

**APPLICATION FOR
URBAN DESIGN COMMISSION
REVIEW AND APPROVAL**

AGENDA ITEM # _____
Project # _____
Legistar # _____

DATE SUBMITTED: September 12, 2012

Action Requested

Informational Presentation
 Initial Approval and/or Recommendation
 Final Approval and/or Recommendation

UDC MEETING DATE: September 19, 2012

PLEASE PRINT!

PLEASE PRINT!

PROJECT ADDRESS: 502 S. Park Street

ALDERMANIC DISTRICT: District 13- Sue Ellingson

OWNER/DEVELOPER (Partners and/or Principals) The Gallina Companies
101 E Main Street Suite 500
Mount Horeb, WI 53572

ARCHITECT/DESIGNER/OR AGENT: Plunkett Raysich Architects
2310 Crossroads Dr. Suite 2000
Madison, WI 53718

CONTACT PERSON: Steven Kieckhafer, AIA
Address: 2310 Crossroads Dr. Suite 2000
Madison, WI 53718
Phone: 608/ 240-9900 x357
Fax: 608/ 240-9690
E-mail address: skieckhafer@prarch.com

TYPE OF PROJECT:

(See Section A for:)

- Planned Unit Development (PUD)
 - General Development Plan (GDP)
 - Specific Implementation Plan (SIP)
- Planned Community Development (PCD)
 - General Development Plan (GDP)
 - Specific Implementation Plan (SIP)
- Planned Residential Development (PRD)
- New Construction or Exterior Remodeling in an Urban Design District * (A public hearing is required as well as a fee)
- School, Public Building or Space (Fee may be required)
- New Construction or Addition to or Remodeling of a Retail, Hotel or Motel Building Exceeding 40,000 Sq. Ft.
- Planned Commercial Site

(See Section B for:)

- New Construction or Exterior Remodeling in C4 District (Fee required)

(See Section C for:)

- R.P.S.M. Parking Variance (Fee required)

(See Section D for:)

- Comprehensive Design Review* (Fee required)
- Street Graphics Variance* (Fee required)
- Other _____

*Public Hearing Required (Submission Deadline 3 Weeks in Advance of Meeting Date)

Where fees are required (as noted above) they apply with the first submittal for either initial or final approval of a project.

12 September 2012

Mr. Al Martin
Department of Planning & Community Development
City of Madison
215 Martin Luther King Jr. Blvd.
Madison, WI 53701

Re: Letter of Intent
New Construction in an Urban Design District
The Ideal Apartments
502 S. Park Street
Madison, WI
PRA Project No. 114387-01

Dear Mr. Martin:

The following Urban Design Application is submitted together with the required submittal of; plans, Letter of Intent, PUD text, and supporting documents for Final approval.

Organizational Structure:

Owner:	Gallina Corporation 101 E. Main St., Ste. 500 Mt. Horeb, WI 53572 Contact: Craig Enzenroth cenzenroth@gallinacos.com	Architect:	Plunkett Raysich Architects, LLP 2310 Crossroads Dr., Ste. 2000 Madison, WI 53718 Contact: Steve Kieckhafer SKieckhafer@prarch.com
Site/Civil:	Burse Surveying and Engineering, Inc. 1400 E. Washington Ave, Suite 158 Madison, WI 53703 Contact: Michelle Burse mburse@bse-inc.net	Landscape:	Bruce Company 2830 Parmenter St. Middleton, WI 53562 Contact: Steve Short sshort@brucecompany.com
Lighting:	Hein Engineering 319 W Beltline Hwy, Suite 111 Madison, WI 53713 Contact: Mike Hein hein@chorus.net		

Introduction:

The Ideal is a proposal for a mixed-use development consisting of apartments and retail located at 502 S. Park Street in Madison, Wisconsin. This development is in the Greenbush Neighborhood and is in the Northern Design District of the Park Street Corridor and is part of Urban Design District No. 7.

Project Description:

The Ideal Development will redevelop five (5) lots on the corner of S. Park St. and along Drake St. Currently these lots hold the Ideal Body Shop at 502 S. Park St., three (3) 2-story residences at 917, 923, and 925 Drake St. and a surface parking lot at 921 Drake St.

502 S Park St- Ideal Body Shop, zoned C-3 (parcel #070923315224)

917 Drake St- single family residential rental property, zoned C-3 (parcel #070923315018)

921 Drake St- parking for Ideal Body, zoned C-3 (parcel #070923315026)

923 Drake St- 2 unit residential rental property, zoned C-3/R-3 (parcel #070923315034)

925 Drake St- single family residential rental property, zoned R-3 (parcel #070923315042)

The structures on all of the listed addresses sites have been determined to be in poor to very poor condition and will be demolished for the proposed development for which the Alder has been notified. Posted notice of demolition has been made on March 30, 2012 to the City's web address <https://www.cityofmadison.com/developmentCenter/demolitionNotification/>

All of the listed addresses will be combined to create a one lot CSM, currently being developed; legal description of properties was submitted previously.

The development will have approximately 4,658 S.F. of retail space accessed off of Park St. and 57 apartment units from studios to 2 Bedrooms on floors 2-5 above.

Along Park St. the new building will maintain the street edge for 3-stories and then step back the fourth and fifth floors 6-feet at the corner and 16-feet remaining façade. The building again steps in height as it moves west along Drake St. back down to 3-stories. The mass of the building is also broken in plan along Drake St. with a courtyard that is 26-feet wide and 35-feet in depth, while the remaining elevation has an 11-foot shift south. The goal is to create a more residentially friendly scale to the design as the building moves west along Drake St. The west end of the building doglegs to the south creating a south facing green roof/terrace for residents use. The apartments on the west end of the development have flat roofs with the roof line punctuated with a rhythm of raised flat roof areas. The intent is to provide a different more residential, though not traditional, character to this end of the development as it transitions into the residential neighborhood. A series of raised planters within the 11 foot step back along Drake St. have been added to bring a sense of human scale and nicely developed green space to the pedestrian experience.

The exterior materials for the Ideal consist of brick masonry, fiber cement panels and bands of precast concrete. These materials will provide for a durable, high quality and attractive building with low maintenance.

Urban Design Application – The Ideal Apartments

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Parking for the development will be provided in a two level parking structure beneath the building. There will be a total of 73 parking spaces provided. In addition, each parking level has ample, secure bike parking provided. Trash and recycling dumpsters are located to provide alley access behind an overhead garage door. A loading zone area is provided on site with access from the alley. Semi-trailer deliveries will not be permitted on to the site.

Green space is provided in several locations. The building is held back approximately 17-feet from the western lot line providing opportunity for a nicely landscaped buffer. A courtyard provides a water feature while also serving as a secondary entrance to the residential units. The 11-foot shift in the building also provides green / landscape space and raised planters. On the south edge of the building there is a 5-foot landscape buffer. The second floor roof terrace also provides a green roof and a resident accessed terrace.

A number of gestures have been made to pay homage to the Ideal Body Co. building which currently occupies a portion of the site. First, naming the development The Ideal respectfully references the original building. The concept is that the sign will be rehabbed and reused, or if not feasible, the signage will replicate in font, and style the original. The original building also has a number of stone medallions which will be salvaged and reused in the façade along Park Street. Soldier coursing the brick at the window head will also reference the detailing on the original building. Also, the look of the factory window pattern will be incorporated into the Park Street elevation at the transom windows along the first floor and at the top of the stair tower. Additional artifacts from the Ideal Body Co. will be salvaged as possible and incorporated into the interior design of the lobby and other spaces.

Site Development Statistics

Lot Area	33,473 s.f. / .77 acres
Dwelling Units	57
Density	587 s.f. / du
Building Height	3-5 Stories
Gross Floor Area (Excluding parking)	74,011 s.f.
Floor Area Ratio	2.21

<u>Dwelling Unit Mix</u>	Total
Studio	8
One Bedroom	23
One Bedroom/Den	11
Two Bedroom	15
Total Dwelling Units	57

Vehicle Parking

Below Grade Parking	73 spaces	(including 2 handicap spaces)
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Parking Ratio 1.28 spaces / du

Bike Parking

Enclosed Bike Storage available to residents, 74 spaces (57 units) greater than 1/unit, and 9 spaces available for retail.

Moped Parking

Enclosed parking available to residents within parking area, and spaces for retail located along terrace on Drake Street.

Project Schedule:

This project is anticipated to start construction in October, 2012 with completion scheduled for Fall, 2013.

Social & Economic Impacts:

The Ideal mixed use development will be a valuable asset to the Park Street Corridor and the Green Bush Neighborhood. It will provide needed housing to the area benefitting local employees. Local businesses will also benefit from the increased customer base. This development promotes connectivity, diversity, and a vibrant local community while minimizing vehicular travel and encouraging pedestrian activity. In addition, this development will provide significant employment for the local construction trades.

City Planning, Urban Design (UDC), Design Assistance Team (DAT), Alderperson and Neighborhoods:

The following is a list of dates of which meetings were held to discuss the proposed project

- August 5, 2011- Alder
- September 6, 2011- City Planning
- September 9, 2011- Neighborhood (Greenbush)
- November 8, 2011- City Planning
- February 2, 2012- City Planning
- February 9, 2012- Alder and Neighborhood (Greenbush-Vilas)
- March 7, 2012- UDC, Informational
- April 11, 2012- Alder and Neighborhood (Greenbush-Vilas and Monona Bay)
- April 18, 2012- UDC, Informational
- May 24, 2012- Design Assistance Team (DAT)
- June 14, 2012- Alder and Neighborhood (Greenbush-Vilas)
- July 11, 2012- UDC, Initial Approval (was referred)
- July 26, 2012- City Planning
- August 7, 2012- City Planning
- August 22, 2012- City Planning

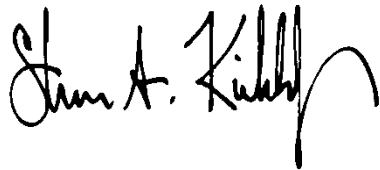
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September 5, 2012- anticipated UDC, Initial Approval and Final Approval

Please contact us with any questions or for additional information that you request.

Thank you for your time in reviewing our proposal.

Best regards,

A handwritten signature in black ink, appearing to read "Steven A. Kieckhafer". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Steven A. Kieckhafer, AIA
Architect

THE IDEAL ZONING TEXT

PLANNED UNIT DEVELOPMENT- GENERAL DEVELOPMENT PLAN/ SPECIFIC IMPLEMENTATION PLAN PUD-GDP-SIP

Lots 1, Certified Survey Map No. _____,
commonly known as 502 South Park Street,
in the City of Madison, Dane County, Wisconsin,
to be known as The Ideal

Statement of Purpose:

This Planned Unit Development – General Development Plan/Specific Implementation Plan PUD-GDP-SIP is established to allow for the redevelopment of five (5) lots on the corner of South Park Street and along Drake Street for the construction of a new mixed use new facility consisting of 57 mixed type residential apartments and approximately 4,658 square feet of commercial space.

Permitted Uses:

A. In the residential portion of the project, multi-family residential uses as shown on the attached approved plans and any accessory uses related thereto;
B. In the commercial portion of the project, the uses specified in Attachment A hereto and any accessory uses related thereto; and
C. Temporary building for storage of building materials and equipment for construction purposes when on same lot as a principal use for a period not to exceed the duration of such construction.

Lot Area:

33,309 square feet; 0.7647 acres.

Height and Floor Area Ratio:

The maximum height and floor area ratio are per the attached approved plans.

Yard Requirements:

The minimum yard requirements are per the approved plans.

Landscaping Requirements:

The minimum landscaping requirements are per the approved plans.

**Accessory Off-Street Parking,
Loading Zone and Bicycle
Requirements:**

The accessory off-street parking, loading zone and bicycle requirements are per the approved plans.

Lighting Requirements:

The lighting requirements are per the approved plans and in compliance with the City of Madison's lighting ordinances.

Signage:

Signage will be allowed as (i) per the approved plans or (ii) as otherwise allowed by Chapter 31 of the Madison General Ordinances as compared to the R4 zoning district for the residential portion of the project and as compared to the C3 zoning district for the commercial portion of the project subject to approval by the Urban Design Commission and Zoning Administrator.

Family Definition:

The family definition of this PUD-GDP-SIP shall coincide with the definition given in Chapter 28.03(2) of the Madison General Ordinances for the R4 zoning district. .

Alterations and Revisions:

No alteration or revision of this planned unit development shall be permitted unless approved by the City Plan Commission, however, the Zoning Administrator may issue permits for minor alterations or additions which are approved by the Director of Planning and Community and Economic Development and the alderperson of the district and are compatible with the concept approved by the City Plan Commission.

Privilege in the Street ROW:

A Privilege in the Street Right of Way shall be granted to allow for canopy overhangs as shown on the approved plans at Park St and Drake St.

EXHIBIT A
The Ideal Zoning Text

Commercial Permitted Uses:

I. Retail Uses:

1. Antique shops.
2. Art, school and business supply stores.
3. Art Galleries and museums.
4. Barber shops and beauty parlors.
5. Bicycle sales, rental and repair stores.
6. Books, magazines and stationery stores.
7. Camera and photographic supply stores.
8. Candy and ice cream stores.
9. Card and gift shops.
10. Carpet and floor covering stores.
11. Catering establishments.
12. China and glassware stores.
13. Clothing and costume rental stores.
14. Coin & philatelic stores.
15. Day care centers.
16. Drug stores.
17. Dry cleaning and laundry establishments.
18. Electronic stores, including the sale and service of computer, audio, radio, business machines, telecommunications and television – video equipment and accessories.
19. Employment agencies.
20. Express and parcel delivery establishments.
21. Financial institutions, including banks, savings banks, credit unions and loan agencies.
22. Florist shops.
23. Food stores including grocery stores, meat and fish markets, bakeries and delicatessens.
24. Furniture stores.
25. Hardware stores.
26. Health clubs.
27. Home improvement stores.
28. Hobby shops.
29. Interior decorating and upholstery shops.
30. Jewelry and watch stores, including repair.
31. Leather goods and luggage stores.
32. Libraries, municipally owned and operated.

33. Liquor stores (packaged goods only).
34. Locksmith shops.
35. Massage therapy.
36. Medical, dental, hearing and optical clinics, including appliances and accessory laboratories.
37. Musical instrument sales & repair.
38. Office supply stores.
39. Optical sales and accessory optical laboratory.
40. Paint and wallpaper stores.
41. Pet stores.
42. Photography studios and accessory laboratory.
43. Physical culture and health services and reducing salons.
44. Picture framing.
45. Post office, including private parcel business.
46. Printing and publishing establishments, including photocopying, letter and newspaper press, stationery and business card, and other similar job printing services.
47. Records, compact disc, cassette, sheet music and phonograph stores.
48. Recreational buildings & community centers.
49. Restaurants, including restaurant-taverns and brew-pubs.
50. Shoe, hat and other leather goods repair stores.
51. Sporting goods store.
52. Tailor shops.
53. Tattoo establishments.
54. Telegraph offices.
55. Ticket agencies, amusement.
56. Tobacco shops.
57. Toy stores.
58. Travel bureaus and transportation ticket offices.
59. TYME or similar credit/money exchange structures.
60. Variety stores.
61. Veterinary clinics (outside kennels prohibited).
62. Video rental and sale establishments.
63. Wearing apparel and shoe shops.

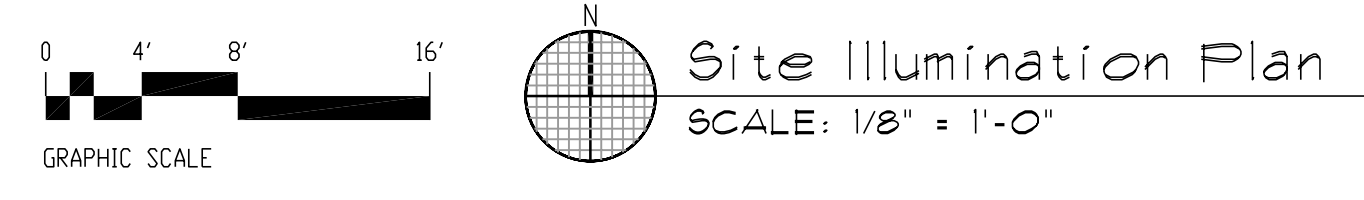
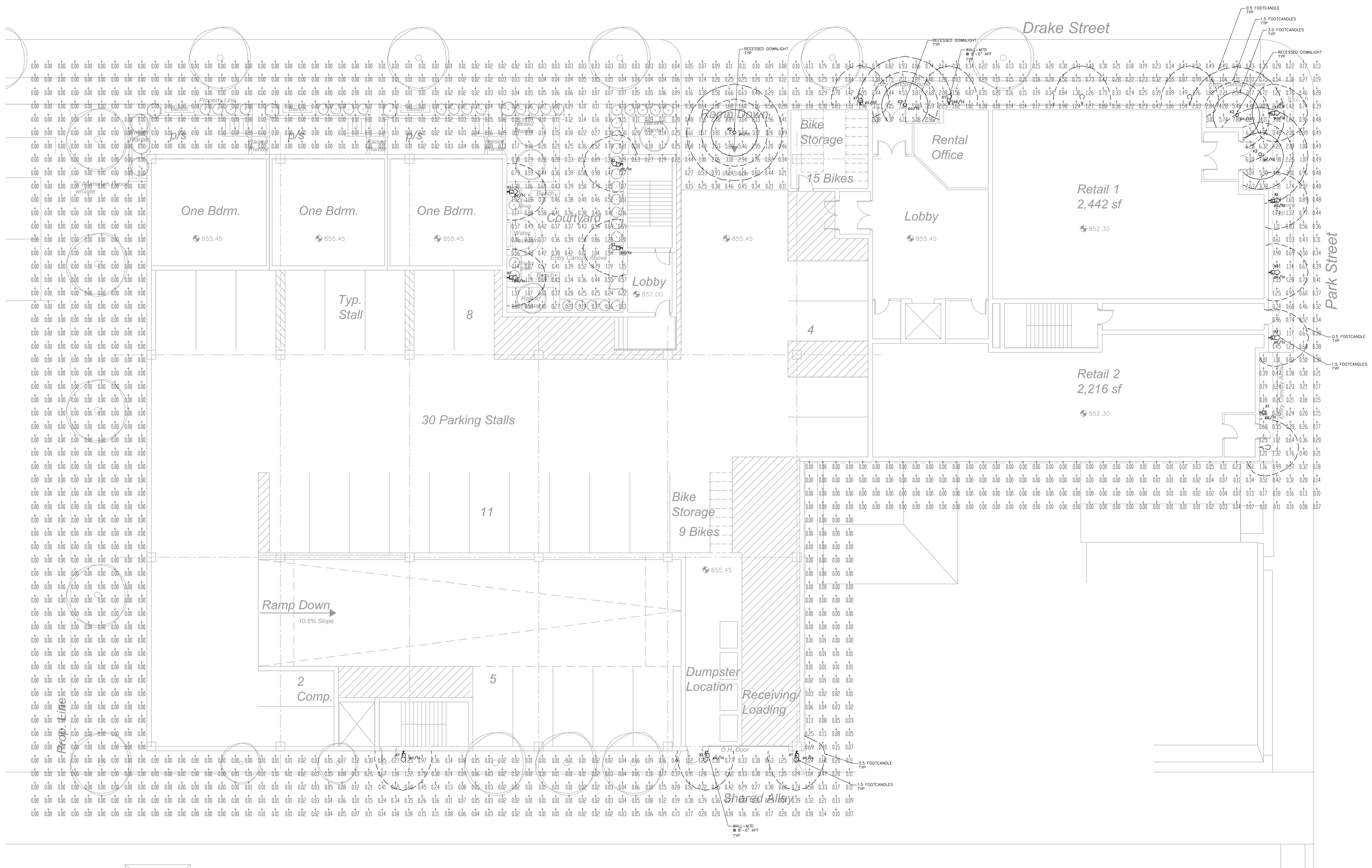
II. Office Uses:

1. Conference center.
2. Educational and training centers.
3. Financial institutions including banks, savings banks, credit unions and loan agencies.
4. Medical, dental, hearing, orthopedic, and optical clinics, including appliances and accessory laboratories.
5. Offices, business and professional.
6. Telecommunication centers.

7. Travel bureaus and transportation ticket offices.
8. TYME or similar credit/money exchange structures.

III. Prohibited Uses:

1. Adult entertainment facilities, including adult bookstores, adult entertainment taverns, adult motion pictures theaters and adult video stores.



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CALCULATION SUMMARY						
AREA NAME	FUNCTIONS	GRID Z	TYPE	L.P.S.	SPAC	GROUP
New Area	3410.000.70.4			1070	3.00	<3>
				Avg	MAX	MIN
				8.34	7.88	0.00
				MAX/MIN	Avg/MIN	N/A
				1.16	0.90	N/A

LOCAL APARTMENTS ORIGIN LUMINAIRE SCHEDULE							
TYP	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	LFY	QTY
x1	☐	Hubbardon Forge - 20750	(1) EF-13	900			6 90 16
x2	○	Lumina Lighting - REAL6 BAW	(1) 3500K LED DOWNLIGHT	1000			6 90 4

The Ideal



Autumn Brilliance Serviceberry (C...



Autumn Brilliance Serviceberry (Tf) (Summer)



Chanticleer Callery Pear 2



Crimson Spire Oak



Jane Magnolia (Spring)



Quaking Aspen

The Ideal



Heritage Birch 1



Street Keeper Honeylocust



Emerald Arborvitae (3)



Techy Arborvitae



Emerald Triumph Viburnum2



Endless Summer Hydrangea (Flower)

The Ideal



Green Mound Boxwood



Gro-Low Fragrant Sumac



Miss Canada Lilac



Angelina Sedum



Dragon's Blood Sedum



Purple Fountain Grass

The Ideal



Elijah Blue Fescue



Karl Foerster's Feather Reed Gra...



