

**James V. Fitzgerald ASBS Pollution Reduction Program
Upland BMPs: LID Projects
Approved by Selection Committee June 9, 2014**

LID Site #5 – Cooperator ID #: 202.0815.01

Site Information:

The property is located west of Highway 1 in Moss Beach on the bluffs above Fitzgerald Marine Reserve. The property is less than 1 acre and the residence is the only structure. Stormwater currently flows to a roadside ditch that directly discharges to the ASBS.

The property has poor drainage in the backyard and stormwater flows to the drainage ditch during storm events. There is erosion in the front yard, along the earth driveway and from the gutter downspouts. This landowner has demonstrated leadership ability by successfully convincing 5 neighbors to install solar systems so this project could result in others adopting similar practices and additional water quality benefits.

Integrated Project BMPs:

- Install two 900 gallon storage tanks to capture and store water from asphalt roof (460 square feet) and to reduce erosion from gutter downspouts
- Install a 18x9 foot rain garden and 40 foot long vegetated swale on both sides of the rain garden to create a treatment system to filter and infiltrate stormwater on the property and from roof
- Increase height of garden wall by two brick courses to decrease earth slope behind wall and minimize loss of soil

Treatment Description:

Roof runoff is directed through the existing gutters to new downspouts that attach to a set of rainwater storage tanks. Overflow from these tanks is outlet into a treatment swale which leads to a rain garden. The rain garden provides infiltration as primary treatment and will overflow into a treatment swale in the case of a large storm event. This treatment swale is outlet by a pipeline that drains to the front of the property. Irrigation risers allow the tanks to be drained manually or for the stored water to be used for irrigation.

**Stormwater Capture/Treatment:
Rain Garden/Tank System: 88%**

PROJECT 202.0815.01

WATER QUALITY IMPROVEMENT PLAN

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH FINAL DESIGN DRAWINGS AND ATTACHED SPECIFICATIONS: 03 30 10 CONCRETE, 03 30 20 PERVIOUS CONCRETE, 04 20 10 CONCRETE BLOCK, 04 20 20 STONE BRICK WALL, 07 65 00 GUTTERS AND DOWNSPOUTS, 32 30 20 GRAVEL EROSION PROTECTION, 32 30 40 VEGETATED SWALE, 32 30 60 RAIN GARDEN, 33 40 00 STORM DRAINAGE UTILITIES, 33 40 10 RAINWATER CATCHMENT.
2. SAN MATEO RESOURCE CONSERVATION DISTRICT SHALL BE RESPONSIBLE FOR OBTAINING ANY NEEDED PERMITS, EASEMENTS, AND/OR RIGHT-OF-WAYS, AND MEETING ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES AND SHALL CALL NORTHERN CALIFORNIA UNDERGROUND SERVICE ALERT AT '811' AT LEAST 3 DAYS PRIOR TO START OF CONSTRUCTION. SPECIAL SAFETY PRECAUTIONS SHALL BE TAKEN WHEN WORKING IN THE VICINITY OF GAS, OIL, AND ELECTRICAL LINES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING LOCATIONS OF TEMPORARY ACCESS, STAGING AREAS, AND OTHER FACILITIES TO PRECONSTRUCTION CONDITION. DISTURBANCE OF EXISTING STRUCTURES AND VEGETATION MUST BE AVOIDED OR MINIMIZED TO THE FULLEST POSSIBLE EXTENT.
5. LANDOWNER SHALL BE RESPONSIBLE FOR THE SUCCESSFUL ESTABLISHMENT AND MAINTENANCE OF VEGETATION PRACTICES.
6. CONTRACTOR SHALL ENSURE THAT THE USE AND/OR STORAGE OF PETROLEUM POWERED EQUIPMENT SHALL BE ACCOMPLISHED IN A MANNER TO PREVENT THE POTENTIAL RELEASE OF PETROLEUM MATERIALS INTO WATERS OF THE STATE.
7. CAL-OSHA SAFETY REQUIREMENTS SHALL BE IN EFFECT DURING ALL CONSTRUCTION.
8. CONTACT THE SAN MATEO RESOURCE CONSERVATION DISTRICT AT LEAST 7 DAYS PRIOR TO START OF CONSTRUCTION. PHONE: (650) 726-4660.

AS-BUILT NOTES

1. THIS AS-BUILT PLAN REPRESENTS THE STATUS OF THE PROJECT AS INSTALLED IN THE FIELD. IT IS NOT A CERTIFICATION OF THE COMPLETENESS OF THE WORK OR THE CONSISTENCY OF THE WORK WITH THE ORIGINAL DESIGN DOCUMENTS. IN SOME CASES DEVIATIONS FROM THE ORIGINAL DESIGN DOCUMENTS MAY LEAD TO OPERATIONS OR MAINTENANCE ISSUES. THE ENGINEER ACCEPTS NO LIABILITY FOR FAILURES OR PROBLEMS ARISING FROM DEVIATIONS FROM THE ORIGINAL DESIGN DOCUMENTS.

