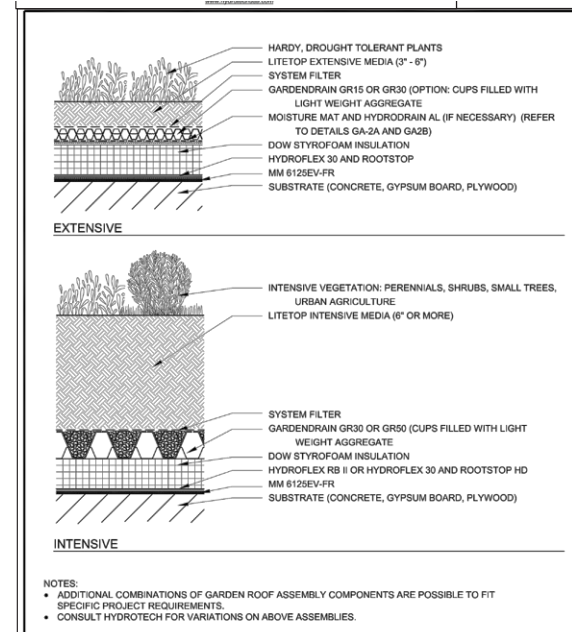
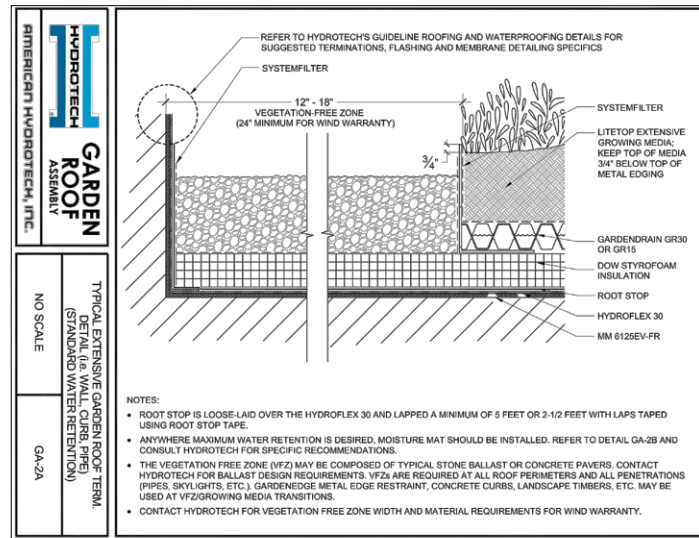


HYDROTECH GREEN ROOF TYPICAL DETAILS



LEGEND

- RHUS AROMATICA 'GRO-LOW'
GRO-LOW FRAGRANT SUMAC (>2')(N)
- JUNIPERUS VIRGINIANA 'GREY OWL'
GREY OWL JUNIPER (>2')(N)
- ITEA VIRGINICA 'HENRY'S GARNET'
HENRY'S GARNET VIRGINIA SWEETSPIRE (>2')(N)
- ILEX GLABRA 'COMPACTA'
COMPACT INKBERRY HOLLY (>2')(N)
- CORNUS SERICEA 'KELSEY'
KELSEY'S DWARF RED-OSIER DOGWOOD (>2')(N)
- RHODODENDRON 'ROBLEZA' PPAF
AUTUMN BONFIRE ENCORE AZALEA (>2)
- LIRIOPE MUSCARI 'EMERALD GODDESS'
EMERALD GODDESS LILY TURF (<2)
- IRIS VERSICOLOR
BLUE FLAG IRIS (18" O.C. SPACING)(>2)(N)
- RUDBECKIA FULGIDA 'FULGIDA'
BLACK EYED SUSAN (18" O.C. SPACING)(>2)(N)
- BAPTISTA AUSTRALIS
FALSE INDIGO (18" O.C. SPACING)(>2)(N)
- LIRIOPE MUSCARI 'BIG BLUE'
BIG BLUE LILY TURF (18" O.C. SPACING)(<2)
- GREEN ROOF SEDUM TILE
MID-ATLANTIC SEDUM BLEND

GARDENDRAIN™ GR15 PRODUCT DATA SHEET

GENERAL DESCRIPTION
Gardendrain GR15 is made of recycled polyethylene molded into a three-dimensional panel. The unique design provides retention cups on the top side, drainage channels on top and bottom and holes in the tops of the "domes" for ventilation and evaporation.