Going Bananas Daylily



Little Titch Catmint



Moonbeam Coreopsis



Palace Purple Coral Bells 2

The Ideal



Periwinkle 1



Rozanne Cranesbill



Sensation Rose Salvia



Goldrush Goldenrod



sapphire blue oat grass



Isanti Dogwood

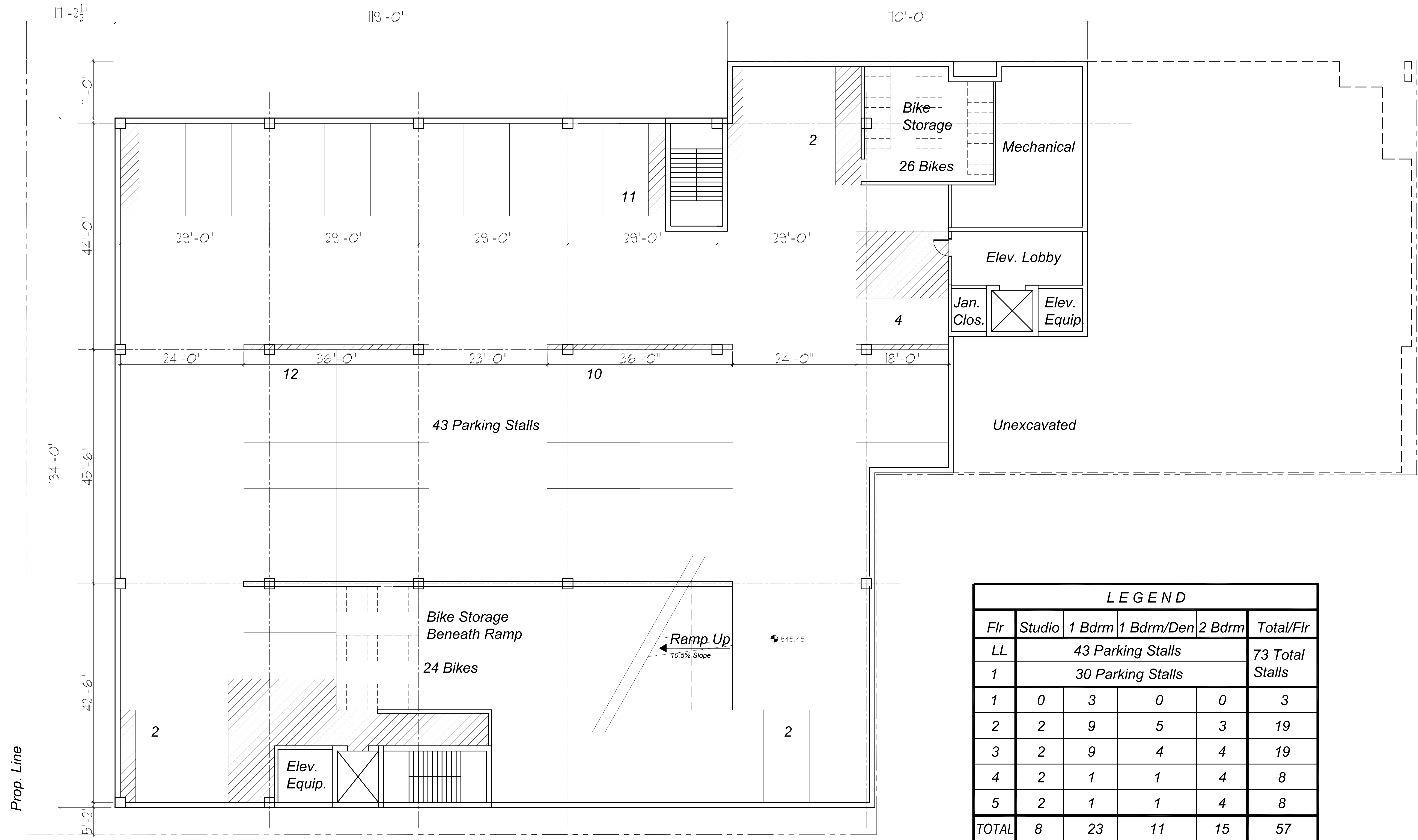
The Ideal



Bonica Rose (Flower) 2

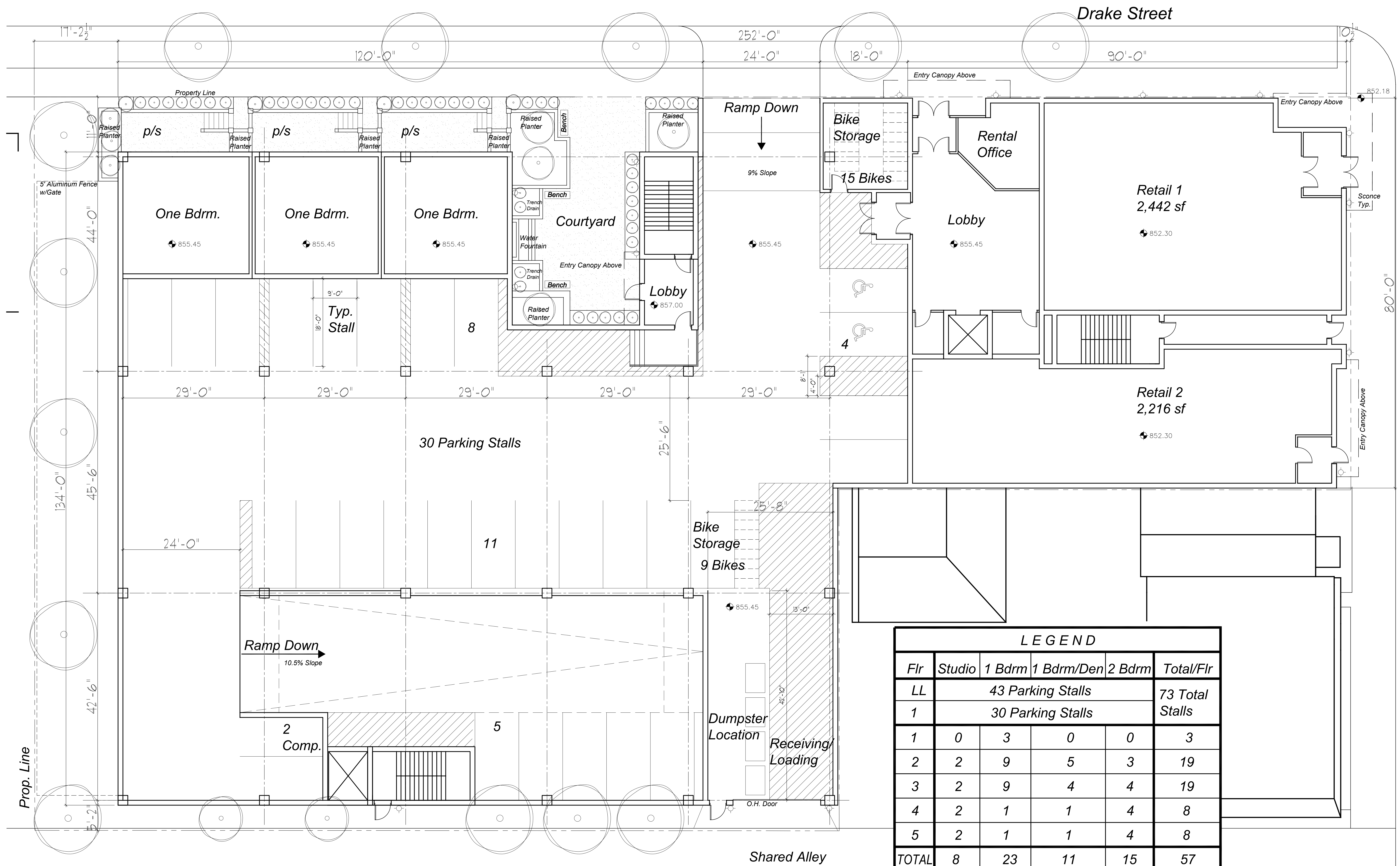


Mohican Viburnum



LEGEND					
Flr	Studio	1 Bdrm	1 Bdrm/Den	2 Bdrm	Total/Flr
LL	43 Parking Stalls				73 Total Stalls
1	30 Parking Stalls				
1	0	3	0	0	3
2	2	9	5	3	19
3	2	9	4	4	19
4	2	1	1	4	8
5	2	1	1	4	8
TOTAL	8	23	11	15	57

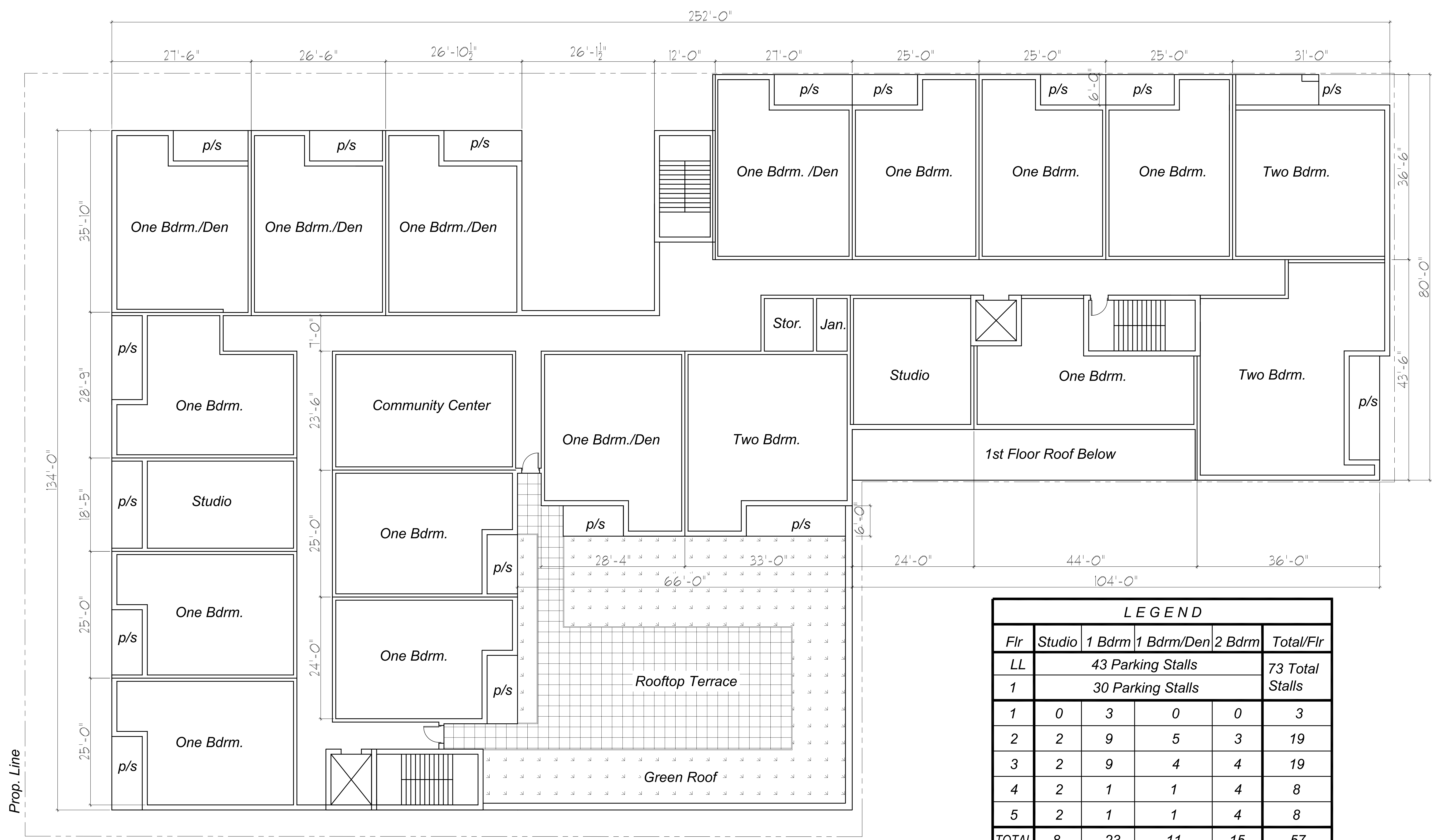
Bike Parking - 74 2'x6' Spaces



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Flr	Studio	1 Bdrm	1 Bdrm/Den	2 Bdrm	Total/Flr
LL	43 Parking Stalls				73 Total Stalls
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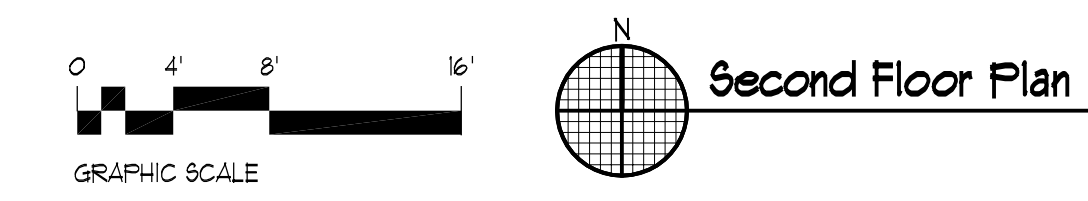
Bike Parking - 74 2'x6' Spaces

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LEGEND					
Flr	Studio	1 Bdrm	1 Bdrm/Den	2 Bdrm	Total/Flr
LL	43 Parking Stalls				73 Total Stalls
1	30 Parking Stalls				
1	0	3	0	0	3
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TOTAL	8	23	11	15	57

Bike Parking - 74 2'x6' Spaces

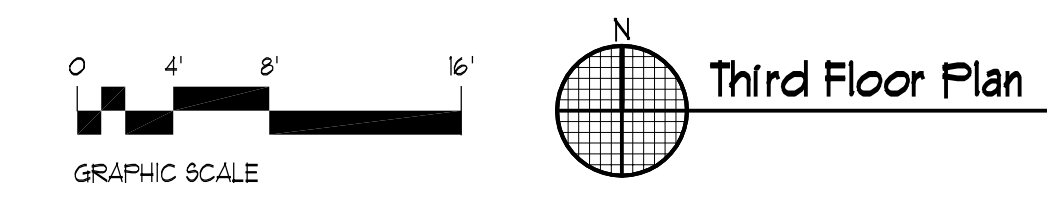


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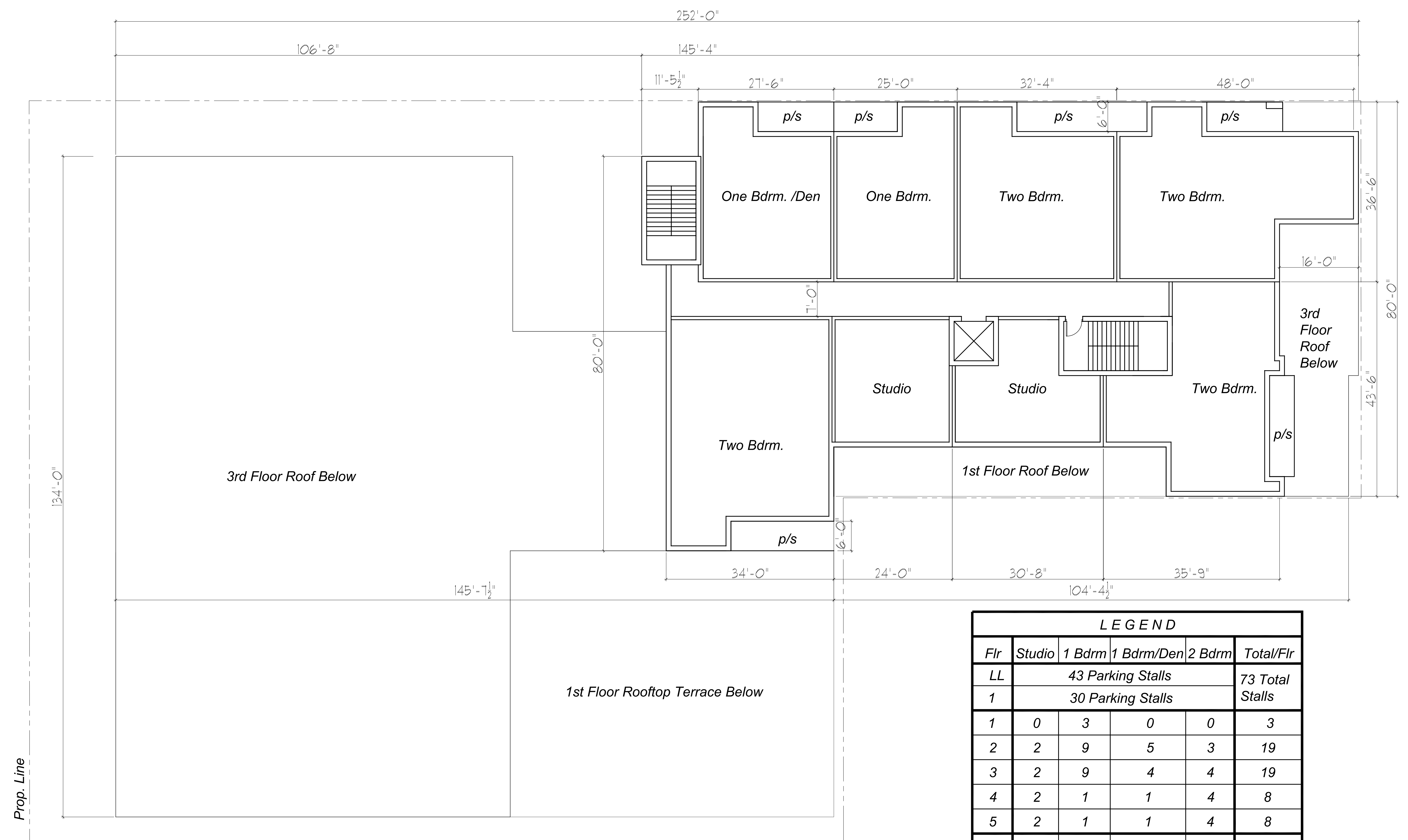


LEGEND					
Flr	Studio	1 Bdrm	1 Bdrm/Den	2 Bdrm	Total/Flr
LL	43 Parking Stalls				73 Total Stalls
1	30 Parking Stalls				Stalls
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TOTAL	8	23	11	15	57

Bike Parking - 74 2'x6' Spaces

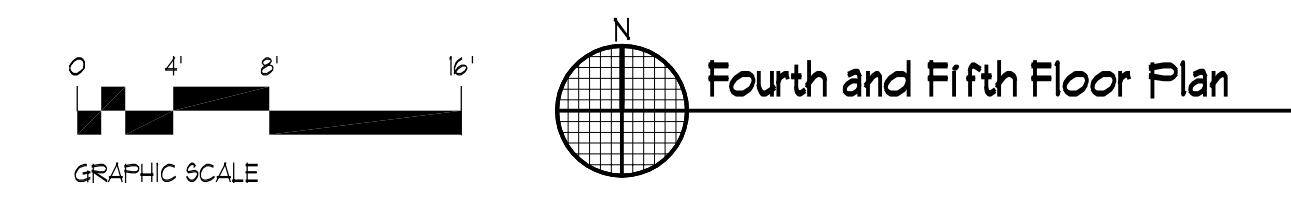


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LEGEND					
Flr	Studio	1 Bdrm	1 Bdrm/Den	2 Bdrm	Total/Flr
LL	43 Parking Stalls				73 Total Stalls
1	30 Parking Stalls				
1	0	3	0	0	3
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5	2	1	1	4	8
TOTAL	8	23	11	15	57

Bike Parking - 74 2'x6' Spaces





Natural Function
Natural Beauty



**FULLY-GROWN INVISIBLE
MODULAR GREEN ROOF SYSTEM**
"The Hybrid System"

SIMPLE

EFFECTIVE

ATTRACTIVE



Submittal Package

LiveRoof® Brand Hybrid Green Roof System

Job Name: The Ideal
 Customer: The Bruce Company
 Job Number:
 Modules:
 Module Size: 1' x2' x 4" Standard

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Plant Mix



Sedum aizoon 'Euphorbioides'

(see-dum aye-zoon)

Euphorbia Leaved Sedum Zone 4 **Deciduous**



8"-12"; full sun to light shade. A taller clump forming sedum, 'Euphorbioides' bears lustrous, rich green foliage, whorled about stout stems in umbrellalike fashion. Mostly deciduous, it has the interesting characteristic of setting new whorls of foliage from new buds prior to winter. During mid summer it blooms with large heads of rich yellow flowers and makes a fine companion to Sedums 'Neon', 'Brilliant', and 'Vera Jameson'.



Sedum hybridum 'Immergrunchen'

(see-dum hye-bri-dum)

Evergreen Sedum Zone 4 **Semi-Evergreen**



2"-3"; full sun to light shade. 'Immergrunchen', in German, literally means evergreen. 'Immergrunchen' is a compact, extremely coarse textured ground cover of tight habit and vibrant green foliage. Its leaves are actually semi evergreen, some of them shed during the winter months and the remainder turning a vibrant amber color during winter. An early and late bloomer. 'Immergrunchen' bears cheerful yellow flowers during early June, rests for a couple of months, then blooms again during September.



Sedum takesimense

(see-dum tak-i-sim-en-see)

Takesimense Sedum Zone 4 **Semi-Evergreen**



4"-6"; full sun to moderate shade. Sedum takesimense is a strong, rather upright grower with rugged vibrant green foliage. It is nice to incorporate in the mix for its taller height which contributes to a more meadowlike appearance. During mid to late summer it bears clear yellow flowers.



Sedum spurium 'Pink Jewel'

(see-dum spew-ree-um)

'Pink Jewel' Sedum Zone 3 **Semi-Evergreen**



1 1/2" - 2"; full sun to light shade. 'Pink Jewel' resembles 'Dragon's Blood' but with more compact, red-suffused foliage. Its summerborne flowers are a lovely clear pink.



Sedum spurium 'Green Mantle'

(see-dum spew-ree-um)

Semi-Evergreen

'Green Mantle' Sedum.....Zone 3.....



1 1/2"-2"; full sun to light shade. Unique for its extra large, super coarse textured, uniformly vibrant green foliage, 'Green Mantle' is rugged and extremely drought-tolerant. 'Green Mantle' is very low maintenance, and looks nice year round. A compact grower, it hugs the ground like a carpet. During summer, it blooms with creamy white, butterfly-attracting flowers.

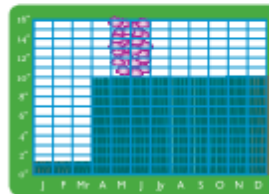


Allium schoenoprasum var. sibiricum 'Pink Giant'

(ale-ee-um skoy-n-oh-prah-sum)

Deciduous

'Pink Giant' Ornamental Chive.....Zone 3.....



12" - 16"; full sun to light shade. This uncommonly robust ornamental chive is magnificent! Not only is it taller, but bigger in every respect. Its tubular powder blue-green leafless stems are about double the normal width, and its large clear pink balloonlike flower clusters are also bigger. Like many other Alliums, 'Pink Giant' emerges with attractive foliage during early spring and transitions to flowering from May through June



Sedum spectabile 'Neon'

(see-dum spek-tab-i-lee)

Deciduous

'Neon' Sedum.....Zone 3.....



10"-14"; full sun to light shade. Selected as a mutation of Sedum 'Brilliant' (at The Ivy Farm in Locustville, VA) for intense deep purplish pink flowers, 'Neon' displays flowers that are deeper rose pink arranged in thick rounded clusters. A great addition for late summer and fall color.



Sedum kamschatcicum 'Takahira Dake'

(see-dum kam-chat-i-kum ta-kah-hee-rah dah-kay)

Deciduous

'Takahira Dake' Kamtschatka Sedum.....Zone 3.....