SHEET INDEX

1. TITLE SHEET AND GENERAL NOTES
2. LAYOUT PLAN
3. CONSTRUCTION DETAILS
4. CONSTRUCTION DETAILS
5. CONSTRUCTION DETAILS

VICINITY MAP

NOT TO SCALE



DRAWN BY: **AS-BUILT**
 DESIGNED BY:
 APPROVED BY:

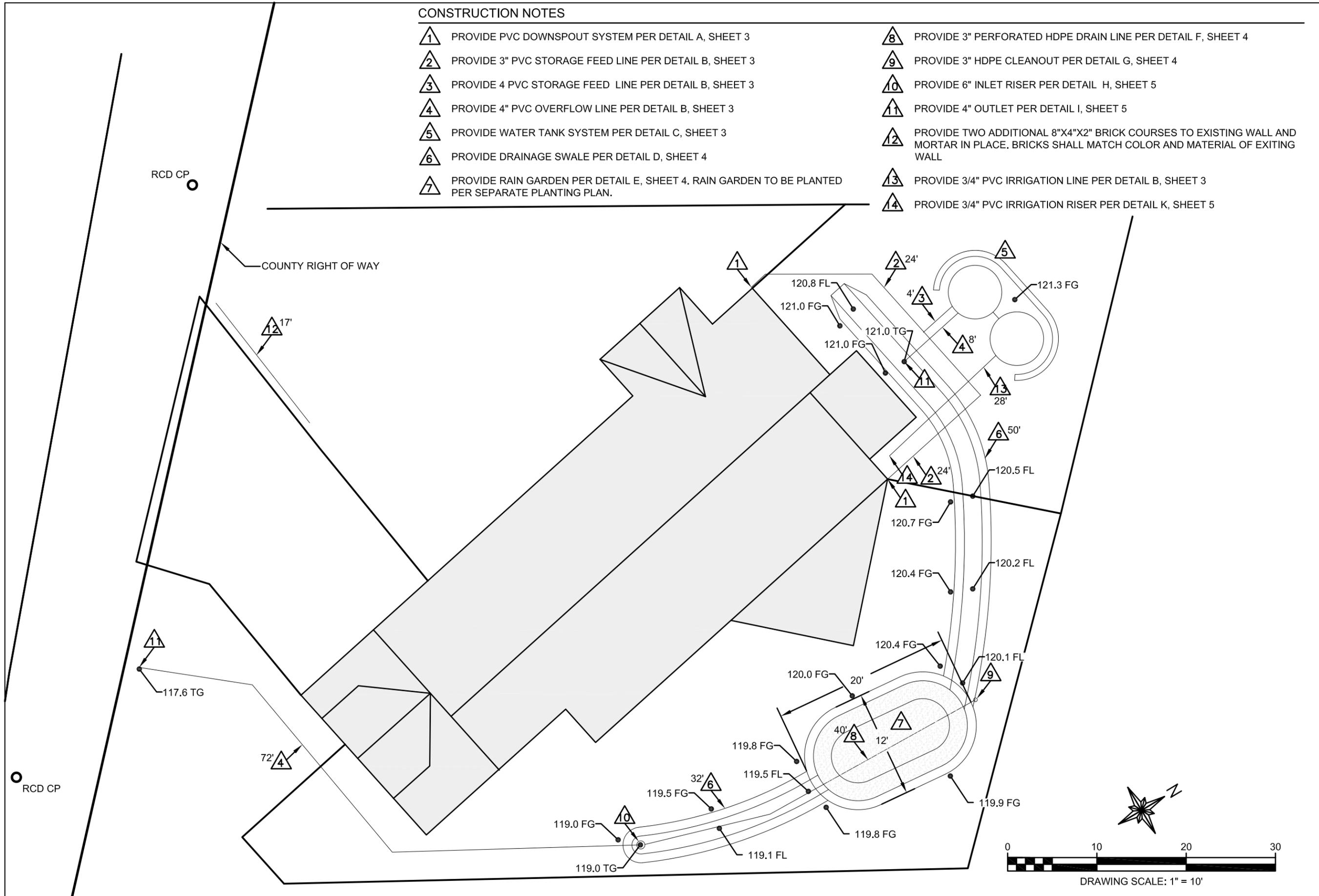
PROJECT 202.0815.01
 TITLE SHEET & GENERAL NOTES