BASIC USE
Gardendrain GR15 is specifically designed to act as a drainage and water retention element in Hydrotech's Garden Roof® Assembly. It is only utilized under "extensive" landscaping.

TECHNICAL DATA
PANEL DIMENSIONS: 3 ft. X 8 ft. (0.9 m X 2.4 m) – in panels (24 sq.ft. total)
PANEL HEIGHT: 5/8 in. (15 mm)
WEIGHT: 0.3 lb/ft² (1.5 kg/m²) – dry
+1 lb/ft² (4.8 kg/m²) – wet

COMPRESSIVE STRENGTH: (ASTM D1821) 7,455 lb/ft² (357 kN/m²)
FLOW RATE: (ASTM D4716) 28 gal./min./ft. width (353 L/min./m. width); h.p. = 1
WATER RETENTION: +0.1 gal/ft² (3.3 l/m²)

INSTALLATION

- GR15 is to be installed loose-laid over the entire surface of the roof where vegetation is specified.
- GR15 is easily cut to fit around penetrations, perimeter drains, etc. with a heavy-duty utility knife or small-toothed saw.
- Adjacent panels are typically butted together.
- An substrate soil loads are typically shallow, the retention cups of GR15 are typically not filled with lightweight expanded aggregate.

American Hydrotech, Inc.
303 East Ohio Street, Chicago, IL 60611 • (312)337-9998 • (312)661-6731 fax • 1087
www.hydrotechroof.com

InstaGreen® Sedum Carpet

Product Information
Size/Coverage: 48"W x 78"L (26.0 SF/roll)
Weight: 3.2 lbs/SF (delivery weight), 80.0 lbs per roll
Fiber/Soil Base: 9.0 lbs/SF (fully saturated), 125.0 lbs per roll
Approx. 1" thick

SEDUM CARPET FEATURES

Instant Green - Hydrotech's InstaGreen Sedum Carpets will typically be delivered with 95% plant coverage.

Maintenance - Minimal maintenance requirements once established.

Flexible Design - For a unique look, perennial plants and/or plugs can be planted through the carpet during installation.

Sloped Installations - Enhanced erosion control makes a sedum carpet ideal for both low and steep slopes.

Varieties - Wide variety of sedum sods in different climates and exposures.

Typical Varieties	Zone	Height (inches)	Spread (inches)	Flower Time	Flower Color	Soil Depth
Sedum spaldingii	3-8	2-4	12-18	Jul-Aug	Yellow	3-4
Sedum album 'Doris Cooper'	4-8	6-8	6-8	Jul-Aug	White	3-4
Sedum album 'Nivalis'	3-8	2-4	4-6	Mid-Jun	White	3-4
Sedum album 'Waldenparkhaus Gold'	3-7	3-6	6-12	Mid-Jun	Yellow	3-4
Sedum hybridum 'Yonagardens'	4-7	3-6	6-8	Jun-Sep	Yellow	3-4
Sedum barnhartianum	4-7	3-6	6-8	Jun-Jul	Yellow	3-4
Sedum album 'Blue Spruce'	5-7	4-6	6-12	Mid-Jun	Yellow	3-4
Sedum spaldingii 'Angelic'	4-7	4-6	6-12	Jul-Aug	Yellow	3-4
Sedum spaldingii	4-7	3-4	6-8	Jul-Aug	Yellow	3-4
Sedum album 'Tallgrass'	5-8	4-6	6-8	Jun-Jul	Red	3-4
Sedum spaldingii 'Coral Carpet'	3-8	4-6	6-8	Jul-Aug	Pink	3-4
Sedum spaldingii 'Red Carpet'	3-7	3-4	6-10	Jul-Aug	Red	3-4
Sedum album 'Honey'	4-7	3-4	6-8	Jun-Jul	Pink	3-4
Sedum album 'Sedum Carpet'	4-8	4-6	6-10	Jul-Aug	Yellow	3-4

Every variety will not be growing in each order shipped, but each order should contain at least 9 of the 12 varieties shown.