6"-10"; full sun to light shade. Robust and clump forming, 'Takahira Dake' sends out stout ascending stems which carry densely set, vibrant green, scallop edged succulent leaves. Neat, compact and requiring little maintenance, 'Takahira Dake' is a strong bloomer, covered with bright yellow flowers, and makes a nice show during early summer.



LiveRoof® System Specifications

MODULE SIZE	<p>LiveRoof Standard: 1' x 2' x 3¼" (soil height approximately 4 - 4¼") Soil fills soil elevator, plants and soil obscure module edges.</p> <p>LiveRoof Lite: 1' x 2' x 1⅞" (soil height +/- 2½")</p> <p>LiveRoof Deep: 1' x 2' x 3¼" (soil height +/- 6¼")</p>
MODULE WEIGHT	<p>Standard and Deep: 14 oz./sq. ft..</p> <p>Lite: 10.5 oz./sq. ft..</p>
MATERIAL	100% post-consumer recycled polypropylene 100 mil. thick walls. No VOC content, extraction distance from manufacturer Lansing, Michigan 100 miles. Location of manufacturing 14 miles from distribution.
WATER DISPERSAL	Approx. 10.0 gal. per min. per lineal foot. <i>Hi-Flow option available with standard and deep module.</i>
MODULE COLOR	Black or gray.
WEIGHT VEGETATED (fully saturated)	<p>LiveRoof Standard: approx. 27-29 lbs./sq. ft.</p> <p>LiveRoof Lite: approx. 15-17 lbs./sq.ft.</p> <p>LiveRoof Deep: approx. 40-50 lbs./sq. ft.</p>
DRAINAGE	Positive drain holes, at lowest point in module.
SOIL MEDIA	Proprietary LiveRoof specified engineered soil, based upon German FLL granulometric specifications, 94+% by dry weight inorganic content for minimal shrinkage/decomposition. (92% in British Columbia). Dry weight approx. 60-65 lbs/cu.ft. <u>May vary somewhat with local grower.</u>
ACCEPTABLE PROTECTIVE UNDERLYING MATERIALS	Modules to be placed directly upon heavy duty (HDPE, Polypropylene, TPO, EPDM or recyclable PVC) slip sheet/root barrier of 40-60 mil. thickness with effectively bonded seams. This is placed as an additional protective barrier above roof waterproofing membrane. <u>Confirm suitability of waterproofing membrane with manufacturer.</u> Alternatively low profile drain boards work well and manufacturers of cold fluid applied reinforced urethane membranes typically warrant their systems for use in conjunction with the LiveRoof® system.
IRRIGATION SYSTEM	Recommended for backup during prolonged hot dry windy weather patterns. Simple overhead system is inexpensive and effective insurance. Irrigation requirements are dependent on plant selection, climate and roof design. <i>If LiveRoof Lite module is used, irrigation will be essential.</i>
EDGE TREATMENTS	Coengineered RoofEdge ® aluminium edging with <u>adequate drain perforations</u> recommended. Any edging should allow for adequate drainage (extending to the bottom of the edging) with sidewalls tall enough to completely cover the modules and contain the soil.
PAVERS	Coengineered LiveRoof Roofstone® recommended.
PLANTS	See LiveRoof.com for grower in your region, for specific recommendations.
CONVEYANCE METHOD	Prevegetated modules to be delivered by HOPPIT or other appropriately engineered conveyance device.

PART 1: GENERAL

1.1 SCOPE

Provide equipment, materials, tools, and labor to install vegetated roofing modules. Modules to include growth media and plants. This work shall also include edge treatments, custom shaping of modules, and installing paver stones or ballast, slip sheet/root barrier and irrigation system, if specified.

1.2 SUBMITTALS

- A. Product data for vegetated roofing systems.
- B. Planting mix design indicating species.
- C. Shop Drawings: Indicating layout of modules, pavers, irrigation, and square footage.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- E. Maintenance instructions for inclusion into owner's manuals.

1.3 QUALITY ASSURANCE

- A. No deviation should be made from this specification. Installer assumes liability for any deviations from specification.
- B. Only LiveRoof® certified installer personnel shall complete all work.
- C. Prior to installing LiveRoof® modules, the following procedures are to be conducted:
 1. The building Owner, Architect, or Engineer shall verify that the roof is properly designed and constructed to adequately support the load of the LiveRoof® system.
 2. The roof is to be flood tested for water tightness for 24 hours. Water testing shall be witnessed and confirmed in writing by Owner's Representative and/or Design Professional, Waterproofing Contractor, Membrane Manufacturer, and Installation Contractor.
 3. Slipsheet/root barrier to be properly installed, seams overlapped and bonded, in accord with architect's and manufacturer's specifications.
 4. The roof is to be inspected and determined ready to accept the LiveRoof® modules by a Technical Representative of the Installer.
- D. During the LiveRoof® installation and afterward, an inspection is to be conducted by a Technical Representative of the installer to verify that LiveRoof® modules are being and have been installed tight against each other, in straight rows, corners aligned, properly oriented, and tight against any edging.

1.4 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section. Review LiveRoof standardized procedures with supervisory staff.

1.5 DELIVERY, STORAGE, HANDLING, PROTECTION

- A. LiveRoof® modules are to be delivered in good condition free from shipping damage.
- B. LiveRoof® modules are to be kept out of the sun if plastic wrapped to prevent overheating.
- C. LiveRoof® modules are to be installed on the roof top within 4 hours of delivery.
- D. On the job site, LiveRoof® modules are to be handled to prevent damage to the modules themselves and all roofing components.
- E. LiveRoof® modules are to be conveyed to roof surface with equipment designed to carry the collective load of the LiveRoof® modules and transport vehicle or Hoppit®. Account for decreasing load limits when boom (of crane or fork lift) is extended. Use crane stabilizers and take all necessary precautions to protect building and personnel.
- F. Never exceed the load capacity of the roof deck when placing LiveRoof® modules on the roof.
- G. When suspending LiveRoof® modules and conveyance vehicle above deck, take precautions to stabilize and prevent twisting of conveyance vehicle. Four tires or two four inch thick sheets of styrofoam is recommended.



LiveRoof® System Specifications (cont.)

- H. During installation, protect the roof deck and membranes with appropriate material such as plywood sheeting. Never scrape or puncture slip sheet or membranes. Keep roof surfaces free of soil, grit, or debris at all times with broom. Never set LiveRoof® modules on top of soil, dirt or grit.
- I. Transport conveyors to be run parallel to the line of installation.
- J. Transport carts to have pneumatic tires, to be wheeled about only upon protective plywood sheeting, and to be loaded so as not to exceed weight capacity of roof deck.

PART 2: PRODUCTS

2.1 VEGETATED ROOFING MANUFACTURER

- A. Provide vegetated roofing systems from the following manufacturer.

1. <u>LiveRoof, LLC (Midwest)</u> Subsidiary of Hortech, Inc. P.O. Box 533 Spring Lake, MI 49456 (800) 875-1392 Fax: (616) 842-1392	<u>Alternatively,</u> LiveRoof Licensed Grower
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- B. 100 mil. thick (sidewall) recycled polypropylene and colored black or gray, 1 foot x 2 feet outside diameter, 3 inches tall (1¾" for Lightweight system). The LiveRoof® Soil Elevator™, the insert collar that allows for growing soil above the container edge, is approximately 3½" tall for the Standard System, 2" for the Lite System, and 6½" for the Deep System, 16 mil. thick, 45 mil. for the Deep System, and composed of recycled polyethylene or suitable biodegradable material. Each module is to be filled to the top of the Soil Elevator™. Soil height from container bottom is approximately 4¼ inches, (2¼" for the Lite System and 6" for the Deep System) although normal settling may reduce this height somewhat.

- C. Saturated weight with mature vegetation: approximately 27-29 lb. per square ft. LiveRoof Lite™ system approximately 15-17 lbs. per square ft. LiveRoof Deep™ system approximately 40-50 lbs. per square ft.

- D. Module clearance above roof deck: ½ inch.

- E. When prevegetated at a Nursery, Licensed Grower is to execute the following:

1. LiveRoof® Soil Elevator™ is to be properly inserted into fasteners inside LiveRoof® module.
2. LiveRoof® module is to be filled with LiveRoof® soil and appropriately settled either by mechanical vibration or flooding with water. Any settled soil is to be replaced so that LiveRoof® soil extends to top of Soil Elevator™ at time of planting.

- F. LiveRoof® module is to be filled with LiveRoof® plants, selected by purchaser. Plants are to be grown to maturity (approx. 95%+ soil coverage).

2.2 GROWING MEDIUM

LiveRoof growing medium is an engineered blend of inorganic and organic components based upon German FLL granulometric guidelines modified so as to contain ecologically sustainable levels of organic content.

2.3 PLANTS

LiveRoof® recommended plant mixes consisting of highly drought resistant ground covers. Local Horticulturists should be consulted for specific recommendations.

2.4 ACCESSORIES

- A. Pavers/Ballast

1. To be of compatible size, design and appropriate weight.

- B. Edging: L-shaped extruded aluminium RoofEdge® with perforations for drainage of 16gpm per lineal foot. For LiveRoof Standard, RoofEdge® is 4½" x 3" with a minimum gauge of 160 mil; 3" tall for LiveRoof Lite, and 6½" for LiveRoof Deep. Edging, regardless of type, must allow for adequate drainage via sufficient drain perforations (at the bottom of the edging) with sidewalls tall enough to cover the modules and contain the soil.

1. Edging required between modules and stone ballast or conventional pavers.
2. If edging is attached to LiveRoof modules, use TEKS 10-24 x 1" wafer head self-tapping screws.

C. Irrigation System

1. System to be used only to keep LiveRoof® in optimal condition during prolonged periods of heat and drought and to optimize the evaporative cooling effect of LiveRoof® during hot weather.

Sloped LiveRoof applications will drain more quickly, thus potentially thinning plants and exposing soil to erosion, and therefore will have an increased need for irrigation.

Reflective walls or windows will increase effects of sun exposure on plants and may require special plant selections and/or more frequent irrigation. Consult a LiveRoof Licensed Grower for appropriate plant selections for use next to reflective surfaces.

LiveRoof® recommends either a standard SCH 40 PVC subterranean, or surface applied SCH 40 PVC green painted (Polyvinyl Chloride Plastic) pipe for irrigation lines, with SCH 80 solvent welded PVC fittings. MP Rotator or equivalent irrigation head recommended.

Consult a qualified irrigation specialist to determine appropriate design configuration of irrigation, including pipe diameter, layout, head style and spacing.

- a. Function: fully automatic or manual.

- b. Controls:

1. Automatic rain sensor optional.
2. Irrigation controller shall be outdoor-type.
3. All sprinklers will have matched precipitation on the same zone.

- c. Piping:

1. Surface applied irrigation pipe and fittings must be UV resistant, preferably painted green to blend in with the plants. For subterranean irrigation, use a v-shaped hoe to dig a trench into the soil at the Moisture Portals™. Lay the irrigation pipe in the trench and fill in soil and plants over the pipe.
2. Along the building edge, irrigation lines can be trenched into the soil or laid between modules. Modules should be spaced to accommodate fittings and irrigation head. Drainage board with a minimum flow rate of 14 gpm/sf should be out into strips and underly irrigation pipe so that drainage is not impeded by pipe. Use a chalk line to ensure straight rows. Lay filter fabric over pipe assembly and out to height of modules. Cut holes in filter fabric as needed to fit over irrigation heads. Fill with LiveRoof® Engineered soil then remove soil elevators.

For subterranean irrigation against a parapet or building wall, place irrigation lines between modules and parapet or wall. Lay filter fabric over pipe assembly and out to height of modules. Cut holes in filter fabric as needed to fit over irrigation heads. Fill with LiveRoof® Engineered growing medium or stone ballast. Remove soil elevators unless advised that they are biodegradable.

- d. Valves:

1. A master valve shall be installed on the mainline after the backflow device.
2. All valves to be covered by a 6" valve box.
3. All wire connections to be waterproof, UL approved.
4. To be a manual drain type. Install automatic freeze protection drain valves on all main and lateral piping.

2. Irrigation System Maintenance

- a. System to be blown out with compressed air no greater than 80 psi annually in fall prior to reaching freezing temperatures.

PART 3: EXECUTION

3.1 LIVEROOF® INSTALLATION MUST BE CONDUCTED BY LIVEROOF® CERTIFIED INSTALLER

3.2 PREPARATION OF ROOF SURFACE

- A. Slip sheet/root barrier, specified by architect and approved by manufacturer, of 40-60 mil. thickness with overlapped and effectively bonded seams to ward against root penetration and to keep waterproofing layer safe and clean from soil during installation. Slip sheet/root barrier typified as follows:

Glued Seam Types (40 mil or greater thickness)

- EPDM, with seams overlapped a minimum of 3 inches and glued with roll out adhesive or double sided tape adhesive of the type that is impervious to and not affected by moisture, and recommended by the manufacturer.
- Low profile drain board such as Dow Stevens (appx. 17 mil. thickness) Enkadrain with edges overlapped 3 inches and glued with manufacturer approved adhesive.

Welded Seam Types (40 mil or greater thickness)

- TPO, with seams heat welded
- PVC, with seams heat welded
- Polypropylene, with seams heat welded
- HDPE, with seams heat welded

Confirm compatibility of slip sheet and waterproofing membrane with manufacturer.

Never use duct tape or any other adhesive not recommended by the manufacturer.

Never use moisture holding fabric, such as needle punched polyethylene or felt, under the LiveRoof® system. Such materials:

- Are impossible to sweep during installation.
- Stay wet and encourage root growth and root penetration, and could lead to impeded drainage; especially detrimental if a woody plant were to become established; such plants have woody root systems and potentially could cause roof leaks.

- B. In cases where Vector mapping may be desired, a fiber-backed drainboard, such as Enkadrain may be used. Fiber-backed drainboards are only recommended when vector mapping is desired, and only with the Lite and Standard LiveRoof systems, and only when vegetated with Sedum, Sempervivum, or other succulents, as these plants are sparsely rooted and not prone to rooting into the fiber of the drainboard.

- C. Experienced Contractor to install slip sheet/root barrier in accordance with manufacturer's recommendations.

- D. All surfaces to be smooth, free of debris, soil, and grit prior to placing modules. All water-proofing materials to be tested water tight and free draining prior to module placement.

- E. All surfaces to be maintained clean and free of debris, soil, and grit during installation process via use of broom. Never walk upon such materials as they may damage membranes.

3.3 INSTALLATION SEASON

Module Installation to be conducted when plants are:

- A. Properly adapted and acclimatized to local weather conditions.
- B. When weather is above 35° F and there is no ice on the roof and LiveRoof® soil is unfrozen.
- C. When plants cover 95% or more of soil surface.

3.4 DELIVERY, STORAGE, HANDLING, PROTECTION

- A. LiveRoof® modules are to be delivered in good condition free from shipping damage.
- B. LiveRoof® modules are to be installed on the roof top within 4 hours of delivery.
- C. Keep LiveRoof modules out of sun on job site if plastic wrapped to avoid overheating.
- D. On the job site, LiveRoof® modules are to be handled to prevent damage to the modules themselves and all roofing components.
- E. LiveRoof® modules are to be conveyed to roof surface with equipment that is designed to carry the collective load of the LiveRoof® modules and transport vehicle or Hoppit®. Account for decreasing load limits when boom (of crane or fork lift) is extended. Use crane stabilizers and take all necessary precautions to protect building and personnel.
- F. Never exceed the load capacity of the roof deck when placing LiveRoof® modules on the roof.



- G. When suspending LiveRoof® modules and conveyance vehicle or Hoppit® above deck, take precautions to stabilize vehicle and prevent twisting of conveyance vehicle or Hoppit®. 4 to 8 tires layed on the deck are recommended.
- H. Surround area below conveyance vehicle and/or crane with caution/stay clear tape to prevent potential injury.
- I. During installation, protect the roof deck and membranes with appropriate material such as plywood sheeting. Never scrape or puncture slip sheet or membranes. Keep roof surfaces free of soil, grit, or debris at all times with broom not blower. Never set LiveRoof® modules on top of soil, dirt or grit.
- J. Transport carts to have pneumatic tires, to be wheeled about only upon protective plywood sheeting, and to be loaded so as not to exceed weight capacity of roof deck.
- K. LiveRoof Roll-a-Roof® conveyor to be used for optimum efficiencies when moving modules about rooftop.

3.5 SAFEGUARDING SYSTEM INTEGRITY

Before working on roof, all Installers and Laborers to be:

- A. Properly instructed in safety procedures and provided LiveRoof Guide to Standardized Installation Procedures.
- B. Instructed to keep all work surfaces clean and debris free.
- C. To report immediately any damage to membranes, protective sheeting, or drain elements to supervisor, and to make appropriate repairs before proceeding.
- D. Instructed in proper methods of LiveRoof® installation by certified representative of installation company.

3.6 LAYING (PLACING) MODULES

- A. LiveRoof® module installation to follow behind installation of slip sheet/root barrier, irrigation system, pavers, ballast, and edging.
- B. LiveRoof® installation to be conducted in strict accordance with LiveRoof® installation guidelines. Rows to be straight, modules to be tight against each other with edges overlapping and arranged in proper directional orientation. LiveRoof® Soil Elevators™ removed only when individual modules are completely surrounded by parapet L-shaped edging RoofStone® edging, or other LiveRoof® modules, so as to prevent soil spillage. *NOTE: If biodegradable Soil Elevator™ is used, then Soil Elevator™ is left in place.*
- C. LiveRoof® module installation to be conducted in accordance with green roof design.
- D. LiveRoof® modules to be placed directly on top of appropriate slip sheet/root barrier.
- E. It is recommended that any custom cutting/fitting be oriented on the high side (top), or sides of the roof. It is recommended that the cut side of the module be set tight against the edging or toward the side of an intact module so as to prevent soil spillage. If custom cutting must be done on the low, draining, side of the roof, it is imperative that no filter cloth be inserted as it could impede drainage. It is best to orient the cut side against another module, facing upstream.
- F. After installing modules, they should be immediately watered so as to thoroughly moisten the growing medium from top to bottom. Water shall be of suitable quality for plant growth and irrigation system or hoses and sprinklers may be used for such purpose. Note: it takes approximately 1 inch of water, or 1¼ gallons per module to moisten each module thoroughly.

3.7 MAINTENANCE

- A. Documentation: Record all green roof maintenance events. Include name of person, date and activity.
 - 1. If fertilizer, record type and amount applied per 1000 sq. ft.
 - 2. If soil test, record lab
 - 3. If irrigation, record duration and quantity
- B. Foot Traffic: Limit foot traffic to a random path a couple times per week by one person. Avoid walking in a single path, standing in one place or trampling plants. If parapet or adjoining wall must be serviced, plants may be covered with plywood or foam sheeting for up to 4-hours intermittently provided foliage is not wet and conditions are not too hot or sunny.

C. Annual Maintenance

1. Soil Testing and Fertilization.

During April 1 to 15 of each year, administer an annual soil test for pH and fertility levels.

- a. Maintain pH in the range of 6.6 to 8.0. In the event that pH is outside of the 6.6 to 8.0 range, consult LiveRoof, LLC for the appropriate amendment.
- b. Maintain fertility in the normal range using a typical field soil fertility test as provided by A&L labs. When indicated, apply a single springtime application of Nutricote 14 14 14, Type 180 (180 day release period), at 20lbs per 1000 sq. ft. Follow the Nutricote labeled directions for application rate, which take priority over any recommendations listed here. Runoff potential does exist and should be evaluated by the applicator in accord with the site specifics; the greater the runoff sensitivity, the lower the application rate. All applications of fertilizer are the sole responsibility of the applicator.

D. Irrigation

1. Watering

Even in the northern temperate zone of North America, successive watering may sometimes be needed to keep LiveRoof® plants alive. Protracted hot dry weather can result in plant thinning or death. In warmer climates, depending upon rainfall and exposure, regular irrigation will probably be required. Regardless of geography, LiveRoof® recommends the installation of an irrigation system that is appropriate to the scale of the project and able to allow for rapid and efficient irrigation when needed as a "temporary" management tool under the following conditions:

Prolonged hot dry weather, in the northern temperate zone, is generally defined as periods of 75 degree weather, with less than 1" of rainfall persisting for 4 weeks or longer, **approximately 2 weeks for LiveRoof Lite system.** This time period will likely be less if the temperatures are hotter, the climate warmer, on sloping rooftops, or roofs exposed to strong winds. Such conditions can dry out the green roof substrate and cause the plants to dry up and thin out or die. This can lead to exposed soil, which can predispose the system to weed encroachment and wind erosion.

NOTE: There are no absolutes when it comes to irrigation. Check the plants for wilting. Irrigate thoroughly to runoff to re-moisten entire soil profile if the plants show signs of wilting.

In areas of reflected light, such as next to south facing walls, more frequent irrigation should be applied to keep the soil from becoming excessively dry.

E. Inspections and Plant Care Protocol

Conduct the following EVERY 2 WEEKS (twice per month) During the entire Spring through Fall Growing Season

- 1. Conduct hand weeding during the twice monthly inspection. Pull all weeds, never allow any weed to flower, set seed and complete its life cycle. Weeding should be conducted spring through fall in areas where the roof becomes frozen and snow-covered in winter. In warmer climates, maintenance should be continued year round.

The interval may be adjusted in accord with seasonal variations in weed growth, but the interval should never exceed 2 weeks or be long enough to allow for weeds to flower and set seed.

Never allow woody plants to establish in a green roof system as their root systems are extensive and can damage roof membranes.

Herbicides, whether pre-emergent or post-emergent, are not recommended as they are not healthy for the environment and can contaminate runoff. A need for pre-emergent herbicides is a sign of weeding too infrequently.

2. Displaced Soil

Any displaced soil, typically due to nesting birds, should be immediately replaced.

3. Drainage Inspection

Roof drains should be cleared of any debris, pebbles, leaves, etc. during the twice monthly inspection to keep drains flowing freely.

4. Debris / Trash Removal

Remove immediately debris or trash during twice monthly inspection. Especially during fall and spring, rake LiveRoof® planting clean of any matted tree leaves to prevent smothering.

6. Pesticides

Pesticide use is discouraged and should always be considered secondary to cultural and biological control measures, as pesticides can get into runoff water and cause environmental damage. Pesticide use should only be conducted by qualified and licensed applicators, and on an "as needed" basis. All applications of pesticides are the sole responsibility of the applicator.

6. Optional Mowing

If desired, around April 1, mow the green roof to remove any dried flower stems from the previous year. The clippings should stay on the roof. Do not bag and remove. USE PROTECTIVE EQUIPMENT.