PLAN DATE
2/26/16

SHEET
01 OF 05

CONSTRUCTION NOTES

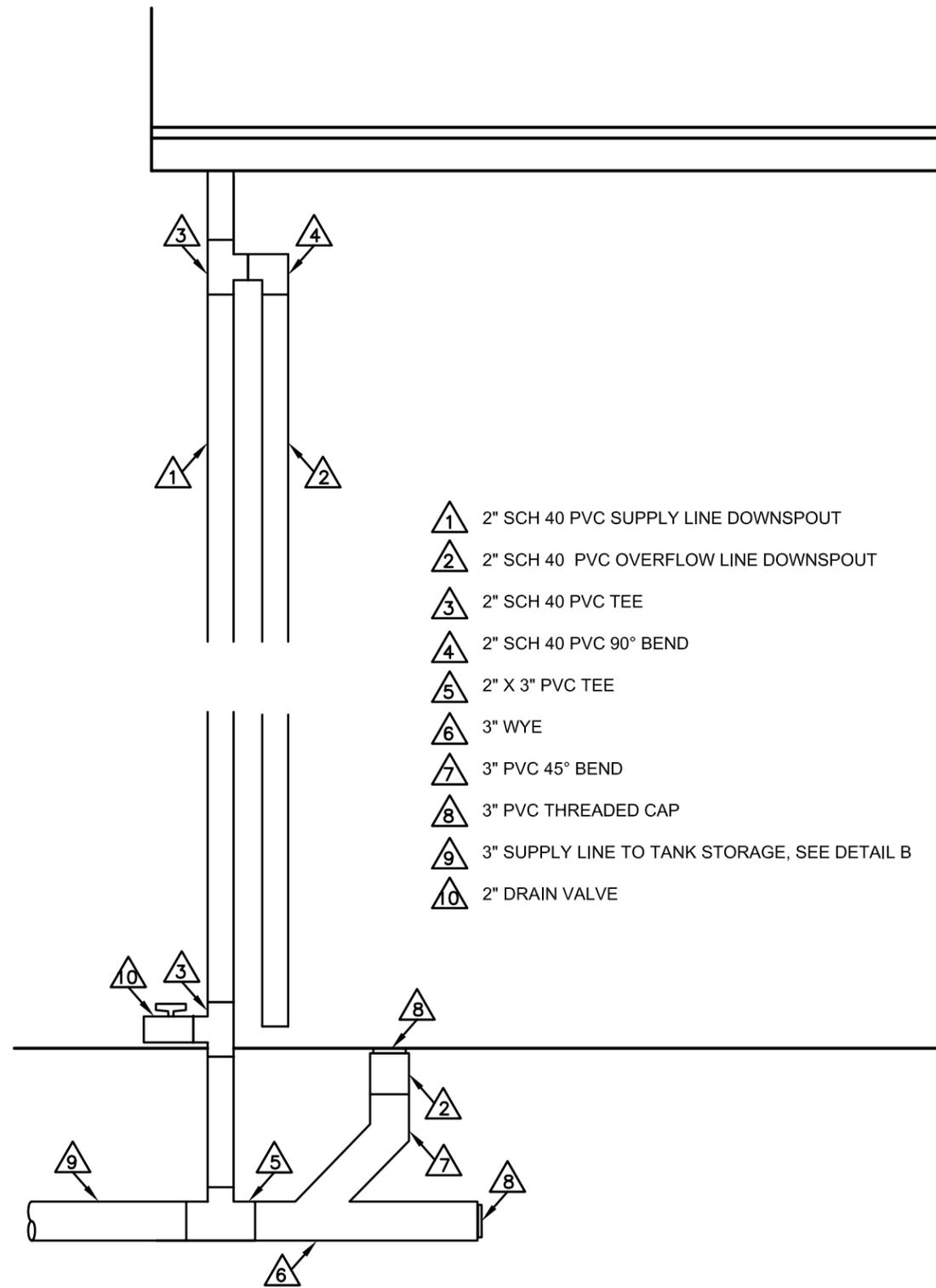
- 1 PROVIDE PVC DOWNSPOUT SYSTEM PER DETAIL A, SHEET 3
- 2 PROVIDE 3" PVC STORAGE FEED LINE PER DETAIL B, SHEET 3
- 3 PROVIDE 4 PVC STORAGE FEED LINE PER DETAIL B, SHEET 3
- 4 PROVIDE 4" PVC OVERFLOW LINE PER DETAIL B, SHEET 3
- 5 PROVIDE WATER TANK SYSTEM PER DETAIL C, SHEET 3
- 6 PROVIDE DRAINAGE SWALE PER DETAIL D, SHEET 4
- 7 PROVIDE RAIN GARDEN PER DETAIL E, SHEET 4. RAIN GARDEN TO BE PLANTED PER SEPARATE PLANTING PLAN.
- 8 PROVIDE 3" PERFORATED HDPE DRAIN LINE PER DETAIL F, SHEET 4
- 9 PROVIDE 3" HDPE CLEANOUT PER DETAIL G, SHEET 4
- 10 PROVIDE 6" INLET RISER PER DETAIL H, SHEET 5
- 11 PROVIDE 4" OUTLET PER DETAIL I, SHEET 5
- 12 PROVIDE TWO ADDITIONAL 8"X4"X2" BRICK COURSES TO EXISTING WALL AND MORTAR IN PLACE. BRICKS SHALL MATCH COLOR AND MATERIAL OF EXISTING WALL
- 13 PROVIDE 3/4" PVC IRRIGATION LINE PER DETAIL B, SHEET 3
- 14 PROVIDE 3/4" PVC IRRIGATION RISER PER DETAIL K, SHEET 5