GARDEN ROOF ASSEMBLY

TYPICAL STANDARD GARDEN ROOF ASSEMBLIES EXTENSIVE AND INTENSIVE

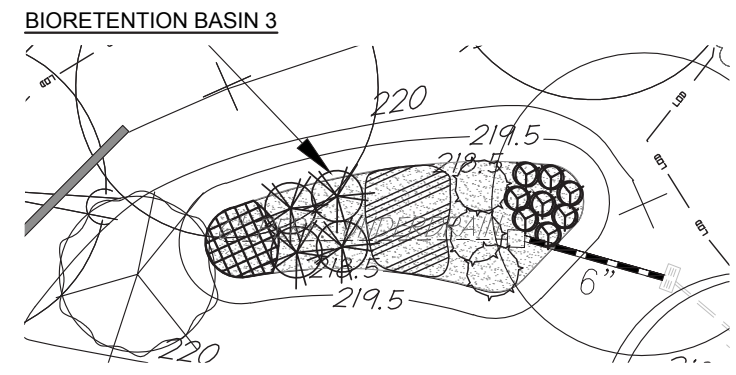
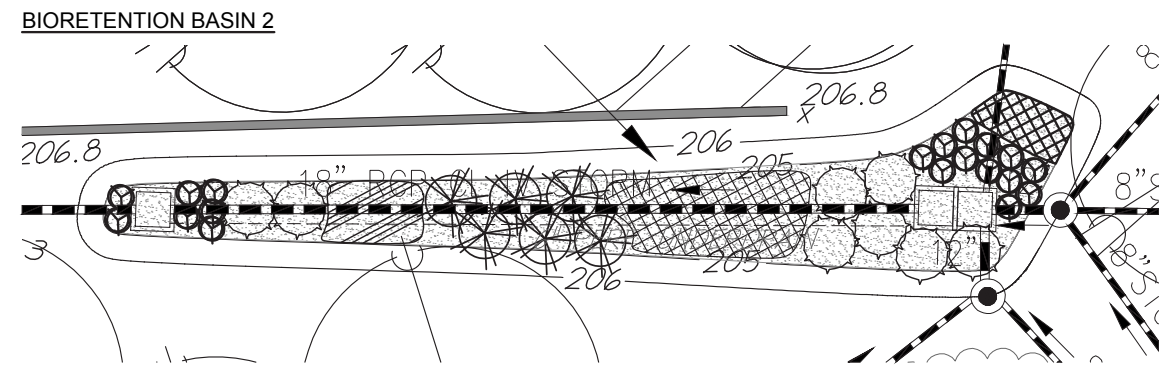
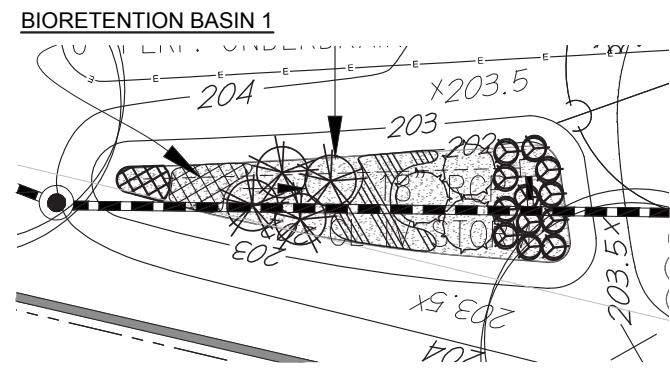
NO SCALE | GA-1A

GREEN ROOF

$S_v = SA \times [(d \times \eta_1) + (DL \times \eta_2)] / 12$

Sv = Storage Volume
Green Roof Area (SA) 18214 ft²
Media Depth (d) 4.25 in
Drainage Layer Depth (DL) 0.0625 in
Media Volume of Voids (η₁) 0.51
Drainage Layer Volume of Voids (η₂) 0.15 (if unknown use 0.15)

Green Roof Receive 100% Retention Value
Rv = 3304 ft³ Max. Rv eligible for discount is Rv1.2"
Rv = 24715 gallons