7. Wintertime

Avoid applying salt and other deicing agents to LiveRoof® plantings. Avoid walking on frozen plants and roof surfaces.

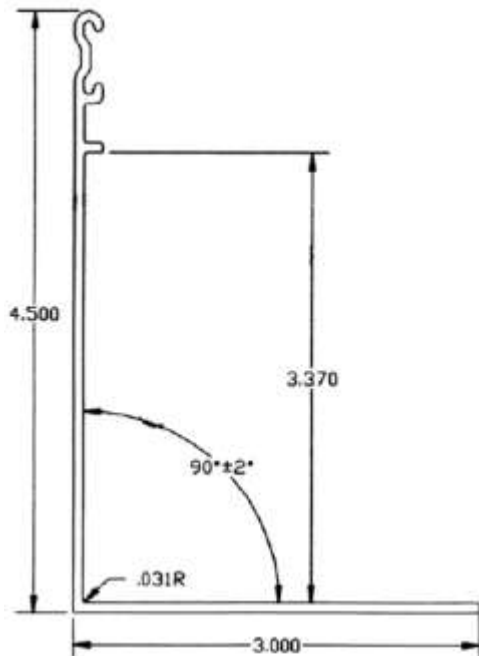
3.8 ACCEPTANCE

- A. Conduct post installation inspection to determine acceptance of modules. Inspection to be made by General Contractor's Representative or by Owner's Representative upon General Contractor's request; five working days notice required.
- B. Upon acceptance, Owner assumes responsibility for module/plant maintenance and warranty requirements.

3.9 CLEAN UP

- A. Throughout installation, keep all work surfaces clean and free of grit, dirt, or debris. Use broom not blower, do not sweep soil under modules or slip sheet. Following installation, remove all excess materials and tools from job site. Ensure that any damage that occurs as a result of installation is appropriately and immediately repaired.





TECHNICAL BULLETIN

General. The 6063 Alloy contains Silicon and Magnesium as the major alloying elements, contributing to good strength, corrosion resistance, weldability, and machinability.

According to the Aluminum Extruders Council (AEC) publication *Extrusion Spotlight Alloys*, aluminum alloyed in the 5XXX and 6XXX series is particularly suitable for application in bridge design. Properties making these alloys particularly desirable include: 1. Very lightweight, one-third that of steel and concrete. 2. High strength, comparable to steel and steel/concrete composites. 3. Strength and ductility as high or higher at sub-zero temperatures than at room temperature. 4. Exceptional corrosion resistance. 5. Ease of fabrication by many techniques, including extrusion, to unique advantageous structural configurations. *This publication can be found at www.aec.org.*

Additional Information

Extreme Low Temperature. The many advantages of extruded aluminum are not impaired by exposure to low temperatures. Aluminum actually gains strength as temperature is reduced, making it an appropriate metal for Arctic, space or cryogenic applications.

Ultraviolet Radiation. Sunlight includes ultraviolet (electromagnetic) radiation which causes tanning or sunburn in human skin, and which may cause chemical or structural changes in some commercial materials. Aluminum, however, reflects ultraviolet radiation and is not damaged by it.

Combustability. Extruded aluminum will not burn, which makes it safer than many other materials, such as wood, paper, or plastic for design applications. Extruded aluminum does not emit any toxic, hazardous fumes when exposed to high temperatures.

Alloy 6063 Chemical Analysis

Percent Weight

	Elements									Others Each	Others Total	Aluminum
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti				
Minimum	.20	—	—	—	.45	—	—	—	—	—	—	Remainder
Maximum	.6	.35	.10	.10	.9	.10	.10	.10	.05	.15		

Liquidus Temperature: 1211°F

Solidus Temperature: 1139°F

Density: 0.097 lb./in.³

Average Coefficient of Thermal Expansion (68° to 212°F) = 13.0 x 10⁻⁶ (Inch per inch per °F)

Alloy 6063 Mechanical and Physical Property Limits

Temper	Specified Section or Wall Thickness ² (Inches)	Tensile Strength (ksi)				Elongation ³ Percent Min. in 2 inch or 4D ⁴	Typical Brinell Hardness (500 kg load/10 mm ball)	Typical Ultimate Shearing Strength (ksi)	Typical Electrical Conductivity (%IACS)
		Ultimate		Yield (0.2% offset)					
		Min.	Max.	Min.	Max.				
T52	Up thru 1.000	22.0	30.0	16.0	25.0	8	60	17	55

① The mechanical property limits for standard tempers are listed in the "standards section" of the Aluminum Association's Aluminum Standards and Data manual and Tempers for Aluminum and Aluminum Alloy Products. ② The thickness of the cross section from which the tension test specimen is taken determines the applicable mechanical properties. ③ For material of such dimensions that a standard test specimen cannot be obtained, or for shapes thinner than 0.062", the test for elongation is not required. ④ D = Specimen diameter.

Characteristics of Alloy/Temper¹

Alloy	Temper	Formability		Machinability				General Corrosion Resistance				Weldability (Arc with Inert Gas)				Brazeability				Anodizing Response				Electrical Conductivity (%IACS) @ 68°F		
		Low	High	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A	D	C	B	A	40	50	60
6063	-T5, T52,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

① Rating: A=Excellent B=Good C=Fair D=Poor For further details of explanation of ratings, see Aluminum Association's Aluminum Standards and Data manual.

Material content provided courtesy of Alcoa.

LiveRoof, LLC Limited Module Warranty

Disclaimer/Limitation of Remedies and Liability

LiveRoof[®] Modular Green Roof System

This disclaimer/limitation of remedies and liability applies to the LiveRoof[®] brand module manufactured and sold by LiveRoof, LLC under the name LiveRoof[®]. No person representing or purporting to represent LiveRoof, LLC shall be entitled to waive or vary the terms set forth herein, and any attempt to do so shall be void and of no effect.

Warranty

The LiveRoof[®] module is warranted against material defects and photodegradation for 20 years from the date of installation, provided the system is surrounded by edging, ballast, pavers or parapet.

Suitability/ Particular Applications

Because LiveRoof, LLC does not have control over each particular application of its products, LiveRoof[®] **makes no warranties express or implied related to the fitness of LiveRoof[®] products for particular applications and or purposes.** It is the responsibility of the user to determine whether the product is suited to a particular purpose or application, and LiveRoof, LLC recommends consultation with a competent architect or engineer to determine if the LiveRoof[®] system is suitable for a particular application including but not limited to roof slope, drainage, underlying membranes, load (weight) bearing potential.

LiveRoof LLC makes **no warranty** that products installed by LiveRoof Certified Installers have been installed properly or in accordance with LiveRoof Standardized installation procedures. **Any warranties for product installation and related work, if available at all, are available solely from the actual installer. Only approved licensees of LiveRoof LLC are authorized to sell or install the LiveRoof System.**

Green roofs typically keep roofing membranes wetter than traditional roofs. This is an important consideration when determining what type of membrane and bonding agent/method to use. The choice of waterproofing system (membrane or otherwise) and bonding method should be preapproved with the manufacturer to ensure that it is suited for use in conjunction with the LiveRoof[®] system. Most manufacturers have indicated to us that their warranties will remain effective when the LiveRoof[®] system is used in conjunction with the manufacturer's approved slip sheet/root barrier. LiveRoof[®] accepts no liability for any issue related to waterproofing systems or bonding methods. The waterproofing system manufacturer should always be consulted before applying any type of green roof system.

Limitation of Remedies and Liability

If the Product is proved to be defective, the exclusive remedy, at LiveRoof, LLC's option, shall be to refund the purchase price of the affected LiveRoof[®] containers (exclusive of soil and plant material) or timely repair or replacement

of affected containers (exclusive of soil, plants or installation). LiveRoof, LLC shall not otherwise be liable for any loss or damages, whether direct, indirect, special, incidental, punitive, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability. If LiveRoof, LLC shall elect to repair or replace the defective Product, or refund the purchase price, such election shall not be deemed an admission of liability. Any lawsuit or legal action against LiveRoof, LLC with regard to product must be brought in Ottawa County, Michigan, and Michigan law shall apply to all proceedings.

Grades and Standards

The LiveRoof[®] system is intended to be delivered in a vegetated condition of approximately 95% coverage. The plants are intended to be of an assortment that is hardy, durable, long-lived and sustainable for your local climate (as advised by your experienced local, licensed LiveRoof[®] grower). Any arrangement for vegetation with a lesser degree of coverage or plant material other than plants recommended by experienced professional growers may result in suboptimal performance, increased maintenance, and is at the discretion of the system owner.

Similarly, the LiveRoof[®] system is intended to be supplied with LiveRoof[®] engineered soil, in accord with established LiveRoof[®] and German FLL soil specifications. Any deviation from such specifications may result in suboptimal performance, resultant performance is solely at the discretion and responsibility of the system owner.



LiveRoof, LLC Limited Plant Warranty

For Michigan, Indiana, Illinois, Wisconsin for product furnished by LiveRoof, LLC of Spring Lake, MI

LiveRoof LLC, green roof plants are selected for proven performance in environmental extremes, in the Midwest. They are, however, living organisms, and different from static nonliving elements of the roof and building. Accordingly, LiveRoof, LLC warrants its prevegetated green roof plantings for **one (1) year** from installation, provided:

- a. That system was installed properly, plants were not subject to foot traffic or other physical, environmental, or chemical damage during installation.
- b. The system was installed prior to:
 - October 1 Illinois – *Mid and Northern*
 - October 7 Illinois – *Mid to South*
 - October 7 Indiana – *Northern*
 - October 15 Indiana – *Southern*
 - October 7 Michigan – *East Side*
 - October 15 Michigan – *West Side*
 - October 1 Wisconsin
- a. The system has been maintained and maintenance documented in accord with LiveRoof, LLC prescribed “Maintenance Protocol,” as outlined in Exhibit A. Failure to maintain and document maintenance in accord with the Maintenance Protocol results in the nullification of this warranty.
- b. The LiveRoof modules were installed within 4 hours of delivery by LiveRoof truck, and were never transferred to any facility, structure, transport device or vehicle, building, holding yard, or any other location prior to installation on the rooftop.

This warranty also excludes certain “Uncontrollable Acts,” as outlined in *Exhibit B*.

During warranty period, LiveRoof LLC, will provide to building owner, additional plants in the form of 38 cell plugs (2 ¼” wide), up to 2 per square foot of the area where the plants have not persisted, due to any reason besides those defined Uncontrollable Acts, provided documented care in accord with the Maintenance Protocol.

LIVEROOF MAINTENANCE PROTOCOL

I. DOCUMENTATION

All green roof maintenance events and acts of plant care must be recorded to indicate staff member, date, activity, and time. This information must be mailed to LiveRoof, LLC for documentation each quarter (send to LiveRoof, LLC, Warranty Documentation, PO Box 533, Spring Lake, MI 49456), see *Schedule A*.

Name of Person	Date	Activity	Observations
		* if fertilizer, type and amount applied per 1000 sf * DO NOT apply fertilizer after June in temperate regions	
		* if soil test, what lab	
		* if irrigation, duration and volume * DO NOT irrigate within 4 weeks of first fall frost, nor during winter	
		Time needed to pull weeds and clean drains.	

II. ANNUAL MAINTENANCE

A. SOIL TESTING AND FERTILIZATION

During April 1 to 15 of each year, an annual soil test is to be conducted and the pH and fertility levels evaluated. The pH, is to be maintained in the range of 6.5 to 8.0. Given that the LiveRoof soil media is formulated to be buffered against acid rain, changes in pH should be small and gradual, and amendments seldom required. In the event that the pH is outside of the 6.5 to 8.0 range, LiveRoof LLC should be consulted for the appropriate amendment.

LiveRoof soil is formulated to have the ideal and sustainable organic content for the plants selected. LiveRoof soil, ideally, will fall into the normal range of fertility, using a typical field soil fertility test as provided by A & L Labs.

A & L Labs
 1311 Woodland Ave., Suite 1
 Modesto, CA 95351
 (209) 529-4080, al-labs-west.com

In the event that the fertility falls below this level, LiveRoof specifies a single springtime application of Nutricote 14 14 14, Type 180 (180 day release period), at 20 pounds per 1000 square feet (or similar slow release fertilizer product). In all cases, the Nutricote (or other product) labeled directions for application rate should be followed and should take priority over any recommendations listed here. Read the product label and follow labeled directions. Nutricote is unique in that it releases nutrition gradually, and minimizes the effects of fertilizer runoff. Runoff potential, however, does exist and in all cases should be evaluated by the applicator in accord with the site specifics. And, the greater the runoff sensitivity, the lower the application rate. All applications of fertilizer are the sole responsibility of the applicator.

AVOID LATE SEASON FERTILIZATION

As indicated above, fertilization should be applied during April, May, or at the latest early June, following fertility analysis. Avoid summer or fall fertilization as this may cause formation of tender growth prior to winter weather, and may compromise the cold hardiness of the plantings.

III. IRRIGATION

A. INITIAL WATERING

Immediately after installation, installer must irrigate the LiveRoof modules thoroughly so as to moisten the soil from top to bottom of the containers and to settle the soil appropriately in its new location.

B. SUCCESSIVE WATERING

While in northern North America, successive watering may not be needed to keep your LiveRoof alive, protracted hot dry weather can result in plant thinning or death. In warmer climates, depending upon rainfall and exposure, regular irrigation will probably be required. Accordingly, LiveRoof recommends irrigation (in a manner practical and efficient for the scale of the installation) as a "temporary" management tool under the following conditions:

PROLONGED HOT DRY WEATHER, in the northern temperate zone (Seattle, Minneapolis, Toronto, Boston), is generally defined as periods of 75 degree weather, with less than 1 inch of rainfall, that persists for four weeks or longer. This "ballpark" time period will likely be less if the temperatures are hotter, the climate warmer, on sloping rooftops, or roofs exposed to strong winds. Such conditions can dry out the green roof substrate and cause the plants to go dormant or in extreme cases to dry up and die. Dormant plants tend to shrink to a smaller size and expose soil, which can predispose the system to weed encroachment.

When hot dry weather persists for greater than 4 weeks, irrigation is to be applied, temporarily, to re-wet the soil to the point of runoff. This will keep plants from going dormant, cover the soil effectively, optimize plant appearance, and keep the evaporative cooling effect of the green roof working.

For the LiveRoof Lite system, this period is shortened to 2 or 3 weeks in the northern part of the temperate zone. This also is a "ballpark" figure and will be less if the temperatures are hotter, the climate warmer, the roof sloping, or if exposed to strong winds.

Note: There are no absolutes when it comes to irrigation. Check the plants for wilting, not midday but in the morning. If the plants show signs of wilting in the morning, then its time to irrigate.

Thoroughly irrigating, even once per month, can pay off significantly. The cost of irrigation is minimal, compared to the energy savings of evaporative cooling and the overall quality of the green roof.

Do Not Water Period For the northern temperate zone, LiveRoof, LLC recommends that you do not water during the fall season, and not within one month of the expected average first frost date. Normally, there is plenty of precipitation this time of year, and adding additional water may compromise the durability of the plants to endure winter's cold. Similarly, watering during winter is not recommended.

REFLECTED LIGHT

In areas of reflected light, such as next to south facing walls, more frequent irrigation should be applied to keep the soil from becoming excessively dry.

SLOPING ROOFTOPS

Flat roofs typically require a pitch of 1/4" per 12 feet in order to shed water to the drains. This amount of slope is common on green roofs and it the reference point for "normal performance" expectations. Keep in mind that the greater the pitch of the roof, the less able the soil will be to retain water, and the greater the potential need for additional irrigation. Get to know your roofs water requirements by checking it frequently and realize that the greater the slope, the more you will need to add supplemental irrigation.

DEICING MATERIALS

Salt and other deicing materials can be very injurious to plant materials, particularly succulent plants that are typical in LiveRoof applications. Such materials should not be applied to LiveRoofs.

IV. INSPECTIONS AND PLANT CARE PROTOCOL

Conduct the following EVERY 2 WEEKS (2X per month)

During the entire Spring through Fall growing season.

A. WEED CONTROL

Weed control, by hand weeding, is to be conducted during the twice-monthly inspection and plant care protocol. The process is simple. Just pull any and all weeds no matter how small, and never allow any weed to flower, set seed, and complete its life cycle. The by-product of this regimen is that each inspection/weeding event requires minimal time, as weeds are headed off proactively. This regimen should be conducted from spring through fall in areas where the roof becomes frozen and snow covered in winter. In warmer climates, it should be continued year round.

The inspector/weeder may adjust this interval in accord with seasonal variations in weed growth, but at no time should the interval exceed two weeks or be long enough to allow for any weed to flower and set seed.

It is especially important that no woody plant ever be allowed to establish in a green roof system. Woody plants have extensive root systems that can damage roofing membranes.

Herbicides, whether preemergent or post emergent, are not recommended. Herbicides are not healthy for the environment and can contaminate runoff water. The need for preemergent herbicides is a sign of weeding too infrequently.

B. DISPLACED SOIL

Nesting birds can potentially displace soil. Any displaced soil should immediately be replaced.

C. DRAINAGE INSPECTION

Roof drains should be inspected every two weeks and any debris, pebbles, leaves, etc., should be removed to keep drains flowing freely.

D. DEBRIS/TRASH REMOVAL

With each visit, any debris or trash should immediately be removed. Similarly, and especially during fall and spring, LiveRoof plantings should be raked clean of any matted tree leaves which could smother the green roof plants.

E. PEST SCOUTING AND PESTICIDES

The roof should be scouted every 2 weeks for insect and disease pest organisms. The observation of pests should be followed with appropriate control measures to protect plants and prevent further damage. Inorganic Pesticide use is discouraged on LiveRoof systems and should always be considered secondary to cultural, biological, and organic control measures. Pesticides can get into runoff water and cause

environmental damage. Pesticide use should only be conducted on "as needed" basis, and then only by qualified and licensed applicators. All applications of pesticides are the sole responsibility of the applicator.

F. MOWING

LiveRoof recommends, but for the purpose of this warranty does not require, that once each year, around April 1st., that the green roof be mowed at a height of 2 inches or less, to break up any dried seed heads and chaff. The clippings should be allowed to stay on the roof, not be bagged or removed. This regimen has a rejuvenating effect on the plant material, and keeps it looking optimally neat and clean. Foregoing annual mowing may be elected by the owner. **BE SAFE, USE YOUR PROTECTIVE EQUIPMENT**

CAUTION: If you choose to mow, only mow during early spring, and set height of mower high enough that it mows the dry flower heads, not the foliage.

UNCONTROLLABLE AND NATURAL ACTS

The following are considered natural acts or acts beyond the control of LiveRoof, LLC and are thus excluded from warranty coverage.

- a. lightning or fire
- b. hail (note: extremely large hail might disfigure plantings, but most plants have below ground buds, and would be expected to rebound quickly)
- c. tornados, hurricanes, high velocity straight line winds
- d. chemical, including deicing materials, inappropriate fertilizer, late season fertilizer applications (within 2 months of first frost), fertilizer burn, or mechanical damage or neglectful or accidental acts; includes excessive foot traffic (trampling or walking on the same plant more than 2 times per week).
- e. poor irrigation water quality
- f. structural failure or damage of any type
- g. physically moved modules (as in the case if modules were removed or moved for rooftop maintenance).
- h. divots or plant displacement resulting from removal of large weeds (avoided easily by pulling weeds when they are small)
- i. insect or disease infestations
- j. animal or bird damage
- k. plugged drains
- l. matted tree leaves that smother plantings
- m. reflected light, generally from south facing walls
- n. exposure to exhaust/air currents, hot or cold, from mechanical systems
- o. natural selection, whereby one plant that is more aggressive than another ends up dominating or the less aggressive plant or plants
- p. earthquakes, erosion, or other acts of God than those listed above
- q. damage or deterioration of any kind due to faulty or improper installation
- r. damage inflicted due to service or modification of the rooftop or underlying membranes mechanical features
- s. vandalism
- t. failure to provide and document prescribed maintenance
- u. water that pools or stands, from insufficient slope, too few drains, plugged drains, uneven deck, or other cause
- v. any other causes beyond the control of LiveRoof, LLC

LIVEROOF MAINTENANCE ACTIVITY DOCUMENTATION

Calendar Year 20 ____

- 1st Quarter, submit by April 15
- 2nd Quarter, submit by July 15
- 3rd Quarter, submit by October 15
- 4th Quarter, submit by January 15

Mail to:
 LiveRoof, LLC
 Warranty Documentation
 P.O. Box 533
 Spring Lake, MI 49456

Project Name: _____

Project Street Address: _____

Project City, State, Zip: _____

Warranty / Maintenance Contact Person: _____

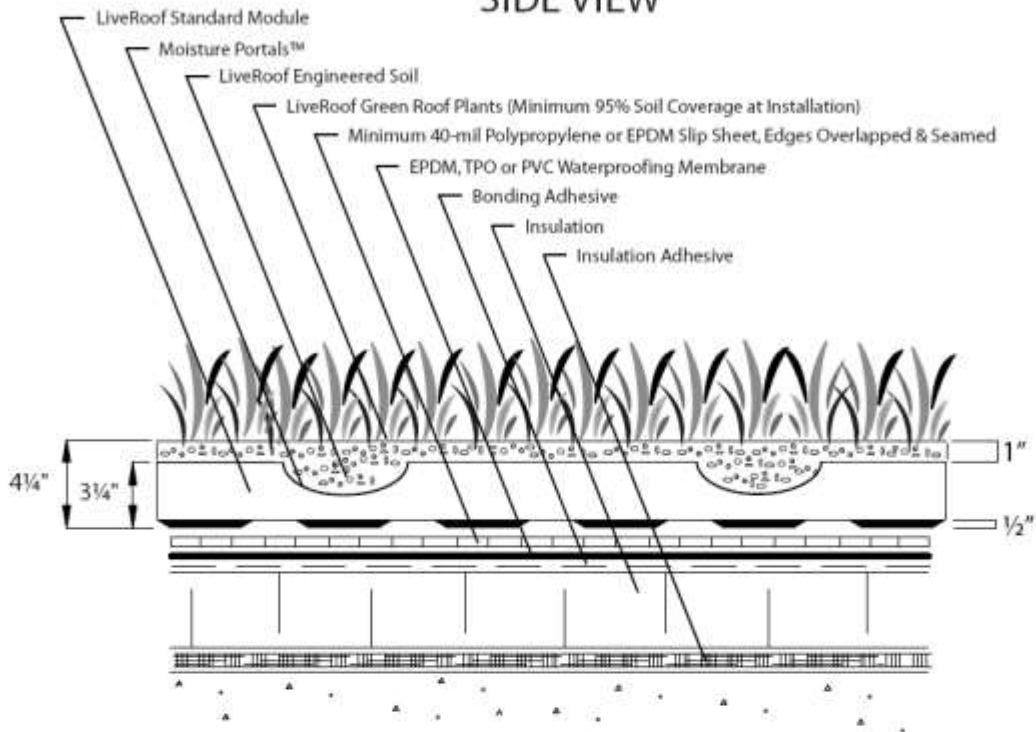
Phone number: _____

Email address: _____

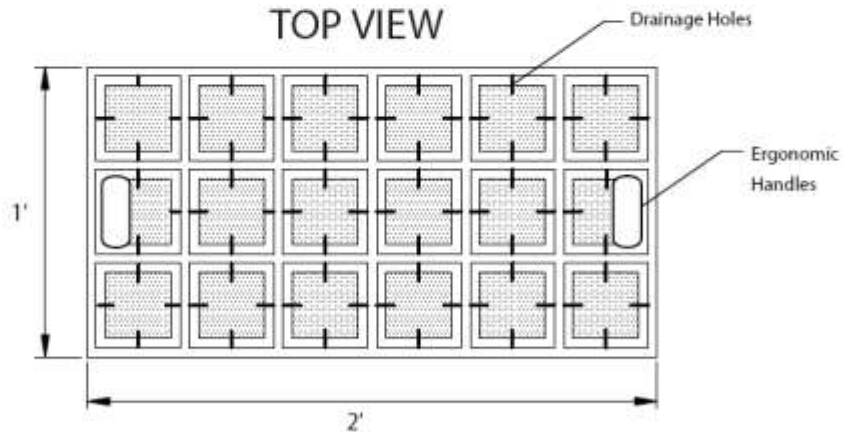
Name of Person	Date	Activity	Observations
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		* if soil test, what lab	
		* if irrigation, duration and volume * DO NOT irrigate within 4 weeks of first fall frost, nor during winter	
		Time needed to pull weeds and clean drains.	