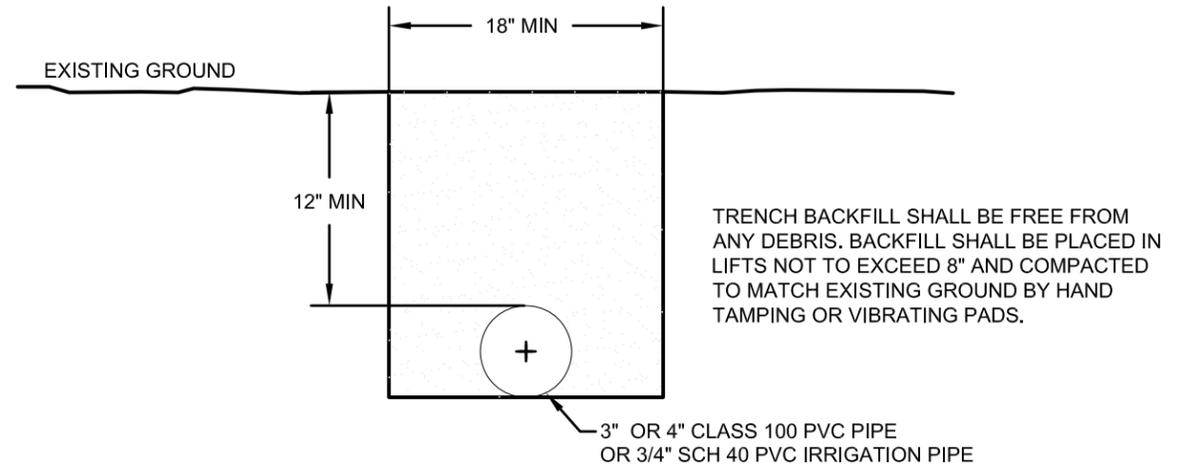
AS-BUILT
 DRAWN BY: _____
 DESIGNED BY: _____
 APPROVED BY: _____

PROJECT 202.0815.01
 LAYOUT PLAN

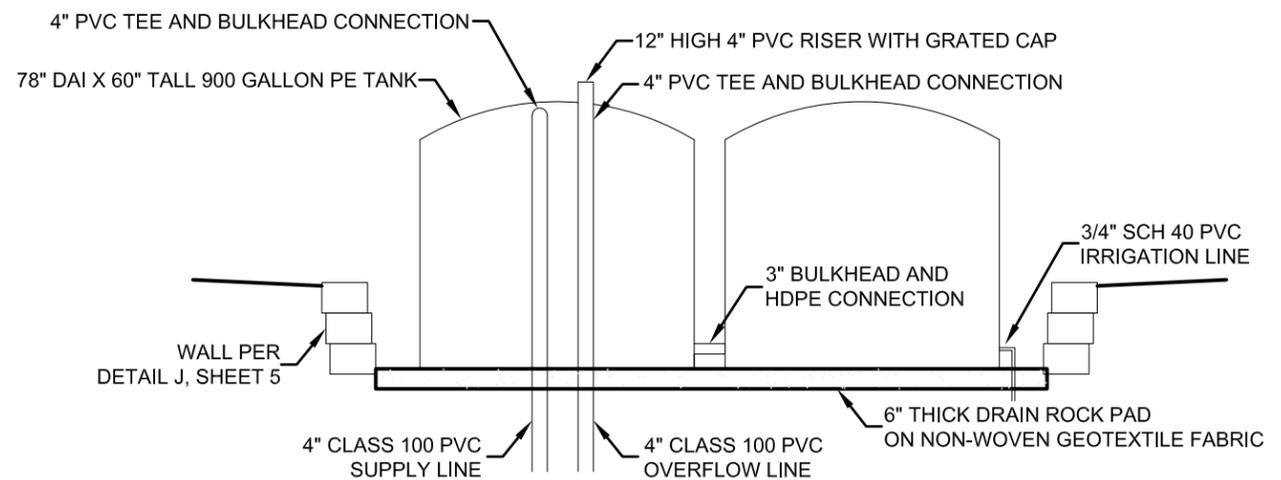
PLAN DATE
 2/26/16
 SHEET
 02 OF 05



- 1 2" SCH 40 PVC SUPPLY LINE DOWNSPOUT
- 2 2" SCH 40 PVC OVERFLOW LINE DOWNSPOUT
- 3 2" SCH 40 PVC TEE
- 4 2" SCH 40 PVC 90° BEND
- 5 2" X 3" PVC TEE
- 6 3" WYE
- 7 3" PVC 45° BEND
- 8 3" PVC THREADED CAP
- 9 3" SUPPLY LINE TO TANK STORAGE, SEE DETAIL B
- 10 2" DRAIN VALVE