Green Area Ratio Scoresheet					
Address	23rd and Savannah Streets, SE	Square	5894	Lot	2, 3 & 4
Other	TERRACE MANOR REDEVELOPMENT	Zone District	RA-1		
Lot size (enter this value first) *	100,260	Minimum Score	.4	Multiplier	GAR Score
					SCORE: 0.505
Landscape Elements					
		Square Feet	Factor		Total
A Landscaped areas (select one of the following for each area)					
1	Landscaped areas with a soil depth < 24"	square feet 0	0.30		-
2	Landscaped areas with a soil depth ≥ 24"	square feet 41,260	0.60		24,756.0
3	Bioretention facilities	square feet 3,491	0.40		1,396.4
B Plantings (credit for plants in landscaped areas from Section A)					
1	Groundcovers, or other plants < 2' height	square feet 342	0.20	Native Bonus square feet	68.4
2	Plants ≥ 2' height at maturity - calculated at 9-sf per plant	# of plants 474	4266	0.30	# of plants 474
3	New trees with less than 40-foot canopy spread - calculated at 50 sq ft per tree	# of trees 6	300	0.50	# of trees 6
4	New trees with 40-foot or greater canopy spread - calculated at 250 sq ft per tree	# of trees 26	6500	0.60	# of trees 26
5	Preservation of existing tree 6" to 12" DBH - calculated at 250 sq ft per tree	# of trees 5	1250	0.70	# of trees 5
6	Preservation of existing tree 12" to 18" DBH - calculated at 600 sq ft per tree	# of trees	0	0.70	# of trees
7	Preservation of existing trees 18" to 24" DBH - calculated at 1300 sq ft per tree	# of trees 1	1300	0.70	# of trees 1
8	Preservation of existing trees 24" DBH or greater - calculated at 2000 sq ft per tree	# of trees	0	0.80	# of trees
9	Vegetated wall, plantings on a vertical surface	square feet		0.60	square feet
C Vegetated or "green" roofs					
1	Over at least 2" and less than 8" of growth medium	square feet 26,480	0.60	square feet	15,888.0
2	Over at least 8" of growth medium	square feet		0.80	square feet
D Permeable Paving***					
1	Permeable paving over 6" to 24" of soil or gravel	square feet		0.40	-
2	Permeable paving over at least 24" of soil or gravel	square feet		0.50	-
E Other					
1	Enhanced tree growth systems***	square feet		0.40	-
2	Renewable energy generation	square feet 0		0.50	-
3	Approved water features	square feet		0.20	-
F Bonuses		sub-total of sq ft = 85,189			
1	Native plant species	square feet 13,616	0.10		1,361.6
2	Landscaping in food cultivation	square feet 0	0.10		-
3	Harvested stormwater irrigation	square feet	0.10		-
Green Area Ratio numerator =					50,585
*** Permeable paving and structural soil together may not qualify for more than one third of the Green Area Ratio score.					
Total square footage of all permeable paving and enhanced tree growth.					-

STATEMENT BY CERTIFIED LANDSCAPE EXPERT:

THIS IS TO CERTIFY THAT I HAVE EXAMINED ALL REQUIRED GAR PLAN SUBMITTALS PRIOR TO SUBMISSION. I FURTHER CERTIFY THAT ALL ASPECTS OF THE SUBMITTAL, INCLUDING LANDSCAPE ELEMENTS WITHIN THE LOT AND LISTED GAR SCORE, MEET THE SPECIFICATIONS REQUIRED UNDER CHAPTER 34 OF TITLE 11 OF THE DISTRICT OF COLUMBIA MUNICIPAL REGULATIONS

JASON RADICE, RLA, ASLA, LEED-AP

NAME AND TITLE

9900 MAIN STREET, SUITE 400

ADDRESS

FAIRFAX, VA 22031

DATE 01/02/2019

PHONE NO. 703-273-6820

[Signature]
CERTIFIED LANDSCAPE EXPERT SIGNATURE

MD-DLLR

CERTIFYING ORGANIZATION

3440

CERTIFICATION NUMBER



Grey Owl Juniper

Foundation Plant – Evergreen, Consistent 3' Height Without Pruning. Silvery Grey Color, Native, Low Water, Durable Plant