LiveRoof STANDARD SYSTEM

SIDE VIEW



TOP VIEW



NOT TO SCALE

STANDARD A

ILLUSTRATIONS ARE TO CONCEPTUALLY ASSIST PROFESSIONALS IN DESIGNING LIVEROOF INSTALLATIONS. LIVEROOF DOES NOT ACCEPT RESPONSIBILITY FOR ENGINEERING BASED ON ILLUSTRATIONS. A QUALIFIED ROOFING SPECIALIST SHOULD BE CONSULTED TO DETERMINE APPROPRIATE WATERPROOFING AND ROOF DECK MATERIALS AND SUITABLE DESIGN.



LiveRoof, LLC
 P.O. Box 533
 Spring Lake, MI 49456

(800) 875-1392
www.liveroof.com

LiveRoof®

LiveRoof® Edge

PERMALOC ALUMINUM EDGING, 13505 BARRY STREET HOLLAND, MI, 49424
 (800) 356-9660 PHONE: (616) 399-9600 fax: (616) 399-9770 WWW.PERMALOC.COM

FOR USE WITH:  LiveRoof®

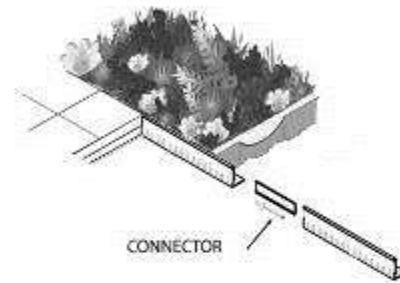
ARCHITECT NOTE: CHECK OFF APPLICABLE SIZE & FINISH DESIRED

SIZE: ALL 8' (2.44 M) LENGTHS w/ 0.210" (5.33 MM)
 THICK EXPOSED TOP LIP

4.5" X 3" (114 MM X 76 MM) MF BL

FINISH LEGEND:

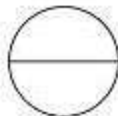
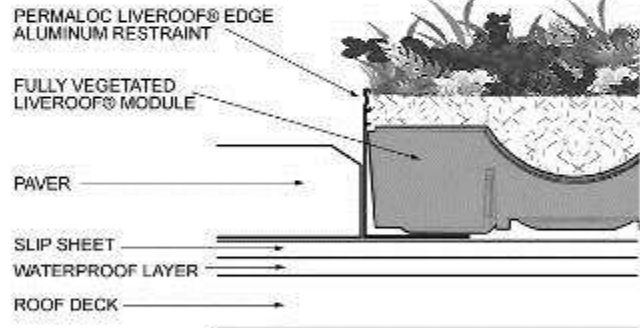
(MF) MILL FINISH-NATURAL ALUMINUM
 (BL) BLACK DURAFLEX-ELECTROSTATICALLY
 APPLIED BAKED ON PAINT, MEETS AAMA 2603



ISOMETRIC VIEW
 NTS

NOTES:

1. INSTALLATION PER MANUFACTURER'S "INSTALLATION GUIDELINES"
2. 8'-0" (2.44 M) SECTIONS CONNECTED WITH 4" (102 MM) SLIDING CONNECTOR.
3. CORNERS: NOTCH BASE ONLY FORM A CONTINUOUS CORNER.
4. WHEN CUTTING BASE, REMOVE ANY BURRS BY FILING.
5. PERMALOC LIVEROOF® EDGE AS MANUFACTURED BY PERMALOC CORPORATION, HOLLAND MI. (800) 356-9660 (616) 399-9600
6. CONTRACTOR'S NOTE: FOR PRODUCT AND PURCHASING INFORMATION



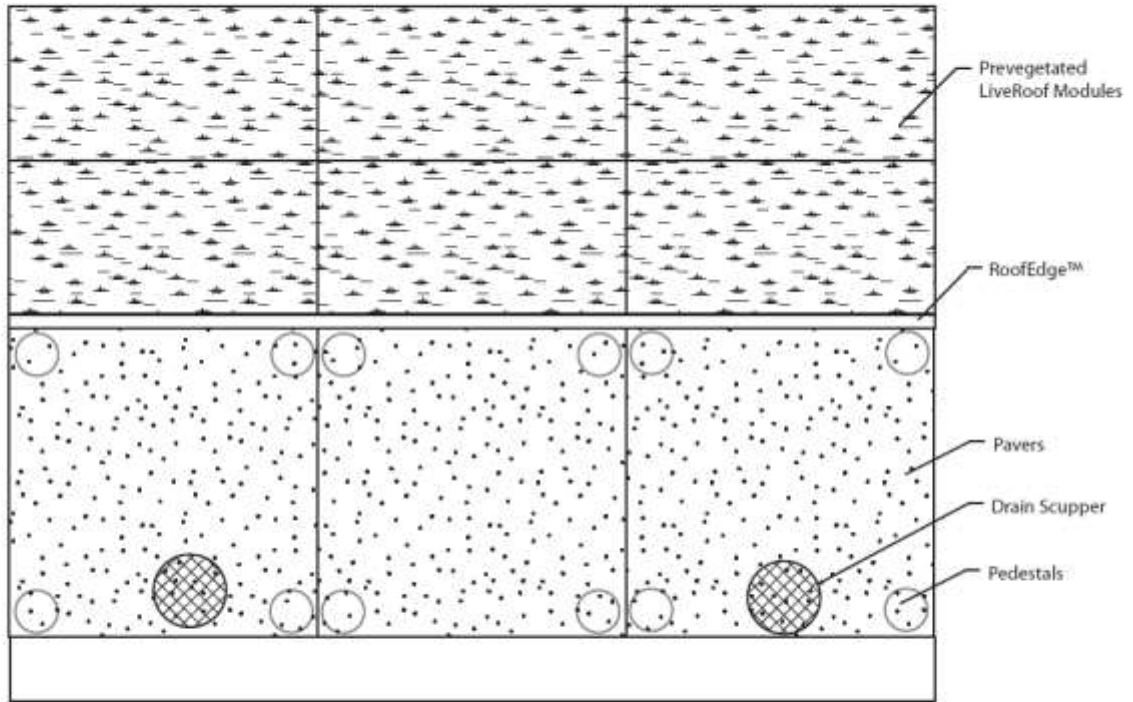
EDGING FOR LIVEROOF® ADJACENT TO PAVERS

SCALE: 3"=1'-0"

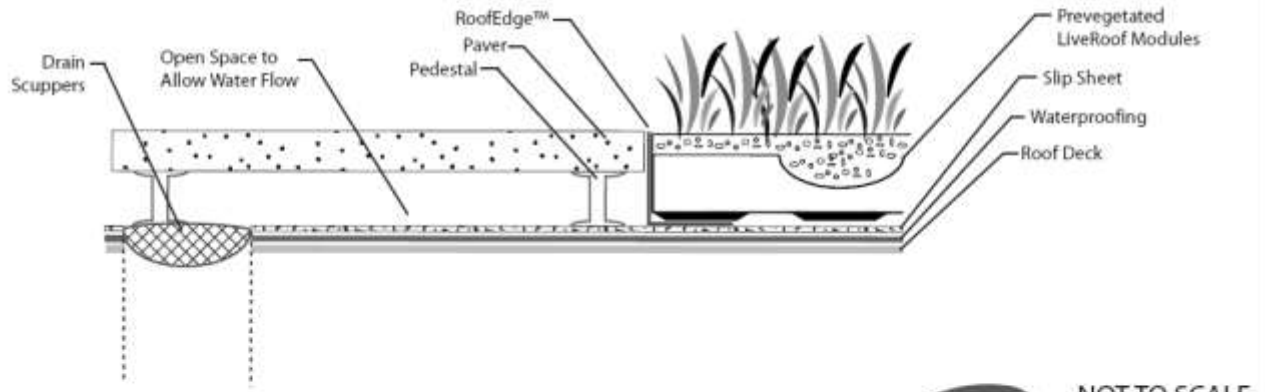
3E3.dwg

PAVER APPLICATION
Using Roof Edge™ and Pedestals

TOP VIEW



SIDE VIEW



ILLUSTRATIONS ARE TO CONCEPTUALLY ASSIST PROFESSIONALS IN DESIGN OF LIVEROOF APPLICATIONS. LIVEROOF DOES NOT ACCEPT RESPONSIBILITY FOR ENGINEERING BASED ON ILLUSTRATIONS. A QUALIFIED STRUCTURAL ENGINEER SHOULD BE CONSULTED TO DETERMINE APPROPRIATE AND SUITABLE DESIGN. PAVER WALKWAYS NEAR PARAPETS SHOULD BE DESIGNED FOR SAFE USE, TAKING INTO ACCOUNT WIND FACTORS.



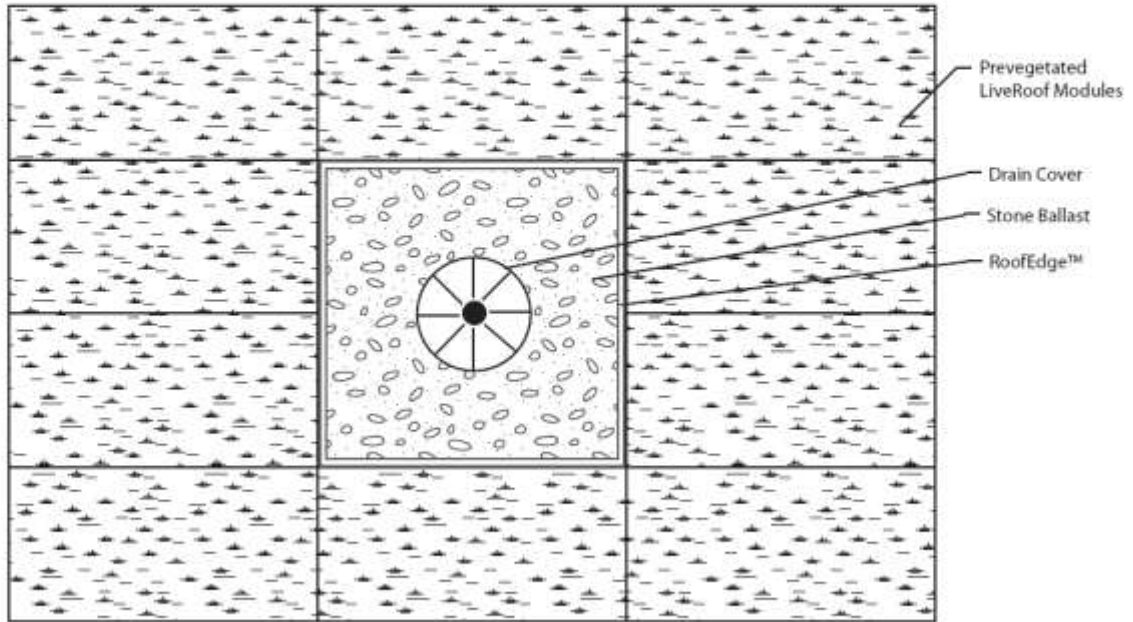
LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

(800) 875-1392
www.liveroof.com

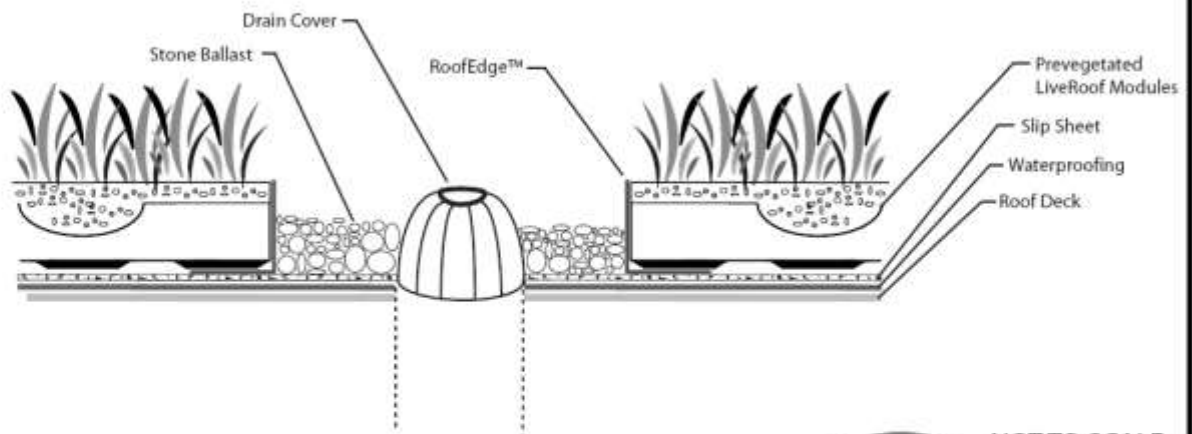
LiveRoof®

DRAIN APPLICATION
Using Roof Edge™ and Stone Ballast

TOP VIEW



SIDE VIEW



NOT TO SCALE

DRAIN COMPONENTS AND FLASHING SHOULD BE INSTALLED ACCORDING TO MANUFACTURER INSTRUCTION.

DRAIN A

LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

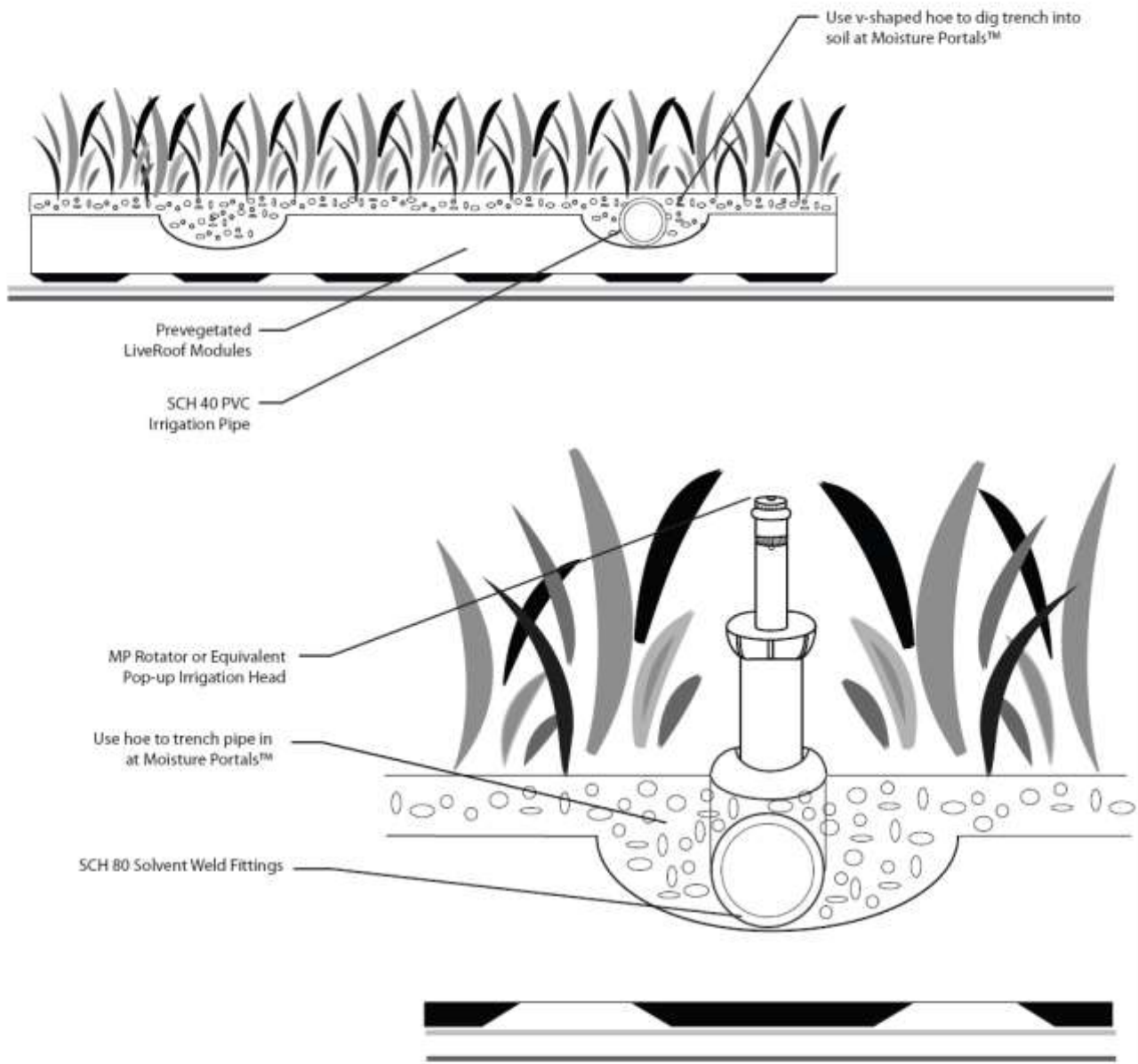
(800) 875-1392
www.liveroof.com

LiveRoof®

SUBTERRANEAN IRRIGATION

Trenched in Modules at Moisture Portals™

SIDE VIEW



NOT TO SCALE

REFLECTIVE WALLS OR WINDOWS WILL INCREASE EFFECTS OF SUN EXPOSURE ON PLANTS AND MAY REQUIRE SPECIAL PLANT SELECTIONS AND/OR MORE FREQUENT IRRIGATION. CONSULT LIVEROOF AFFILIATE GROWER FOR APPROPRIATE PLANT SELECTIONS FOR USE NEXT TO REFLECTIVE SURFACES.

IRRIGATION A

LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

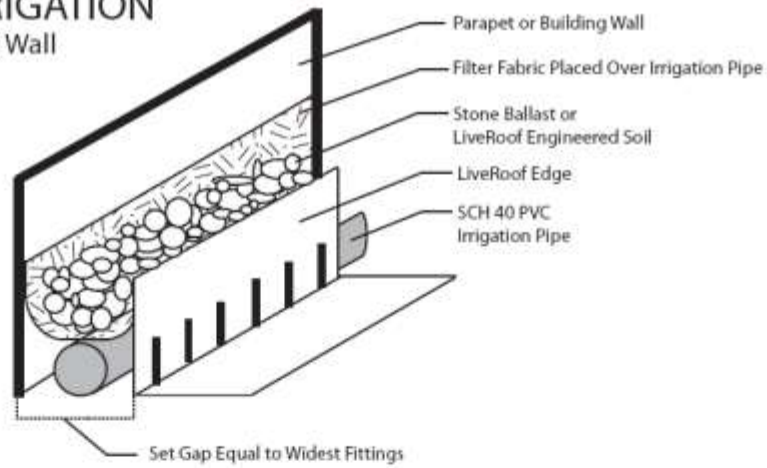
(800) 875-1392
www.liveroof.com



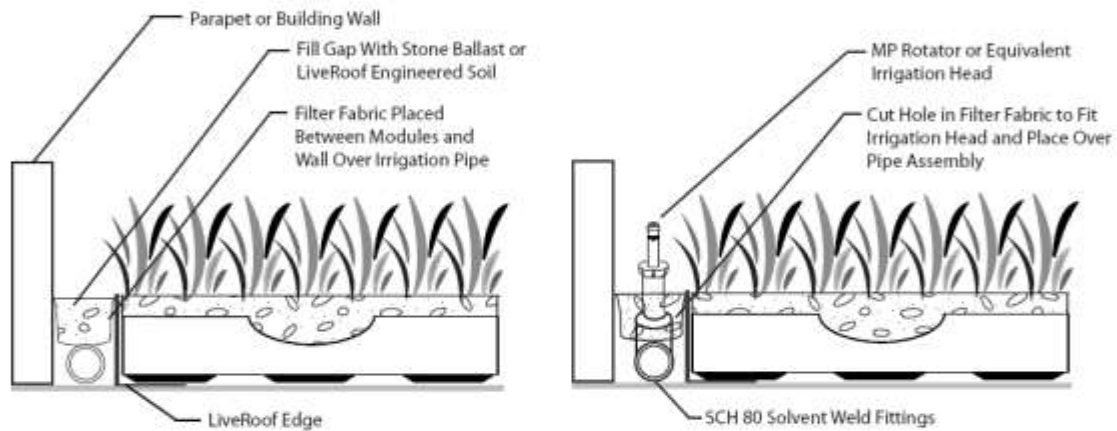
LiveRoof®

SUBTERRANEAN IRRIGATION

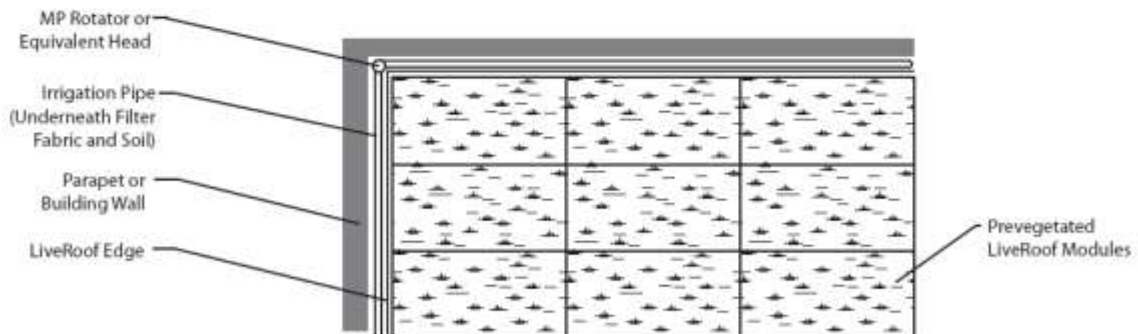
Parallel to Parapet or Building Wall



SIDE VIEWS

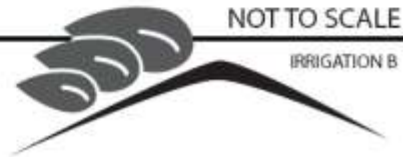


TOP VIEW



NOT TO SCALE

REFLECTIVE WALLS OR WINDOWS WILL INCREASE EFFECTS OF SUN EXPOSURE ON PLANTS AND MAY REQUIRE SPECIAL PLANT SELECTIONS AND/OR MORE FREQUENT IRRIGATION. CONSULT LIVEROOF AFFILIATE GROWER FOR APPROPRIATE PLANT SELECTIONS FOR USE NEXT TO REFLECTIVE SURFACES.



LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

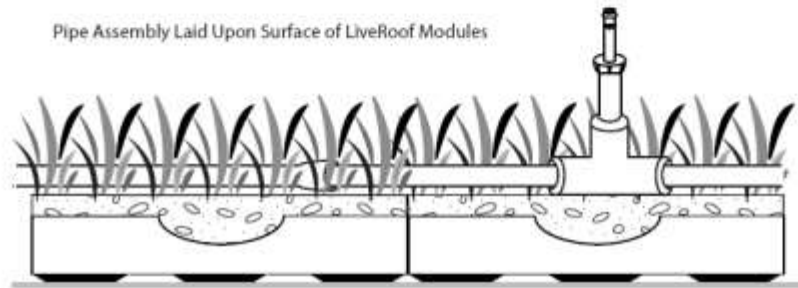
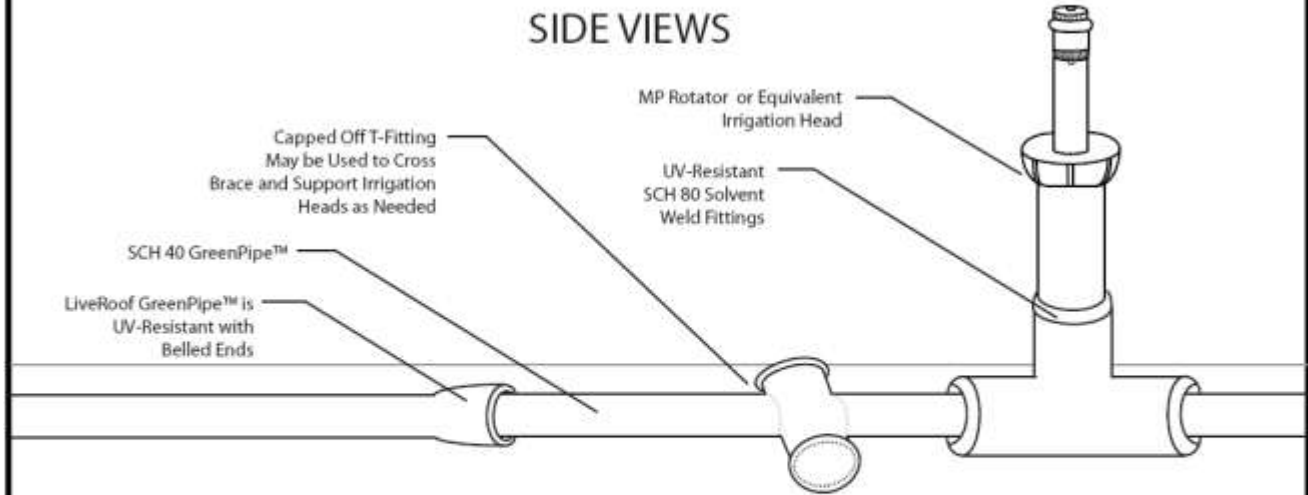
(800) 875-1392
www.liveroof.com

LiveRoof®

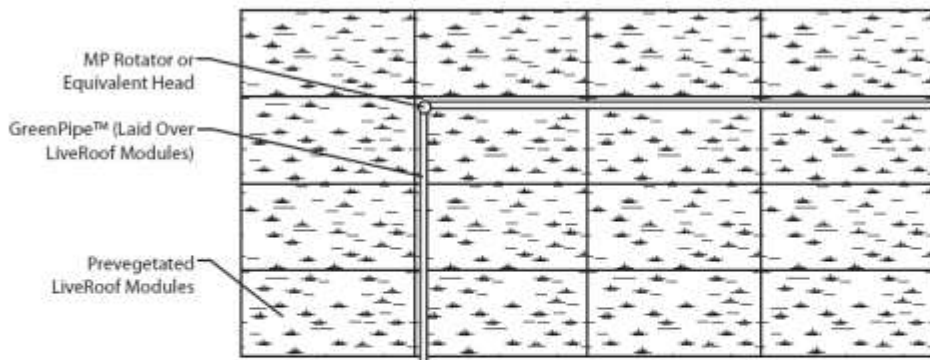
SURFACE APPLIED IRRIGATION

Using GreenPipe™

SIDE VIEWS



TOP VIEW



NOT TO SCALE

REFLECTIVE WALLS OR WINDOWS WILL INCREASE EFFECTS OF SUN EXPOSURE ON PLANTS AND MAY REQUIRE SPECIAL PLANT SELECTIONS AND/OR MORE FREQUENT IRRIGATION. CONSULT LIVEROOF AFFILIATE GROWER FOR APPROPRIATE PLANT SELECTIONS FOR USE NEXT TO REFLECTIVE SURFACES.

IRRIGATION C

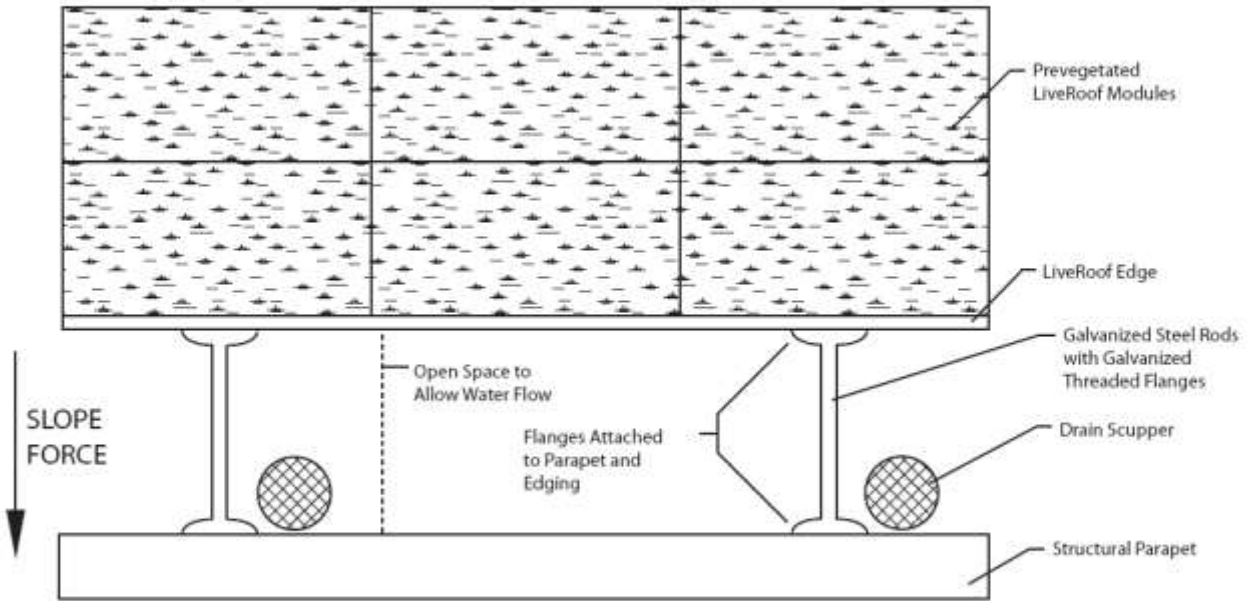
LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

(800) 875-1392
www.liveroof.com

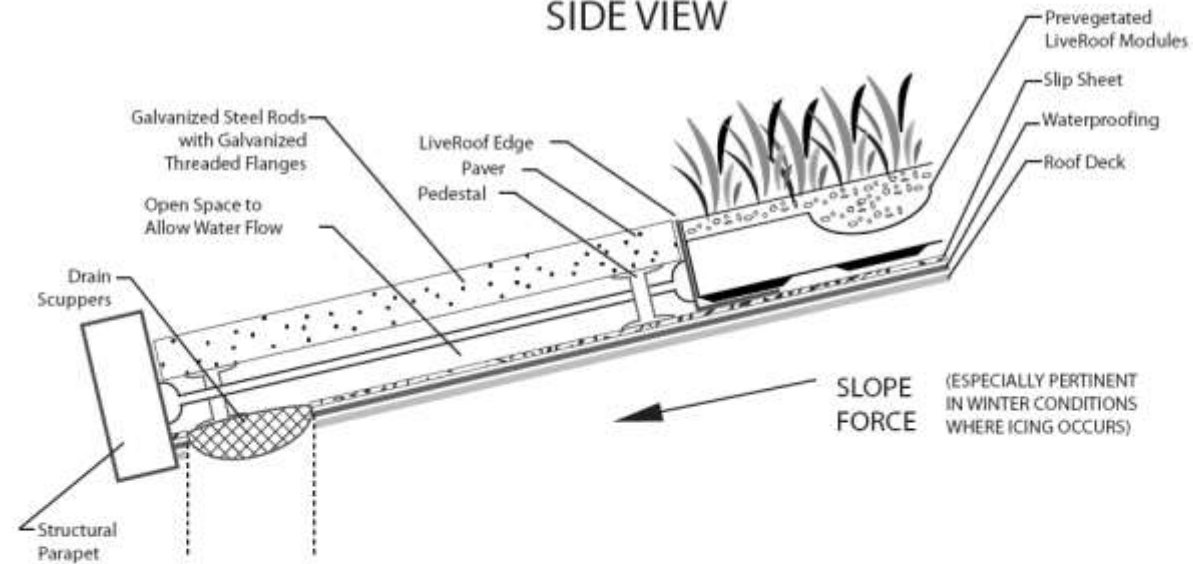
LiveRoof®

SLOPED APPLICATION
 Lower Parapet Physical Constraint
 Against Downward Force

TOP VIEW



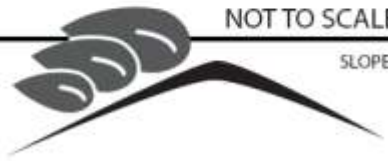
SIDE VIEW



NOT TO SCALE

SLOPE A

ILLUSTRATIONS ARE TO CONCEPTUALLY ASSIST PROFESSIONALS IN DESIGN OF STRUCTURAL SUPPORTS. LIVEROOF DOES NOT ACCEPT RESPONSIBILITY FOR ENGINEERING BASED ON ILLUSTRATIONS. A QUALIFIED STRUCTURAL ENGINEER SHOULD BE CONSULTED TO DETERMINE APPROPRIATE FORCE CONTAINMENT AND SUITABLE DESIGN.



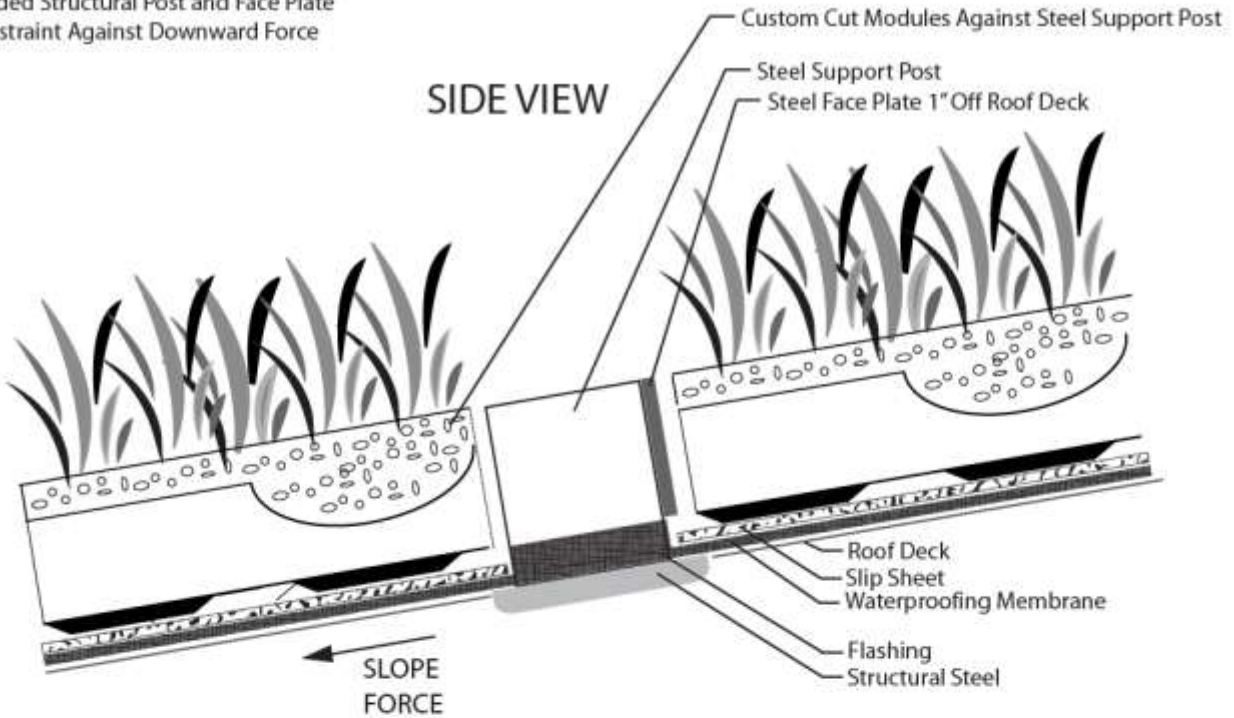
LiveRoof, LLC
 P.O. Box 533
 Spring Lake, MI 49456

(800) 875-1392
 www.liveroof.com

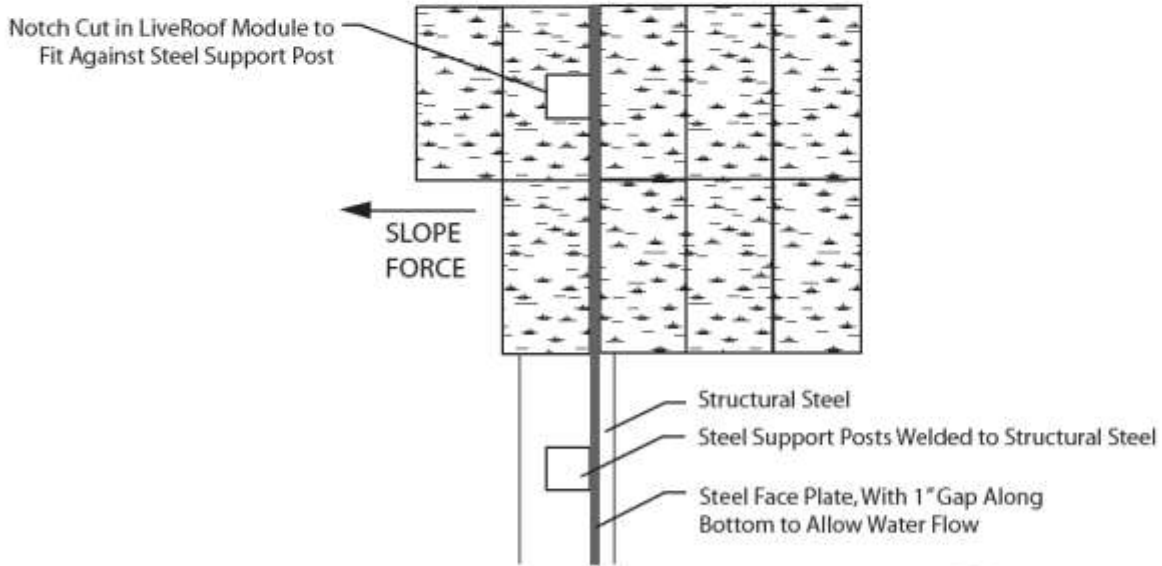
LiveRoof®

SLOPED APPLICATION

Welded Structural Post and Face Plate
Constraint Against Downward Force



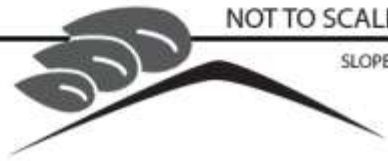
TOP VIEW



NOT TO SCALE

SLOPE B

ILLUSTRATIONS ARE TO CONCEPTUALLY ASSIST PROFESSIONALS IN DESIGN OF STRUCTURAL SUPPORTS. LIVEROOF DOES NOT ACCEPT RESPONSIBILITY FOR ENGINEERING BASED ON ILLUSTRATIONS. A QUALIFIED STRUCTURAL ENGINEER SHOULD BE CONSULTED TO DETERMINE APPROPRIATE FORCE CONTAINMENT AND SUITABLE DESIGN.



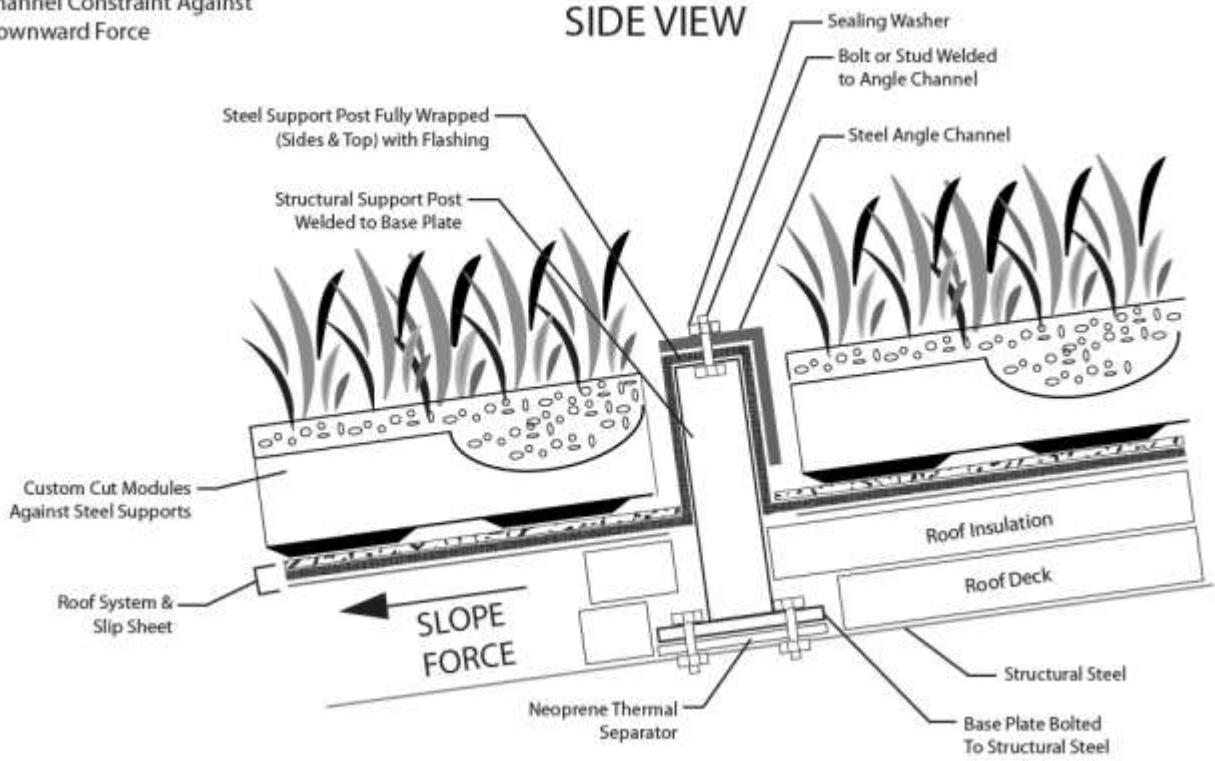
LiveRoof®

LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

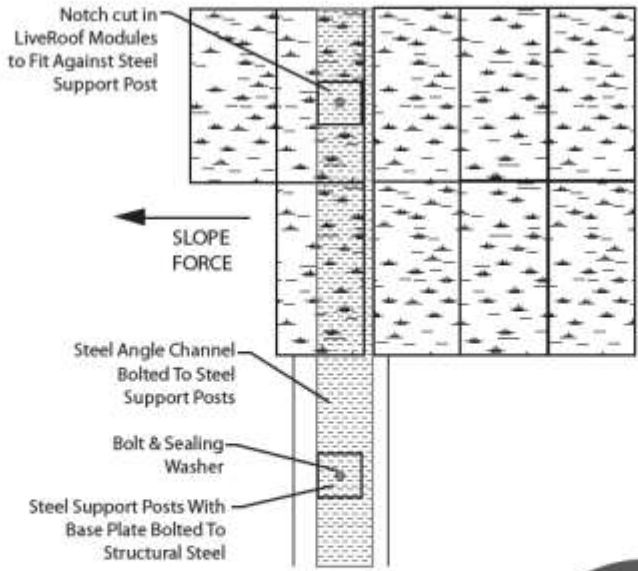
(800) 875-1392
www.liveroof.com

SLOPED APPLICATION

Bolted Structural Post and Steel Angle
Channel Constraint Against
Downward Force



TOP VIEW



NOT TO SCALE

SLOPE C

ILLUSTRATIONS ARE TO CONCEPTUALLY ASSIST PROFESSIONALS IN DESIGN OF STRUCTURAL SUPPORTS. LIVEROOF DOES NOT ACCEPT RESPONSIBILITY FOR ENGINEERING BASED ON ILLUSTRATIONS. A QUALIFIED STRUCTURAL ENGINEER SHOULD BE CONSULTED TO DETERMINE APPROPRIATE FORCE CONTAINMENT AND SUITABLE DESIGN.



LiveRoof, LLC
P.O. Box 533
Spring Lake, MI 49456

(800) 875-1392
www.liveroof.com

LiveRoof®

Installation Standardized Procedures

SECTION 1

The LiveRoof[®] System

A. LiveRoof[®] is designed to provide **Natural Function** and **Natural Beauty**.

Natural Function

LiveRoof[®] is the only modular green roof system that uses Soil Elevator[™] and Moisture Portal[™] technology to unite the entire soil continuum.