SCALE	TYPICAL DRAIN PIPE SECTION	DETAIL B
1" = 1'		SHEET 2



SCALE	STORAGE TANK DETAIL	DETAIL C
1" = 4'		SHEET 3

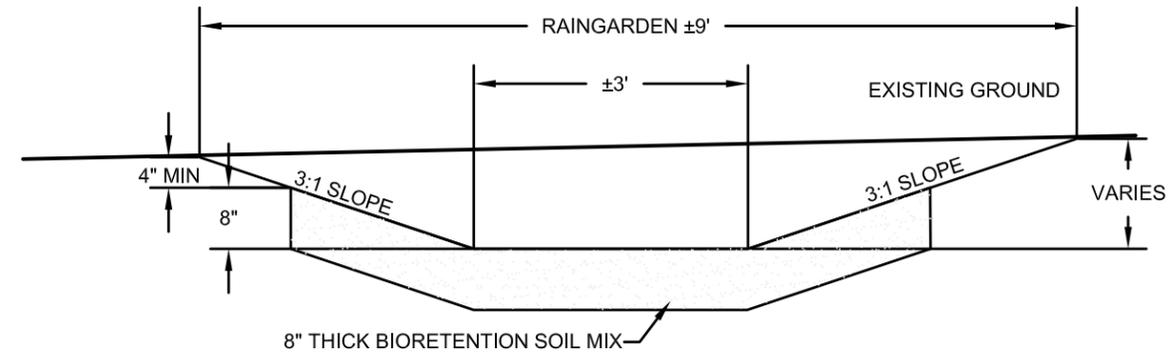
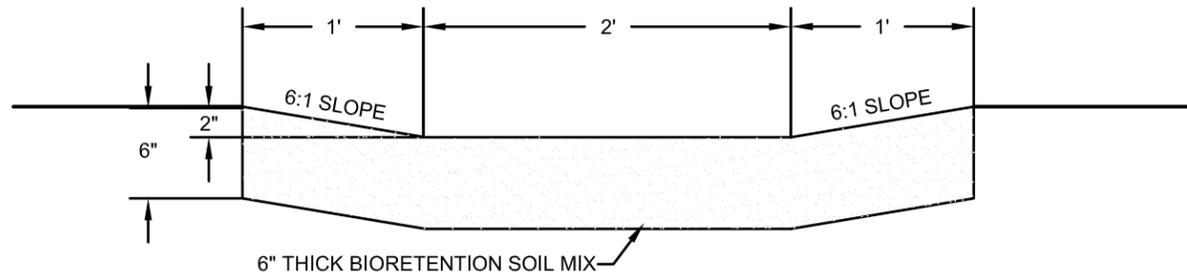
SCALE	DOWNSPOUT SYSTEM DETAIL	DETAIL A
1" = 1'		SHEET 2

DRAWN BY: **AS-BUILT**
 DESIGNED BY:
 APPROVED BY:

PROJECT 202.0815.01
 CONSTRUCTION DETAILS

PLAN DATE
2/26/16

SHEET
03 OF 05



SCALE
1" = 1'

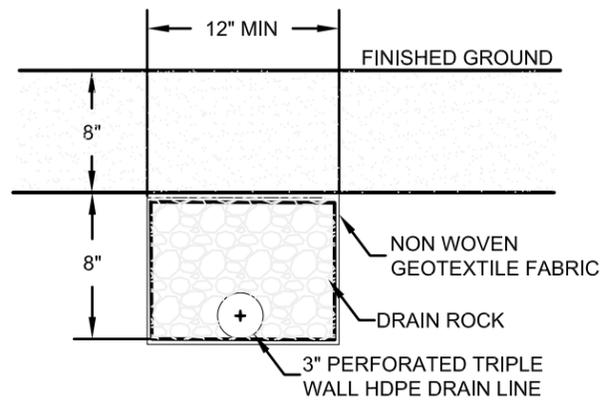
DRAINAGE SWALE TYPICAL SECTION

DETAIL D
SHEET 2

SCALE
1" = 2'

TYPICAL RAIN GARDEN SECTION

DETAIL E
SHEET 2



SCALE
1" = 1'

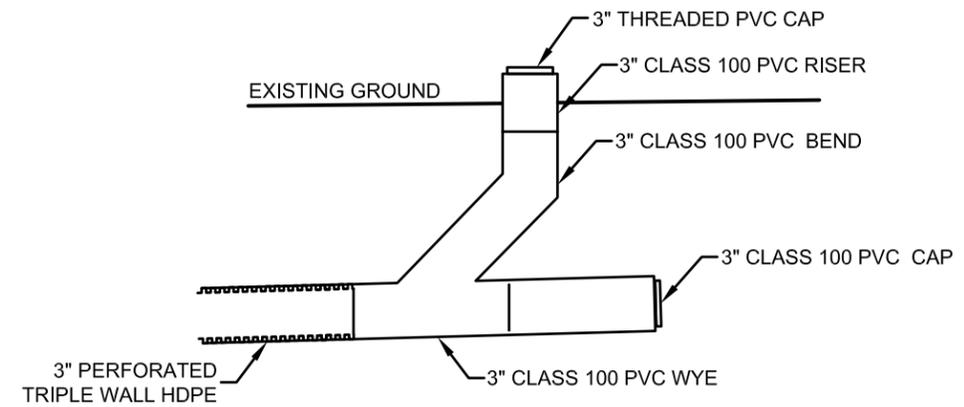
PERFORATED DRAIN LINE TYPICAL TRENCH SECTION

DETAIL F
SHEET 2

SCALE
1" = 1'

