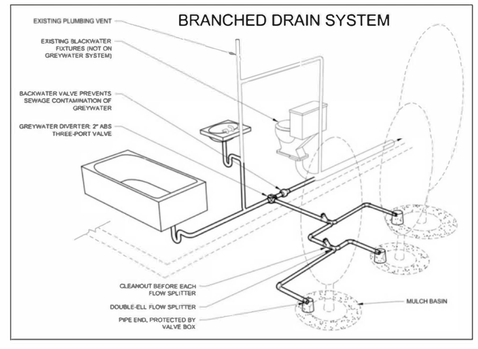

2 BRANCHED DRAIN SYSTEM DIAGRAM AND INSTALL PHOTO
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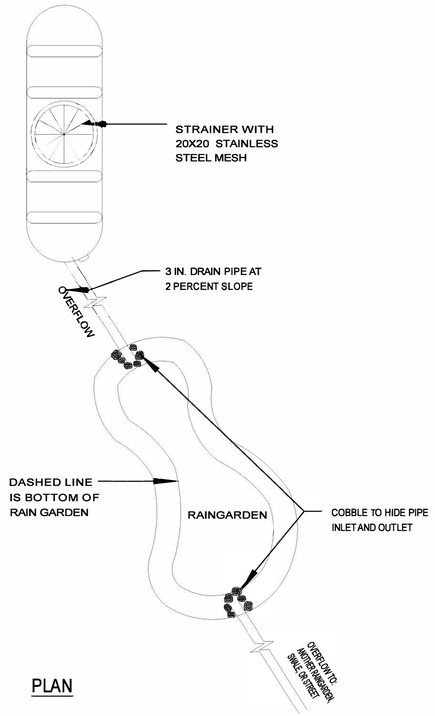

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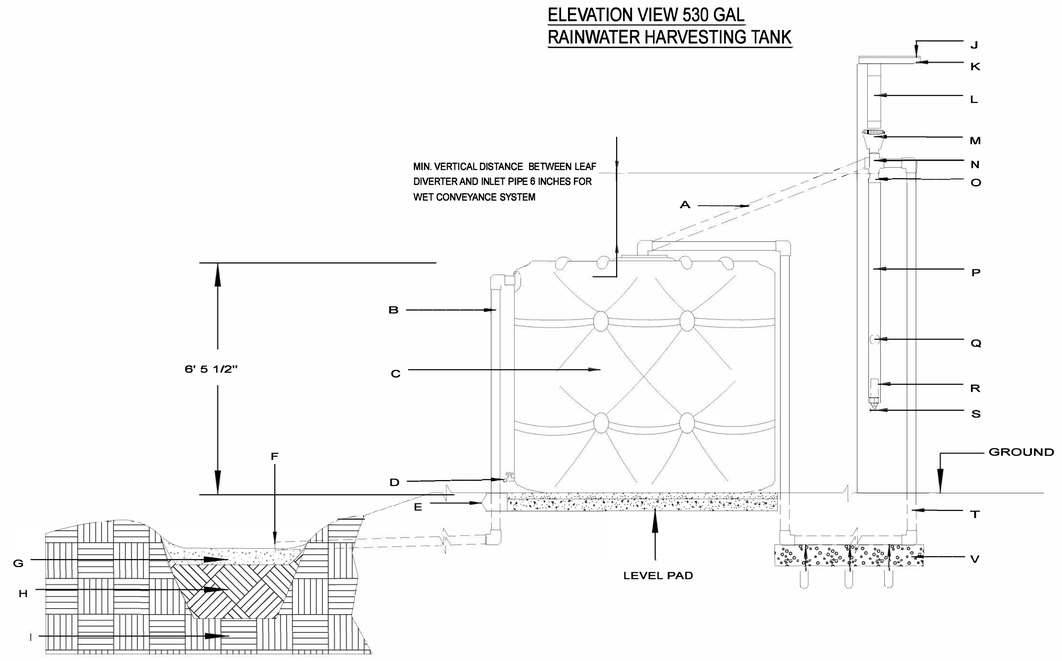

SECTION VIEW RAIN GARDEN

NOTES:
1. A RAINWATER CATCHMENT SYSTEM MAY NOT REQUIRE A BUILDING PERMIT PROVIDED ALL OF THE FOLLOWING ARE MET (CALIFORNIA PLUMBING CODE 1601.3 (I):
- 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)
ALL OTHER RAINWATER CATCHMENT SYSTEMS MUST BE SUBMITTED FOR BUILDING PERMIT.
2. PUMP AND PRESSURE TANK LIKELY REQUIRE INEXPENSIVE, OVER-THE-COUNTER, ELECTRICAL PERMIT.
3. 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.
4. TANKS CAN BE DAISY CHAINED AT POINT "D" USING FLEXIBLE PIPE ONLY TO REDUCE CHANCE OF LEAKAGE IN EARTHQUAKES.
5. 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" CONVEYENACE 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

1 RAINWATER HARVESTING DETAIL
1/2" = 1'-0"

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