This allows for the natural sharing of water, nutrients and beneficial organisms across the entire rooftop strata. It also minimizes hot, wet, and dry zones, and avoids compartmentalizing the growing medium into unnatural ‘grid’ as is the case with other modular systems.

By not compartmentalizing the soil into ‘grids,’ **LiveRoof[®] functions as nature intended**, and the difference in performance is real.



Natural Function LiveRoof[®] ‘soil elevation’ design and Moisture Portals[™] unite soil across the entire green roof strata for sharing, not compartmentalization, of water, nutrients and beneficial organisms. This allows for the plants to be healthier, and hot, dry and wet spots are avoided.

No Photodegradation

To completely prevent photodegradation, LiveRoof[®] is subterranean with no exposed lips or edges.

Proper Roof Top Drainage

LiveRoof[®] keeps the roof dry with drain channels that disperse water at 7.0 gallons per minute per linear foot.

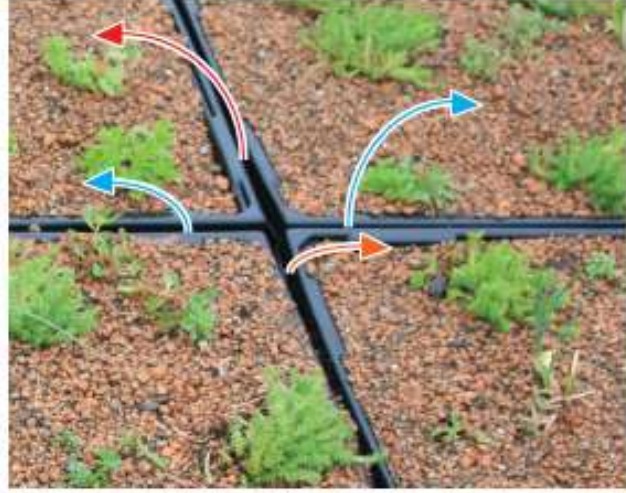
eliminates air gaps for optimal R value, cooling value, and stormwater absorption.

No Air Gaps Between Modules

Uninterrupted continuum of soil



LiveRoof® modules eliminate air gaps and are protected from harmful UV rays to prevent photodegradation.



Other modular systems may have exposed lips, making them vulnerable to photodegradation and allowing for warm or cool air to escape from the building below.

Natural Beauty

The aesthetic advantages of LiveRoof are significant, and during spring, summer, fall or winter, **LiveRoof® looks like a beautiful meadow.** Other modular systems look like man-made 'grids,' especially during the dormant season.



LiveRoof® project in June (above) & April (below)



Other modular system project in June (above) & April (below)



LiveRoof® modules offer meadow-like, natural beauty the entire year, even during winter dormancy.



Even if pregrown to full vegetation, other modular systems may look like this during the dormant season.

Natural Beauty

LiveRoof's monolithic soil continuum and unique plant mixtures bring 4-season aesthetics. Soil and plants obscure modules all 12 months of the year.

Subterranean Module

Gives a meadow-like look with no 'grid' lines.

Proven Soil

The industry's best engineered soil, expected to last indefinitely.



LiveRoof® modules can be custom cut to foster creativity.



Other modular systems offer less flexibility.

Flexibility

LiveRoof® modules can be custom cut to create natural looking green roofs with sweeping curves and full vegetation from parapet to parapet. Other modular systems offer considerably less flexibility around drains, at edges, and cannot be used on curved applications without creating large gaps.

LiveRoof® is an Instant Green Roof

Each LiveRoof® module arrives to the job site with fully grown plants inside the container and is simply set in place on the rooftop. The unique patent-pending Soil Elevators™ are then removed for a seamless fit. No need to start with a brown roof and farm it for years, hoping and waiting for it to become a green roof.



Day 1: LiveRoof® always looks like this



Day 1: Conventional / Built in Place systems may look like this

B. LiveRoof® is only sold through licensed Growers with horticultural experience and expertise in your region.

- Your local Grower provides plant selection assistance, pricing, technical assistance and training.

C. Custom equipment, such as Hoppit® racks and Roll-a-Roof™ conveyors are available to allow for fast and safe installations.

Check with your Grower to determine if this equipment is currently available locally.



- Unique Hoppits[®] are custom designed racks which allow the modules to “hop” from the truck to the roof for unloading without double handling.
- Roll-a-Roof[™] Conveyor systems are available for rental to minimize unnecessary walking for a faster installation.



D. LiveRoof[®] is Unique in that Its Installers Must Be Prequalified Trained

- We care about our customers and always want to ensure things are done right.



&

SECTION 2

Pre-Bid Considerations

PLANNING AHEAD

- A. **Always check online to ensure you’re using the current version of this document:**
<http://www.liveroof.net/media/Installation-Standardized-Procedures.pdf>
- B. On a retrofit roof, it is essential to enlist the services of a structural engineer to determine if sufficient weight bearing capacity exists for the green roof. Similarly, you must contact the waterproofing manufacturer to assess the existing waterproofing system and find out whether a green roof retrofit will affect the warranty.
- C. Work on your bid several days before it is due.
- Allow yourself time to digest the specifics of the job.
 - Know what plant mix the customer wants, and if there is any special planting pattern required. This affects the price of growing and your cost of installation.
- D. Be aware of production time frames from *your local licensed grower*.
- E. Determine what type of pavers, stone, pedestals, drains, and protective membranes will be used.
- F. Determine the amount of custom cutting or infill (between modules and edging) that will be used. Order enough extra modules, to account for custom cut modules.
- G. Realize LiveRoof[®] represents the majority of the cost of the green roof (growing medium, drainage, and plants) and:

- It is a permanent building component not a landscape plant,
- Mark ups on building components are typically 5 % - 10 %,
- You must be efficient with your labor to be competitive and profitable.

H. Plant warranties:

- LiveRoof, LLC does not issue plant warranties for any projects not grown by LiveRoof, LLC. Growers may offer a plant warranty but are not required to. *Speak with your local grower regarding terms, conditions and pricing of a plant warranty, if applicable.*
- Do not exist unless you receive written notification from the local grower.

I. LiveRoof, LLC offers a limited warranty on properly installed modules which is detailed on the LiveRoof website and in the system catalog. Warranties are issued upon receipt of completed **warranty registration form** and **punch list**.

J. When calling your Grower for a bid, have the following information ready:

- Type and Number of LiveRoof® Vegetated Modules (2 sq ft each).
- Plant mix(es). If more than one mix, how many square feet of each mix?
- Linear Feet of co-engineered RoofEdge™ by Permaloc® (8' lengths).
- Quantity of LiveRoof® Engineered Green Roof Soil for infill (if needed).
- Quantity & Color of RoofStone® Pavers and delivery specifics.
- Anticipated LiveRoof® delivery / installation date.
- Project Name, location, and specifying architect.
- Project Owner and General Contractor.

K. Be sure to perform your own count of the vegetated roof space for each project.

If it is a retrofit, visit the job site and take measurements of the actual roof. Each project is custom grown, so if the number of modules ordered is too few, additional modules must be ordered and may take two or more months depending on the season to deliver. On the other hand, if too many are ordered, your local Grower typically will not refund the excess.

Typical Green Roof Design (below)

A green roof such as the one below may be fairly simple to estimate and install, as the roof is designed for minimal custom cutting of the modules, and the design calls for a single plant mix.



Creative Green Roof Design (right)

Creative green roof designs may call for curves, different plant mixes, and many custom cuts. For these jobs, the number of modules will depend on the installer's plan for module placement, cutting, and excess for unanticipated issues, such as dropped modules or errant cuts.



L. Know who will install the protective slip sheet/root barrier.

- It must be seam welded, glued, or taped, according to the manufacturer's directions.
- Follow the architect's specifications. **You may be held liable for unauthorized substitutions or changes.**

- Slip sheet must be preapproved by the manufacturer of the waterproofing membrane, and you should ensure that the warranty for the waterproofing membrane remains intact.
- Usually it will be one of the membrane manufacturer's own products, typically one of the following, no less than **40 mil.** thick:

Welded Seam Type	TPO, PVC, HDPE, Polypropylene, with seams heat welded
Glued Seam Type	EPDM, with seams overlapped 3-6 inches, primed and glued or with double-sided manufacturer approved tape.
Low profile drain board	Overlapped 3-6 inches and glued with manufacturer-recommended adhesive.

M. Welding or gluing seams is essential to:

- Keep aggregate from getting under slip sheet
- Help prevent root intrusion
NEVER use duct tape or any non-approved adhesive.

N. **NEVER use a moisture holding fabric, such as needle-punched polyethylene or felt.**

Such materials:

- Stay wet and encourage root growth that could impede drainage, especially detrimental if a woody plant were to become established as woody plants have substantial root systems which could potentially cause leaks.
- Are impossible to sweep clean during the installation.

O. Determine how many modules you will install each day and schedule delivery with the grower at least 2 weeks in advance.

P. Use roller conveyors or other efficient transport methods to minimize walking and wasted motion. *Check with your grower distributor to see if they provide special Roll-a-Roof conveyors for rent.*

Q. Each time a truck is unloaded, fill it back up with empty Hoppits. If a truck returns to the nursery empty, there will be additional charges from the grower.

R. Use attached **Materials Check List** to prepare for each job.

SECTION 3

Site Visit Before Installation

A. Visit the job site with representative of roofing contractor for approval to begin LiveRoof installation. At this point,

- Roof should have been waterproof tested and signed off as ready for the green roof by the roofing contractor. LiveRoof, LLC recommends that a 24 to 48 hour flood test be performed.
- Protective slip sheet/root barrier may have been placed and held with temporary ballast.

SECTION 4

Preparation for Personal Safety and Property Security

With your staff, conduct a pre-installation review of **Installation Guide DVD**, set-up, and safety procedures including the following:

- A. Obey OSHA regulations; be diligent with harnesses and other special safety equipment. You may even have to rope off the edges of the roof.
- B. Use proper body mechanics and posture when lifting LiveRoof modules. Bend your legs, not your back and hold modules close to your body.
- C. When using lifting equipment, lifting capacity decreases as the boom is extended. Use equipment that is big enough to easily do the job safely.
- D. Always protect the parapet (wall around roof) from bumping and abrasion.
- E. Never set the Hoppit directly on the rooftop; instead cushion it with tires or closed cell foam and exert only enough pressure to keep it from twisting.
- F. Be absolutely sure to place the Hoppit® or other conveyance device on the roof, only in areas of adequate support for the weight, and only after placing appropriate protective materials on top of the roof membranes.
- G. Regardless of what device is used for conveyance, account for the weight of the rack as well as the modules.
- H. If even the slightest damage occurs to the underlying roof membrane, stop and report it to the roofing contractor for immediate repair. **NEVER COVER ANY DAMAGE OR DEFECT.** Report damage from other contractors as well.
- I. **Never install frozen LiveRoof modules.** They will not align properly and fit tightly.
- J. When plants arrive shrink wrapped, they will bake in the sun very quickly. Always, get them to the roof right away, unwrap, unload and install them. Don't let them cook in the sun.
- K. **Avoid walking on plants during installation.**
- L. Roller conveyors can be set on transportable jack-stands. But, these stands must have rubber bases or be set upon plywood to protect the waterproofing. Use a LiveRoof® Roll-a-Roof™ conveyor if available.
- M. A representative of your local grower will contact the Job Site Foreman 2-3 days before an installation to conduct a pre-installation review of the critical aspects of the installation.
- N. Depending on the project size and your level of experience, a representative of your local Grower will be on site during the first few hours of an installation to ensure standardized installation procedures are understood and followed. Grower observation does not waive installer of its contract responsibilities or workmanship warranties to the owner.

SECTION 5

Set Up for Efficient Installation

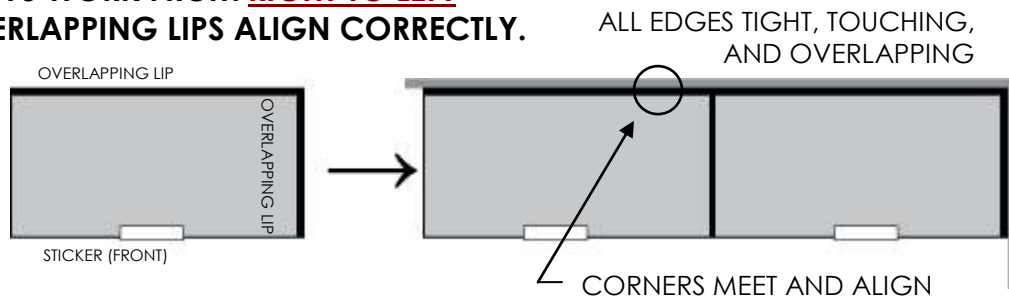
Plan to Work Smart, not Hard!

With your Staff, Conduct a pre-installation meeting with installation crew to review set up and efficiency including the following:

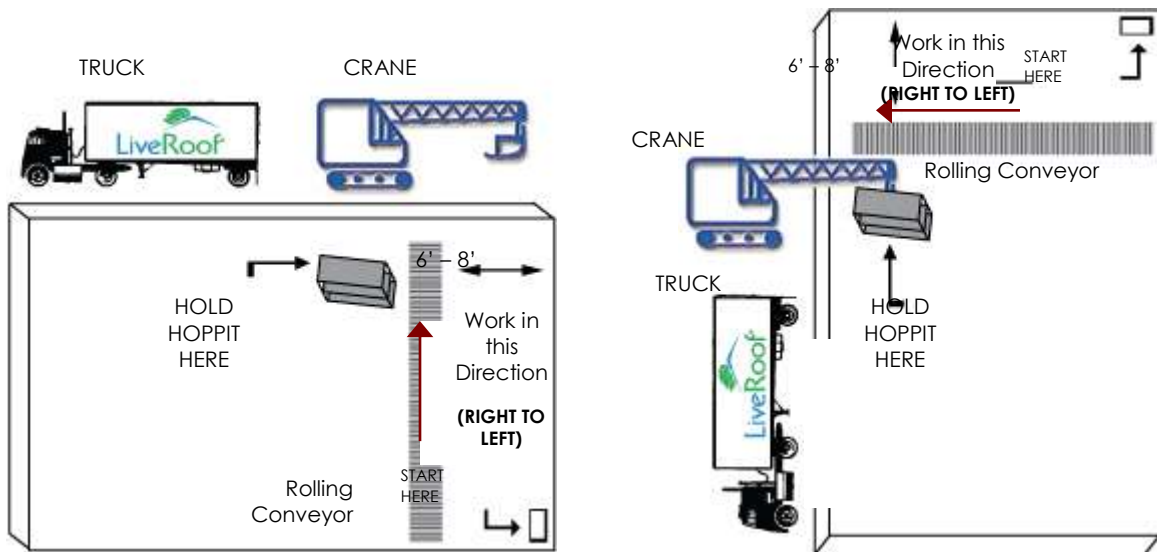
- A. Decide upon safe and efficient placement of truck and crane.
- B. Decide upon efficient rooftop unloading point and placement of conveyors.
 - Orient conveyor line 6-8 feet away from and parallel to the roof edge where modules will be placed.
 - This way, 4 to 6 rows of modules can be set before the conveyor needs to be moved back another 6-8 feet.
 - A well designed installation will require almost no walking!
WALKING IS WASTE

C. Start in the top right hand corner of the roof.

YOU MUST ALWAYS WORK FROM RIGHT TO LEFT SO THAT THE OVERLAPPING LIPS ALIGN CORRECTLY.

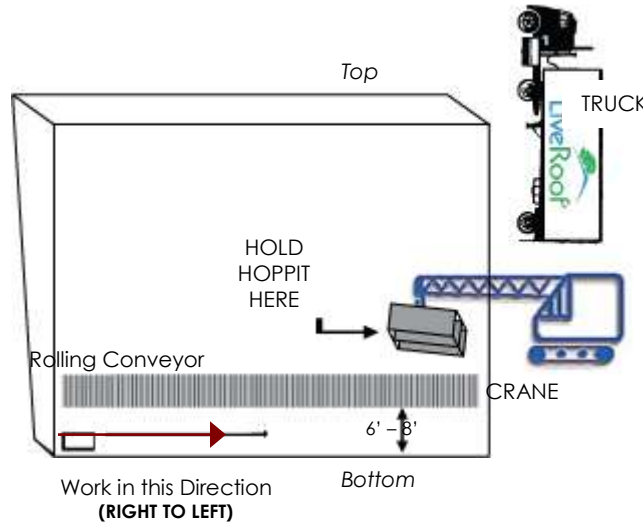


FLAT ROOFS



D. If the roof is sloping, start at the bottom and work up. This way, if there is any compression, the compression will be against modules that have not been cut.

**SLOPED ROOF
WITH COMPRESSIVE FORCE AT BOTTOM**



- E. With appropriate sized crane or SkyTrak, you can lift one or two 36-module Hoppits. Know the capacity of your equipment.
- F. If using Hoppit®, lift by forks under pallet base or by lifting ring using crane hook only. **NEVER lift the lifting ring using fork lift arm or any other non-secured method. The Hoppit® could slide off the fork and cause damage or injury.**
- G. If not placing modules against a wall, paver, or edging, make chalk lines to indicate direction and to ensure straight rows. Don't compose as you go, plan ahead.
- H. Establish a team of 6 or 7 people and designate the specific function that each person will perform.

	LiveRoof Truck Driver*	Attaches crane hooks onto Hoppits
1	Hoppit Unloader	Directs crane operator with 2-way radio and removes modules from Hoppits and places them on roller conveyor
2	Module Transporter	Pushes modules along Conveyor
3	Conveyor Unloader	Sets modules within reach of Module Placer
4	Slip Sheet Sweeper	Uses kitchen broom to keep surface clean before modules are placed
5	Module Placer	Sets modules in place on roof surface
6	Soil Elevator™ Puller	Removes soil elevators, bags them, and sends them down to ground for recycling
7	Custom Cutter	(optional)

* Check with your grower to see if the LiveRoof truck drivers may assist by attaching the Hoppits to the crane. Efficiently executed installations should take a maximum of 4 hours per truckload. **The installer may be charged up to \$100 per hour or fraction thereof if the driver is kept onsite longer than 4 hours per truckload.**

- I. Plan to rotate functions each hour or two to eliminate fatigue.

EFFICIENT EXECUTION CAN YIELD THE FOLLOWING PRODUCTIVITY

BASED ON	TAKES
<ul style="list-style-type: none"> 3 Story building, flat rectangular roof. Using Roll-a-Roof™ Conveyor 6000 square foot installation. 7 people 2 paid 10 minute breaks during workday. Includes placing modules and a moderate amount of custom cutting. Slip sheet/root barrier, irrigation, pavers, edging and conveyor set up the day before. 	<ul style="list-style-type: none"> Cycle time of 10 minutes per 72 modules/ 144 sq ft Lifting two 36-module Hoppits (72 modules/ 144 sq ft) simultaneously <p style="text-align: center; margin-left: 40px;"> = 3000 minutes = 50 man hours = 7.15 hours for team of 7 CAN BE DONE IN ONE DAY! </p> <p style="font-size: small; color: red; margin-left: 40px;"> NOTE: Your actual man hours required will vary based on planning, building height, roof size and shape, equipment, work pace, amount of custom cutting, size of team, etc. </p>

SECTION 6

Efficiently Conducting a LiveRoof Installation

- A. 1-2 days before job; if not already done by other contractor. Place slipsheet/root barrier, weld or tape all seams, then install irrigation (gray U.V. or green-painted resistant recommended for surface applications). Use temporary ballast (tires) to hold things in place.
- B. Cut and prepare all edging and install any pavers that are part of the plan. Note: it is best to score the top back portion of the edging prior to bending. RoofEdge™ pre-bent corners are also available.
- If edging is left on roof, be sure to secure it with temporary ballast.



A well prepared roof, ready for the delivery of LiveRoof modules. The slip sheet is properly installed, the pavers are laid and cut, and edging is installed and ballasted.

- C. Set up conveyors parallel to the line of installation as previously determined.

Hoppit Unloading & Module Placement

- D. Within a few feet and alongside the conveyor, rest the Hoppit lightly upon four tires, closed cell foam, or roofing cart to protect roof, and to prevent Hoppit from twisting.
- E. Alternatively: use a crane to suspend module-filled Hoppits in the vicinity of where the modules will be installed.
Do not overload the capacity of the roof, and protect the roof surfaces with tires, plywood, or closed cell foam.

- F. Hoppit unloader then places modules on conveyor, all in the same direction with stickers facing toward the module placer.
- G. Hoppit unloader should use hand grips on the bottom of the tray, and never pull on the removable soil elevators.
- H. Module transporter pushes modules down conveyor line, in a smooth manner so they don't bang together and displace soil.
- I. **The sweeper must clean the surface before the module placer sets down each module. Avoid setting modules on soil or debris.**
- J. LiveRoof modules have a front and back.
 - The overlapping lip is oriented away from the module placer.
 - The short right side also has an overlapping lip.
- K. Once the surface is swept clean the module placer sets down the first module and tightly pushes it in against the edging or parapet with the overlapping lip facing away from him. **Only push against the hard plastic base of the module.**
- L. Set the second module next to it.
 - Make sure its overlapping lip overlaps the half-moon shaped "moisture portal" of the first module.
 - Flip any overhanging plant material up and out of the way.
 - Push module tightly in place.
 - **The corners of the modules must align precisely with the adjacent modules.** If the modules become misaligned, stop the process immediately and correct the alignment.



IMPROPERLY ALIGNED MODULES.
Always ensure the corners of each module line up with the corners of adjacent modules. Failure to do so can lower product performance.

- **All sides of the modules must be tight, touching and overlapping all adjacent modules.**

- M. Continue to repeat this process until the first row is installed.
- N. Or, once the first row has 5 to 10 modules placed, another placer may begin the process with the second row.

Removal of Soil Elevators™

- O. As the second row is set, the flexible "soil elevators" from the modules in the first row will be 100 % surrounded by either modules or edging. **At this point, the soil elevators should be pulled out.**
- P. A good puller can pull 2 adjacent soil elevators out at the same time.
 - Soil elevators must be pulled in sideways fashion, not upward (which displaces soil).
 - Use a pair of spring loaded pliers for pulling.

Soil elevators should always be pulled as you go. **Don't wait or you will end up trampling the plants and you will overlook many of the soil elevators.**

Q. The puller should bag the soil elevators as he removes them. They should be recycled.

Custom Cutting of Modules (To Fit Odd-Sized Areas)

- R. LiveRoof modules may be cut to size, with plants and soil intact, using a radial arm saw with masonry blade, or portable masonry saw or similar tool.
- A reciprocating saw can be used for curved cuts.
 - Always install modules in a manner that minimizes custom cutting.
 - Wear protective goggles and gloves.