PERFORATED DRAIN LINE CLEANOUT DETAIL

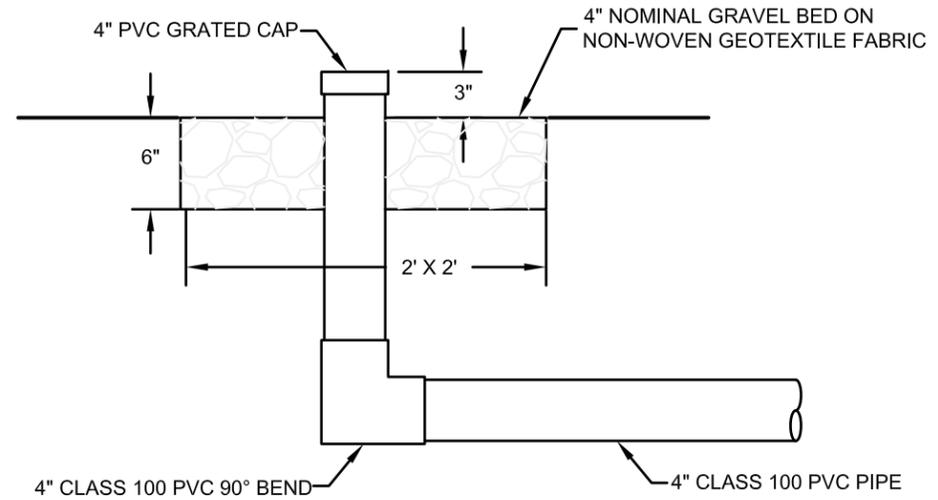
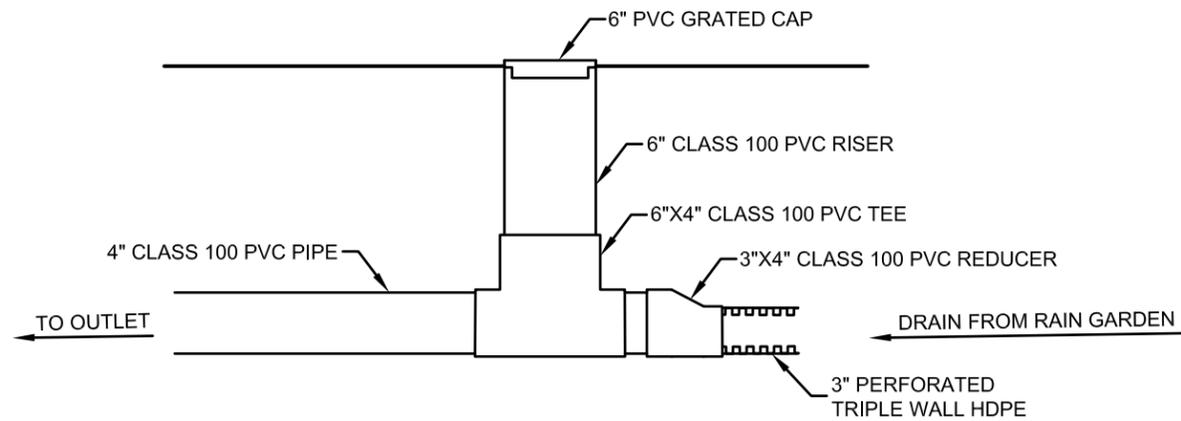
DETAIL G
SHEET 2



DRAWN BY: _____
 DESIGNED BY: _____
 APPROVED BY: _____

PROJECT 202.0815.01
 CONSTRUCTION DETAILS

PLAN DATE
2/26/16
 SHEET
04 OF 05



SCALE
1" = 1'