Compact Inkberry

Maintains Button Like Form – 4' Height Requires Male to Fruit– Bioretention Plant - Native



Gro-Low Sumac

Short Spreading Groundcover/Shrub – Mass Planting Brilliant Red Fall Color – Low Water – Durable Plant - Native



Emerald Goddess Liriope

Largest Form of Evergreen Liriope 2' High - Low Water – Durable Plant



Black-Eyed Susan

Blooms from July to October 30" High – Bioretention Plant



Autumn Bonfire Encore Azalea

Repeat Blooming and Fall Color Evergreen Shrub – 3' High



Blue Flag – Iris Versicolor

May-June Bloom - Naturalizing Bioretention Plant– 2.5' High



False Indigo

May-June Bloom - Naturalizing Bioretention Plant– 4' High



Sedum Tile

Mid-Atlantic Mix Sedum Tile Green Roof Plants– 2" High



Henry's Garnet Sweetspire

Bloom May to June - Naturalizing Bioretention Plant – 4" High



Kelsey's Dwarf Red Osier Dogwood

Compact cultivar of red osier dogwood. Bioretention Plant - 2' High



Scarlet Oak
Maroon – Dark Red Fall Color
50'-70' High x 40'-50' Canopy
Native



October Glory Red Maple
Deep Red to Orange Fall Color
40'-50' High x 30'-40' Canopy
Low –Water – Native Variety















Red Sunset Red Maple
Brilliant Red Fall Color
40'-50' High x 30'-35' Canopy
Low –Water – Native Variety



Eastern Redbud
Fuchsia Flower - Orange Fall Color
20'-30' High x 25'-35' Canopy
Low –Water – Native

LEGEND

-  *RHUS AROMATICA 'GRO-LOW'*
GRO-LOW FRAGRANT SUMAC (>2')(N)
-  *JUNIPERUS VIRGINIANA 'GREY OWL'*
GREY OWL JUNIPER (>2')(N)
-  *ITEA VIRGINICA 'HENRY'S GARNET'*
HENRY'S GARNET VIRGINIA SWEETSPIRE (>2')(N)
-  *ILEX GLABRA 'COMPACTA'*
COMPACT INKBERRY HOLLY (>2')(N)
-  *CORNUS SERICEA 'KELSEY'*
KELSEY'S DWARF RED-OSIER DOGWOOD (>2')(N)
-  *RHODODENDRON 'ROBLEZA' PPAF'*
AUTUMN BONFIRE ENCORE AZALEA (>2')
-  *LIRIOPE MUSCARI 'EMERALD GODDESS'*
EMERALD GODDESS LILY TURF (<2')
-  *IRIS VERSICOLOR*
BLUE FLAG IRIS (18" O.C. SPACING)(>2')(N)
-  *RUDBECKIA FULGIDA 'FULGIDA'*
BLACK EYED SUSAN (18" O.C. SPACING)(>2')(N)
-  *BAPTISTA AUSTRALIS*
FALSE INDIGO (18" OC SPACING)(>2')(N)
-  *LIRIOPE MUSCARI 'BIG BLUE'*
BIG BLUE LILY TURF (18" O.C. SPACING)(<2')
-  *GREEN ROOF SEDUM TILE*
MID-ALTANTIC SEDUM BLEND

BIORETENTION 1 PLANTING SCHEDULE									
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	STOCK SIZE		STOCK TYPE	NATIVE	GREATER THAN 2' HEIGHT	COMMENTS
				CALIPER	HEIGHT				
SHRUBS									
CS	12	CORNUS SERICEA 'KELSEY'	KELSEY'S DWARF RED-OSIER DOGWOOD	N/A	N/A	2 GAL	Y	Y	
IG	3	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY HOLLY	N/A	N/A	2 GAL	Y	Y	
IV	4	ITEA VIRGINICA 'HENRY'S GARNET'	HENRY'S GARNET VIRGINIA SWEETSPIRE	N/A	N/A	2 GAL	Y	Y	
GRASSES/PERENNIALS									
IS	10	IRIS VERSICOLOR	BLUE FLAG IRIS	N/A	N/A	QUART	Y	Y	20 SF @ 18" O.C. SPACING
RF	37	RUDBECKIA FULGIDA 'FULGIDA'	BLACKEYED SUSAN	N/A	6-9"	QUART	Y	Y	73 SF @ 18" O.C. SPACING
	66	PLANTS ABOVE 2' MATURE HEIGHT							