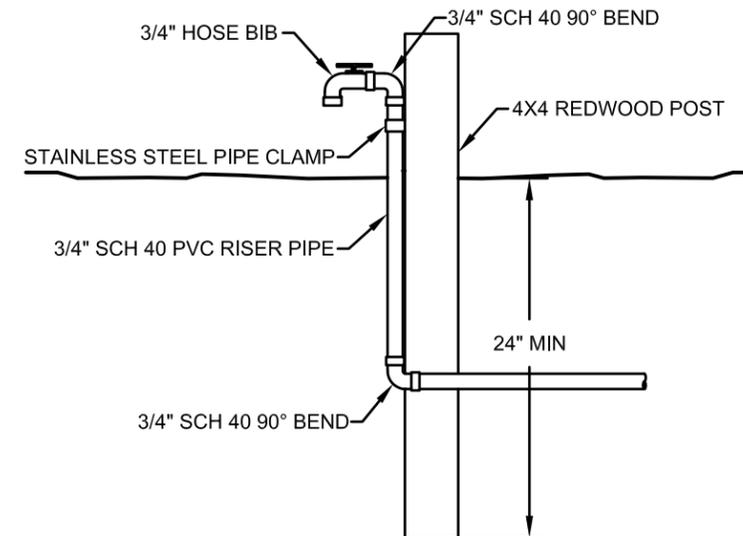
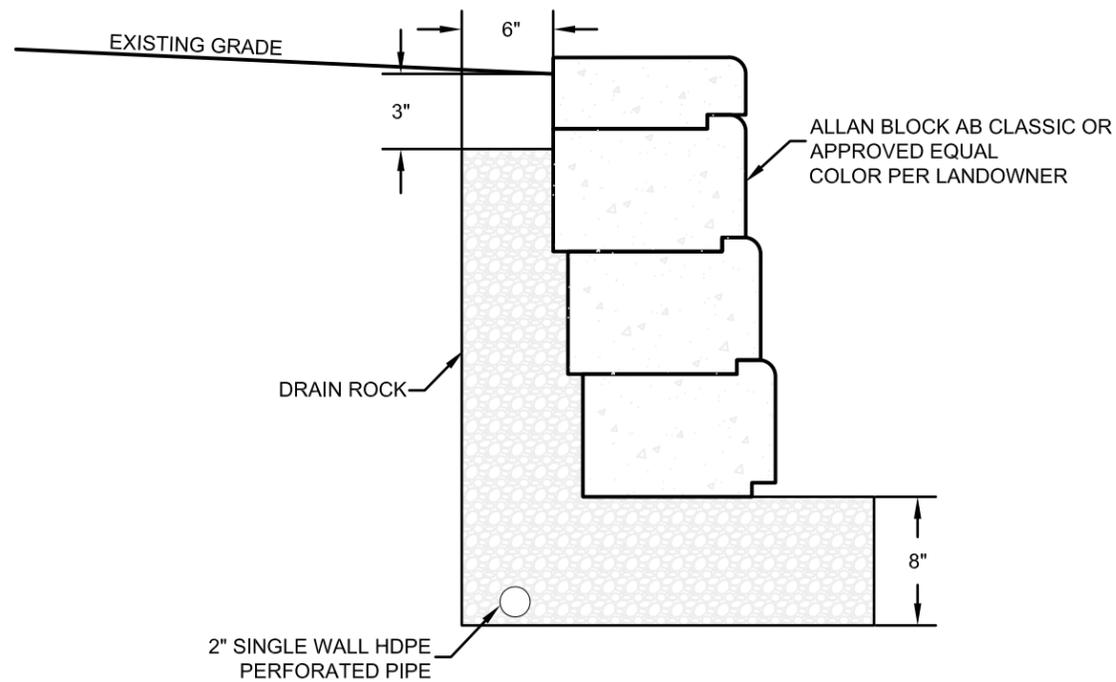
DRAIN INLET DETAIL

DETAIL H
SHEET 2

SCALE
1" = 1'

GRAVEL DRAINAGE OUTLET DETAIL

DETAIL I
SHEET 2



SCALE
1" = 1'

MASONRY UNIT WALL DETAIL

DETAIL J
SHEET 3

SCALE
1" = 1'

IRRIGATION RISER

DETAIL K
SHEET 2

DRAWN BY: **AS-BUILT**
 DESIGNED BY:
 APPROVED BY:

PROJECT 202.0815.01
 CONSTRUCTION DETAILS

PLAN DATE
2/26/16

SHEET
05 OF 05



ECOLOGICAL CONCERNS, INC.
 10000 UNIVERSITY AVENUE, SUITE 100
 SAN DIEGO, CALIFORNIA 92121
 TEL: 619-444-1111 FAX: 619-444-1112
 WWW.ECOCONCERNS.COM

FITZGERALD ASBS - STORM WATER QUALITY BMPs
 SPMATEO COUNTY RESOURCE CONSERVATION DISTRICT
 COUNTY OF SAN MATEO | CA STATE WATER RESOURCES CONTROL BOARD

DATE	DESCRIPTION OF REVISION

APPROVAL

SHEET CONTENTS
 PLANTING PLAN
 SITE # 202008101
 PROJECT # 202008101
 MOSSBEACH, CA

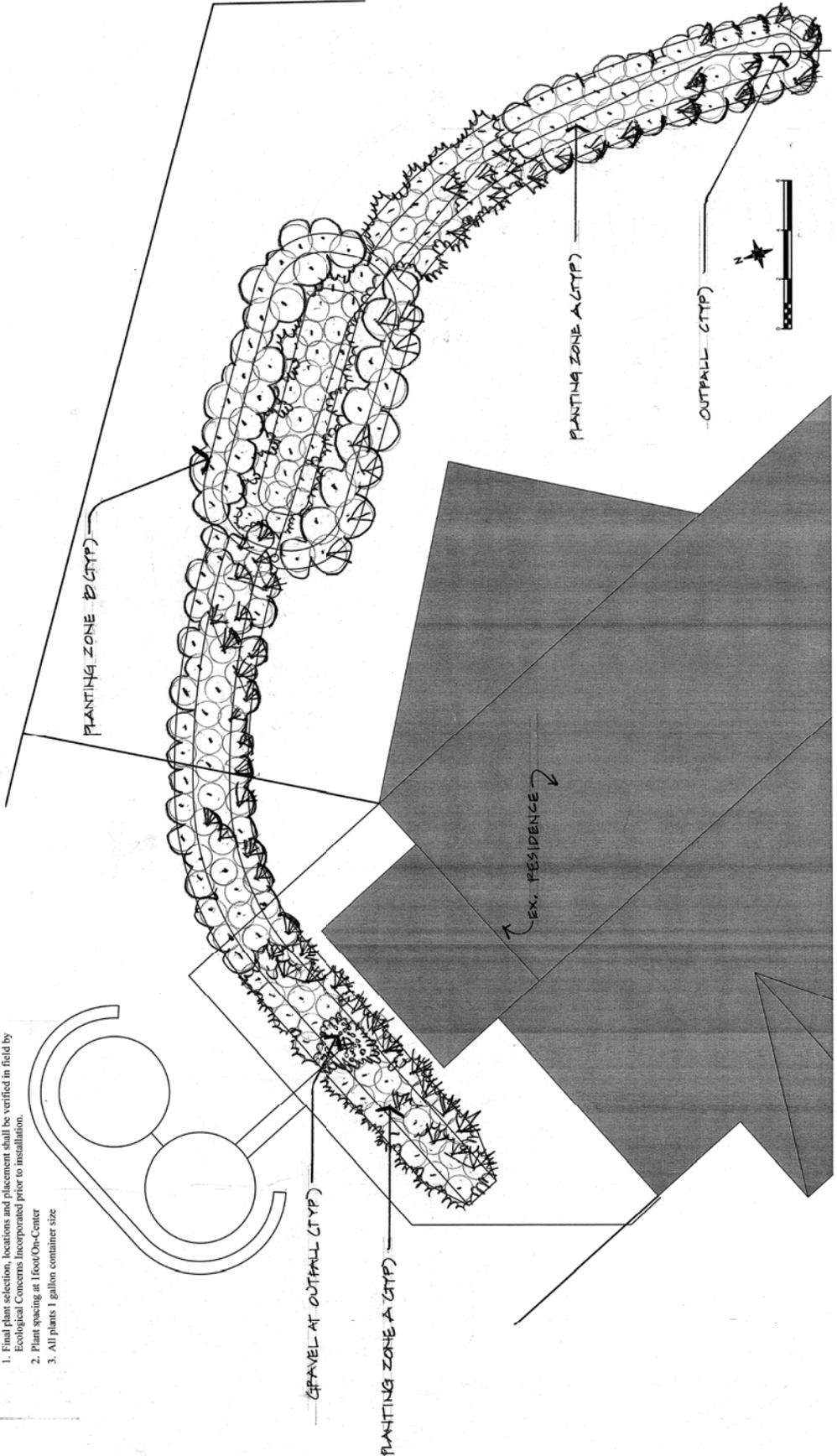
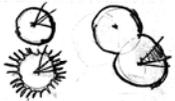
SHEET
L5.0
 OF ALL SHEETS
 LATER REVISION

PLANTING PLAN GENERAL NOTES

1. ECI LANDSCAPE DRAWINGS ARE BASED ON PLAN DOCUMENTS PREPARED BY BRUCE QUINTANA-JONES P.E. REFER TO ENGINEERING DRAWINGS FOR ALL SITE MEASUREMENTS.
2. SEE ENGINEERING DRAWINGS AND SPECIFICATIONS FOR ALL CONSTRUCTION DETAILS OF BEST MANAGEMENT PRACTICES, INCLUDING GRADING AND TRIPLETATION SLOPE.
3. ALL PLANTS SHALL BE INSPECTED AND APPROVED BY ECI LANDSCAPE DESIGNER PRIOR TO INSTALLATION.
4. PLANTS SHALL BE PLANTED IN SOIL MIX SPECIFIED, AND PLANTED TO THE DEPTH OF THE ROOT CROWN, AND ALL PLANTS SHALL BE WATERED THOROUGHLY AT TIME OF PLANTING.
5. ALL MAINTENANCE SHALL BE PERFORMED BY OTHERS, AND IS NOT INCLUDED IN THIS SCOPE OF WORK. MAINTENANCE SHALL INCLUDE: PRUNING, FERTILIZING, AND DURING EXTENSIVE DRY PERIODS THROUGHOUT THE LIFE OF THE PROJECT, NONNATIVE INVASIVE SPECIES SHOULD BE CONTROLLED BY HAND WEEDING.

Zone	Botanical Name	Common Name	Total Count
A	<i>Carex tumulicola</i>	foxtail sedge	161 (total all plants in Zone A)
	<i>Juncus patens</i>	California grey rush	
	<i>Leymus triticoides</i>	creeping wildrye	
	<i>Calamagrostis foliosa</i>	Mendocino reed grass	
	<i>Yarrow</i>	Yarrow	
B	<i>Achillea millefolium</i>	Yarrow	34 (total all plants in Zone B)
	<i>Aster chilensis</i>	California aster	
	<i>Erigeron annuus</i>	California fuchsia	
	<i>Erigeron glaucus</i>	seaside daisy	
	<i>Fragaria chiloensis</i>	beach strawberry	
	<i>Iris douglasiana</i>	Douglas iris	
	<i>Salvia spathulata</i>	hummingbird sage	

1. Final plant selection, locations and placement shall be verified in field by Ecological Concerns Incorporated prior to installation.
2. Plant spacing at 1'foot/On-Center
3. All plants 1 gallon container size



RAIN GARDEN AND SWALE

1/2"=1'-0"