BIORETENTION 2 PLANTING SCHEDULE									
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	STOCK SIZE		STOCK TYPE	NATIVE	GREATER THAN 2' HEIGHT	COMMENTS
				CALIPER	HEIGHT				
SHRUBS									
CS	19	CORNUS SERICEA 'KELSEY'	KELSEY'S DWARF RED-OSIER DOGWOOD	N/A	N/A	2 GAL	Y	Y	
IG	8	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY HOLLY	N/A	N/A	2 GAL	Y	Y	
IV	6	ITEA VIRGINICA 'HENRY'S GARNET'	HENRY'S GARNET VIRGINIA SWEETSPIRE	N/A	N/A	2 GAL	Y	Y	
GRASSES/PERENNIALS									
BA	103	BAPTISTA AUSTRALIS	FLASE INDIGO	N/A	N/A	QUART	Y	Y	200 SF @ 18" O.C. SPACING
IS	29	IRIS VERSICOLOR	BLUE FLAG IRIS	N/A	N/A	QUART	Y	Y	57 SF @ 18" O.C. SPACING
RF	40	RUDBECKIA FULGIDA 'FULGIDA'	BLACKEYED SUSAN	N/A	6-9"	QUART	Y	Y	78 SF @ 18" O.C. SPACING
	205	PLANTS ABOVE 2' MATURE HEIGHT							

BIORETENTION 3 PLANTING SCHEDULE									
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	STOCK SIZE		STOCK TYPE	NATIVE	GREATER THAN 2' HEIGHT	COMMENTS
				CALIPER	HEIGHT				
SHRUBS									
CS	8	CORNUS SERICEA 'KELSEY'	KELSEY'S DWARF RED-OSIER DOGWOOD	N/A	N/A	2 GAL	Y	Y	
IG	3	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY HOLLY	N/A	N/A	2 GAL	Y	Y	
IV	4	ITEA VIRGINICA 'HENRY'S GARNET'	HENRY'S GARNET VIRGINIA SWEETSPIRE	N/A	N/A	2 GAL	Y	Y	
GRASSES/PERENNIALS									
IS	30	IRIS VERSICOLOR	BLUE FLAG IRIS	N/A	N/A	QUART	Y	Y	58 SF @ 18" O.C. SPACING
RF	57	RUDBECKIA FULGIDA 'FULGIDA'	BLACKEYED SUSAN	N/A	6-9"	QUART	Y	Y	57 SF @ 18" O.C. SPACING
	102	PLANTS ABOVE 2' MATURE HEIGHT							

DECORATIVE LANDSCAPE SCHEDULE									
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	STOCK SIZE		STOCK TYPE	NATIVE	GREATER THAN 2' HEIGHT	COMMENTS
				CALIPER	HEIGHT				
TREES									
AG	12	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY MAPLE	2"	N/A	B&B	Y	Y	
AS	8	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2"	N/A	B&B	Y	Y	
CC	6	CERCIS CANADENSIS	EASTERN REDBUD	2"	N/A	B&B	Y	Y	
QC	6	QUERCUS COCCINEA	SCARLET OAK	2"	N/A	B&B	Y	Y	
SHRUBS									
JV	65	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	N/A	N/A	1 GAL	Y	Y	
RA	14	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	N/A	N/A	1 GAL	Y	Y	
RR	23	RHODODENDRON 'ROBLEZA' PPAF'	AUTUMN FIRE ENCORE AZALEA	N/A	N/A	1 GAL	Y	Y	
GRASSES/PERENNIALS									
LG	157	LIRIOPE MUSCARI 'EMERALD GODDESS'	EMERALD GODDESS LILY TURF	N/A	N/A	PLUG	N	N	769 SF - SPACING AS SHOWN
LM	395	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILY TURF	N/A	6-9"	PLUG	N	N	342 SF @ 12" O.C. SPACING
	102	PLANTS ABOVE 2' MATURE HEIGHT							