S. CUSTOM CUTTING METHOD

- 1) Mark cut line using a straight edge and grease pencil.
- 2) Handle gently to keep soil intact.
- 3) Set module on table or elevated surface during cutting.
- 4) Never cut module while it is on membrane or roof deck.

T. Orient the cut side against another module if it's on the low, draining side, of the roof.

U. **If the roof is sloping, start at the bottom and work up.**

This way if there is any compression it will be against modules that have not been cut.

V. In the event of infilling gaps that are less than 4 inches wide, use only LiveRoof brand engineered green roof soil and keep it in place with filter cloth.

SECTION 8

Common Mistakes – What NOT To Do

- A. Edging needs to be used in all applications where parapet or paver is of insufficient height / thickness to fully contain the soil above the edge of the plastic tray.



Edging must be used where pavers or parapet do not contain entire exposed soil level. Failure to use edging can lead to soil washout & increase susceptibility of the tray to photodegradation.

NOTE: RoofStone® pavers do not require edging if bordered by LiveRoof® modules or parapet.

- B. Edging must be perforated to allow drainage. It also must be of sufficient height to contain the soil.



If the edging surrounding a drain box isn't perforated (*left photo*), it will impede water flow to the drains.

Impeded drainage can lead to plant death (*right photo*).



- C. Pull the soil elevators while standing on the slip sheet. **NEVER** stand on the plants to pull soil elevators.



DO NOT STAND ON THE MODULES TO PULL SOIL ELEVATORS. This may cause plant damage.

- D. **NEVER** mow LiveRoof® when the plants are flowering. Mow in early spring, about April 1.
- E. **NEVER** move plants from a thawed to a frozen environment. And, never move frozen plants to a warm environment. Rapid exposure to freezing or thawing temperatures may kill plants.

SECTION 9

Wrap Up and Initial Watering

- A. Clean up the job site 100%; leave no waste, debris or excess modules.
- B. Once installed, immediately and completely water in plants. Soak the growing medium from top to bottom.
- C. This settles the growing medium, and requires about 1 ¼ gallons of water per module. Look for water flowing freely to roof drains to indicate that you have watered thoroughly.

SECTION 10

Transfer of Ownership

NOTE: As the installer, you are responsible for maintaining the green roof until the maintenance contractor accepts responsibility or an owner's representative accepts the green roof installation as correctly executed and complete.

Follow the LiveRoof® Maintenance Protocol, printed copies are available from your local grower or you may download the protocol from the www.liveroof.com. In the event that you are not hired to maintain the green roof, ensure the owner or maintenance contractor has a copy of the LiveRoof® Maintenance Protocol.

SECTION 11

LiveRoof® Maintenance Protocol

I. DOCUMENTATION

Record all green roof maintenance events. By keeping records, you will learn the particular nuances of caring for your LiveRoof®:

<i>LiveRoof Documentation Format</i>			
Name of Person	Date	Activity	Observations
		▪ If fertilizer, type and amount applied per 1000 sf	
		▪ If soil test, which lab?	
		▪ If irrigation, duration and volume?	
		▪ Time needed to pull weeds and clean drains.	

II. FOOT TRAFFIC ADVISORY

Most LiveRoof® applications are planted with succulent plants. And, it is ok for one person to walk on such plants a couple of times each week without causing permanent harm. However, one must avoid walking in a single path or standing in one place and trampling the plants. If a wall, window or parapet requires service, the surrounding plants may be covered with plywood or closed cell foam for a few hours (for protection from foot traffic), provided the foliage is not wet and the conditions are not too hot or sunny. It is especially important to avoid repetitive foot traffic when plants are wet, frozen or under drought stress.

III. ANNUAL MAINTENANCE

A. SOIL TESTING AND FERTILIZATION

Between April 1 to 15 of each year, administer an annual soil test for pH and fertility levels. pH should be maintained in the range of 6.5 to 8.0. Since the LiveRoof® engineered green roof soil is buffered against acid rain, changes in pH should be small and gradual, and amendments seldom required. In the event that the pH falls outside of the 6.5 to 8.0 range, the soil testing lab should be consulted for the appropriate amendment. Fertility will ideally fall into the normal range of fertility using a typical soil test as provided by:

A & L Labs
1311 Woodland Ave., Suite 1
Modesto, CA 95351
209-529-4080, al-labs-west.com

Another fine testing facility with green roof specific test capability is Penn State University. Their contact information is as follows:

(814) 863-0841
Fax (814) 863-4540
Agricultural Analytical Services Laboratory
The Pennsylvania State University
University Park, PA 16802

If fertility is below the normal range LiveRoof, LLC recommends a single springtime application of a high quality slow or controlled release granular ‘turf’ or fairway grade fertilizer. Such fertilizers are typically marked “Slow Release” or “Controlled Release”. It is essential that you NOT USE any fertilizer that contains herbicide. Most acceptable fertilizers will have a formulation of approximately 18-6-12 (indicating the percentages of Nitrogen, Potassium and Phosphorus). In all cases, the labeled directions for application rates should not be exceeded. Runoff potential, however, does exist on every green roof, and in all cases should be evaluated by the applicator in accord with the site specifics. The greater the runoff sensitivity, the lower the application rates. All applications of fertilizer are the sole responsibility of the applicator.

Late Season Fertilizer Advisory. Do not fertilize during the late summer or fall as it may stimulate tender growth and compromise the winter hardiness of your plantings.

MOWING

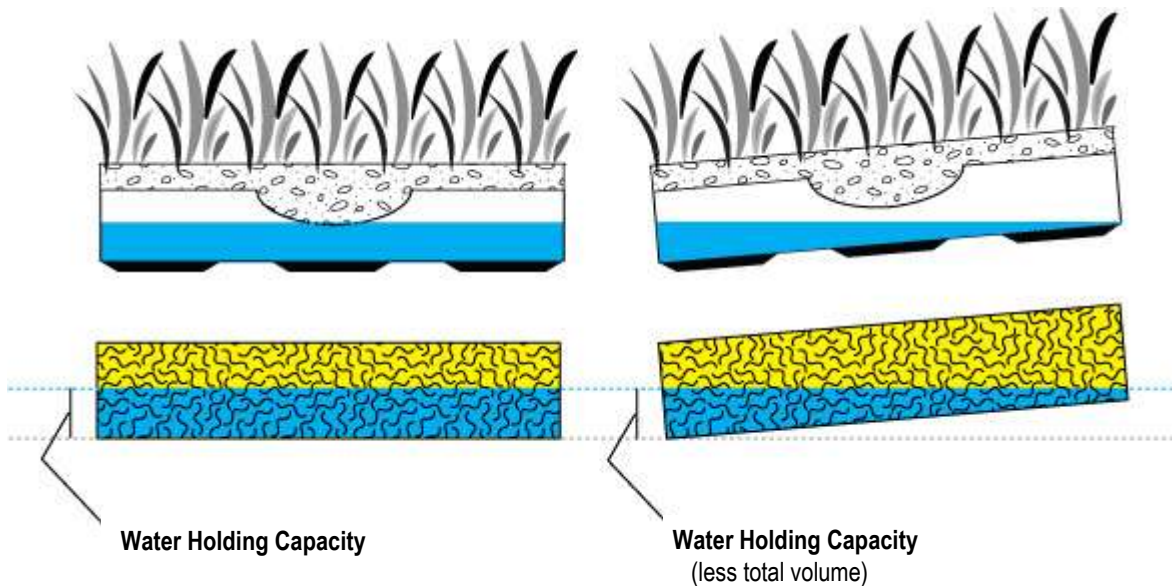
LiveRoof, LLC suggests that once each year, around April 1st, that the green roof be trimmed to a height of 2 inches or less, to break up any dried seed heads and chaff. The clippings should be allowed to stay on the roof and not be bagged or removed. This regimen has a rejuvenating effect on the plant material, and keeps it looking optimally neat and clean. Foregoing annual mowing may be elected by the owner. **Note: Never mow during summer or when plants are blooming as plants may be severely damaged or weakened. BE SAFE, USE YOUR PROTECTIVE EQUIPMENT.**

IV. IRRIGATION

WATERING: For the LiveRoof® Standard System, normally in northern North America, regular irrigation will not be needed to keep your LiveRoof® alive; however, protracted hot dry weather can result in plant thinning or death. In warmer climates, depending upon rainfall and exposure, regular irrigation will probably be required. Accordingly, LiveRoof® recommends irrigation (in a manner of practical and efficient for the scale of the installation) as a “temporary” management tool under the following conditions:

PROLONGED HOT DRY WEATHER, in northern temperate zone (Seattle, Chicago, Toronto, Boston, New York), is generally defined as a period of 75 degree weather, with less than 1 inch of rainfall, which persists for four weeks or longer. This “ballpark” time period will likely be less if the temperatures are hotter, the climate warmer, on **sloping rooftops**, or roofs exposed to strong winds or reflected sunlight. Such conditions can dry

out the green roof substrate and cause the plants to go dormant or in extreme cases to dry up and die. Even dormant plants tend to shrink to smaller size and expose soil, which can predispose the system to weed encroachment.



The Sponge Example: Water Holding Capacity on Flat vs. Sloped Roofs Practically speaking, soil acts as a sponge. If a moist sponge is angled upward, additional water will run out of it. The same is true of soil. The greater the angle, the less capable the soil is of retaining water.

When hot dry

weather persists for more than 4 weeks, irrigation is to be applied temporarily to rewet the soil to the point of runoff. This will keep plants from going dormant, cover the soil effectively, optimize plant appearance, and keep the evaporative cooling effect of the green roof working. Please note that this is a “ballpark” time period and will vary with weather, plants and roof design.

For LiveRoof® Lite System, this period is shortened to 2 or 3 weeks in the northern part of the temperate zone. This also is a “ballpark” figure and will be less if the temperatures are hotter, the climate warmer, the roof sloping, or if exposed to strong winds.

For the LiveRoof® Deep System, irrigation requirements will depend upon the plant material and climate. Normally, because herbaceous plants such as perennials and grasses are used, there will be a need for regular irrigation during the growing season. An installed irrigation system is strongly recommended, regardless of climate.

NOTE: There are no absolutes when it comes to irrigation. Check the plants for wilting, especially in the morning. If the plants show signs of wilting in the morning, then it’s time to irrigate.

Thoroughly irrigating, as indicated above, can pay off significantly. The cost of irrigation is minimal compared to the energy savings from evaporative cooling and ensuring the overall quality of the green roof.

In areas of reflected light, such as next to south-facing parapets, windows or walls, more frequent irrigation should be applied to keep the soil from becoming excessively dry.

DO NOT WATER PERIOD: For the northern temperate zone, LiveRoof, LLC recommends that you do not water (irrigate) during the fall season, unless the plantings become very dry due to prolonged wind and drought. In all but the most windswept climates, there is typically sufficient precipitation during fall, and adding

excessive additional water may compromise winter hardiness. Likewise, in all but the most dry/arid climates, wintertime irrigation is not recommended.

V. INSPECTIONS AND PLANT CARE PROTOCOL

Conduct the following EVERY 2 WEEKS (2X per month) during the entire Spring-through-Fall growing season. In warm climates, conduct this maintenance protocol year round.

A. WEED CONTROL

Weed control, by hand-weeding, is to be conducted during the twice-monthly inspection. The process is simple. Just pull any and all weeds no matter how small, and never allow any weed to flower, set seed, and complete its life cycle. **The benefit of this regimen is that each inspection/weeding event requires very little time.** This regimen should be conducted from spring through fall in area where the roof becomes frozen and snow covered in winter. In warmer climates, it should be continued year round.

The inspector/weeder may adjust this interval in accord with seasonal variation in weed growth, but a not time should the interval exceed two weeks or be long enough to allow for any weed to flower and set seed.

It is especially important that no woody plant (such as a tree or shrub) ever be allowed to establish in a green roof system. Woody plants have extensive root systems that can damage roofing membranes.

Herbicides, whether preemergent or post emergent, are not recommended. Herbicides are not healthy for the environment and can contaminate runoff water. The need for preemergent herbicides is a sign of weeding too infrequently.

B. DISPLACED SOIL

Nesting birds can potentially displace soil. Any displaced soil should immediately be replaced with LiveRoof® brand engineered green roof soil.

DRAINAGE INSPECTION

Roof drains should be inspected every two weeks and any debris, pebbles, leaves, etc., removed to keep drains flowing freely.

DEBRIS/TRASH REMOVAL

With each visit, any debris or trash should immediately be removed. Similarly, LiveRoof® plantings should immediately be raked clean of any matted tree leaves which could smother the plants.

SNOW REMOVAL

For walkways adjacent to LiveRoof® modules, snow removal that avoids piling snow on top of plantings beyond natural levels is recommended.

Sand, instead of deicer, should be used to provide traction on walkways adjacent to modules.

NOTE: All deicing products are salts of some type, and work by suppressing the freezing point. If the soil does not freeze, and is insulated by wet piles of snow, the plants will sit in excessive moisture for long periods of time. This can cause root rot.

PESTICIDES

Pesticide use is discouraged on LiveRoof® systems and should always be considered secondary to cultural and biological control measures. Pesticides can get into runoff water and cause environmental damage. In almost all cases, any infirmities with LiveRoof® plants will be caused by unusual weather events, and be temporary in nature. Pesticide use should only be conducted on an “as needed” basis by qualified and licensed applicators

and only after approval from the membrane manufacturer. All applications of pesticides are at the sole responsibility of the applicator.

SECTION 11

Moving Previously Installed Modules

- A. With a dull flat bladed spade, probe the growing medium for a container edge.
- B. With a dull instrument, such as the handle of a spoon, butter knife or trowel, dig back a few plants and expose the container edge (never cut or damage roof membranes).
- C. Then, with the same dull instrument, cut along all four sides of one module.
- D. Using a pair of pliers, grasp the lip of the container and lift it to expose the roof surface.
- E. Successive modules may be removed in similar fashion.
- F. Sweep up all aggregate before replacing modules.
- G. Replace the modules by simply setting them back on the roof surface with the overhanging lip orientated in the same manner as the installed modules.

SECTION 12

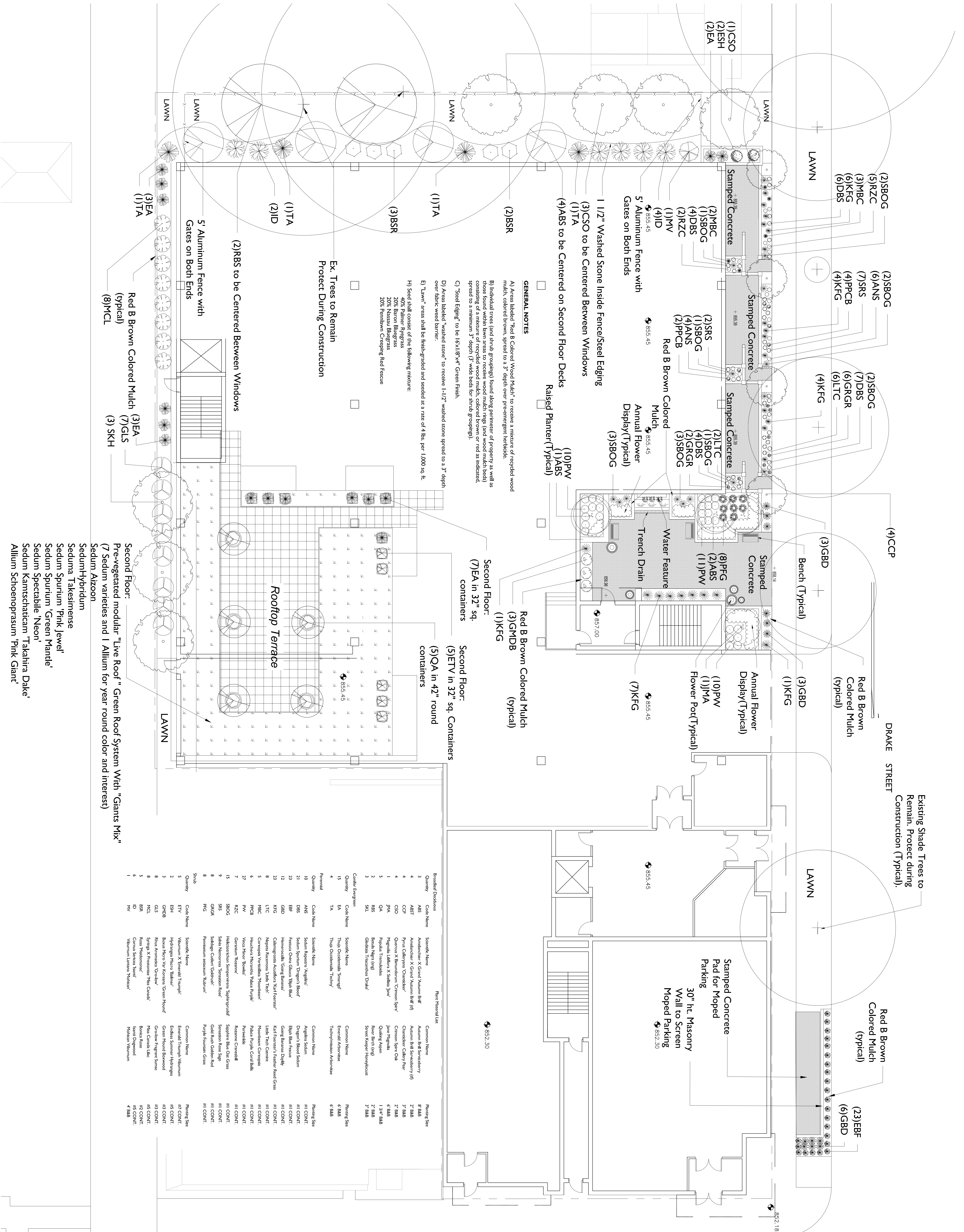
Final Sign Off and Warranty Registration

The installer should have the owner or owner's representative sign off on the project. At the same time the installer's representative should sign off that the LiveRoof Standardized Procedures were followed on the **warranty registration form** and **punch list**. Warranty forms provided by licensed LiveRoof® growers.

MATERIALS CHECK LIST

USE TO HELP ORGANIZE EACH JOB

- | | |
|---|---|
| <ul style="list-style-type: none"><input type="checkbox"/> LiveRoof® Installation Guide of Standardized Procedures<input type="checkbox"/> LiveRoof® Maintenance Guide<input type="checkbox"/> LiveRoof® Warranty Registration Form<input type="checkbox"/> LiveRoof® Punch List<input type="checkbox"/> Broom for sweeping aggregate<input type="checkbox"/> Plastic bags for soil elevators<input type="checkbox"/> Spring loaded pliers to pull soil elevators<input type="checkbox"/> Conveyor & Jack Stands or Roll-a-Roof Rental<input type="checkbox"/> Electric drill if edging is to be affixed to modules<input type="checkbox"/> Self tapping screws if edging is to be affixed<input type="checkbox"/> Chalk line<input type="checkbox"/> Irrigation supplies<input type="checkbox"/> Scissors to cut plastic off of Hoppit<input type="checkbox"/> Hacksaw for cutting edging<input type="checkbox"/> Table to cut modules | <ul style="list-style-type: none"><input type="checkbox"/> Radial arm saw with masonry blade, masonry saw, or Reciprocating saw (if curved cuts needed) to cut modules<input type="checkbox"/> Protective goggles for use when cutting<input type="checkbox"/> Gloves for use when cutting<input type="checkbox"/> Tires for temporary ballast and to cushion Hoppits<input type="checkbox"/> Filter fabric if any infilling is to be done<input type="checkbox"/> LiveRoof engineered green roof soil (get from grower) if any infilling is to be done<input type="checkbox"/> 2-way radios to communicate with crane operator<input type="checkbox"/> Stone or other specified material for use around drains<input type="checkbox"/> Digital camera to photograph completed project, for posting in "Project Showcase" on LiveRoof.com |
|---|---|



- GENERAL NOTES**
- A) Areas labeled "Red B Colored Wood Mulch" to receive a mixture of recycled wood mulch, colored brown, spread to a 3" depth over pre-emergent herbicide.
 - B) Individual trees (and shrub groupings) found along perimeter of property, as well as those found within lawn areas to receive wood mulch beds (and wood mulch beds) consisting of a mixture of recycled wood mulch, colored brown or red as indicated, spread to a minimum 3" depth (3" wide beds for shrub groupings).
 - C) "Steel Edging" to be 16x1/8"x4" Green Finish.
 - D) Areas labeled "washed stone" to receive 1-1/2" washed stone spread to a 3" depth over fabric weed barrier.
 - E) "Lawn" areas shall be finish-graded and seeded at a rate of 4 lbs. per 1,000 sq. ft.
 - H) Seed shall consist of the following mixture:
 - 40% Palmer Ryegrass
 - 20% Bison Bluegrass
 - 20% Nassau Bluegrass
 - 20% Pennium Creeping Red Fescue

Ex. Trees to Remain Protect During Construction

- (1) TA
- (2) ID
- (3) BSR

(2)RBS to be Centered Between Windows

5' Aluminum Fence with Gates on Both Ends

- (3)EA
- (1)TA
- (1)TA
- (9)MCL

Red B Brown Colored Mulch (typical)

- (3)EA
- (7)GLS
- (3)SKH

Second Floor: (7)EA in 32" sq. containers

Second Floor: (5)ETV in 32" sq. Containers

Second Floor: (5)QA in 42" round containers

Rooftop Terrace

Second Floor: (7)EA in 32" sq. containers

Second Floor: (5)ETV in 32" sq. Containers

Second Floor: (5)QA in 42" round containers

Second Floor: (7)EA in 32" sq. Containers

Quantity	Code Name	Scientific Name	Common Name	Planting Size
10	ANS	Andropogon	Andropogon	6" B&B
21	D8S	Sedum spectabile	Red Brick	7" B&B
23	EBF	Echinops	Headed Thistle	7" B&B
12	GBD	Geranium	Geranium	6" B&B
23	KFG	Kniphofia	Red Hot Poker	6" B&B
8	LTC	Liatris	Liatris	6" B&B
5	P8C	Panicum	Panicum	6" B&B
6	PCB	Peperomia	Peperomia	6" B&B
27	PW	Pennisetum	Switchgrass	6" B&B
15	SBOG	Sesuvium	Sesuvium	6" B&B
9	S6S	Sida	Sida	6" B&B
9	G8R	Gonolobus	Gonolobus	6" B&B
8	PRG	Pennisetum	Pennisetum	6" B&B

IDEAL

EXTERIOR WALL

X1

HUBBARDTON FORGE®

HAND-FORGED, VERMONT MADE LIGHTING AND ACCESSORIES

- NEW DESIGNS
- CHANDELIERS
- LARGE FIXTURES
- PENDANTS
- WALL SCONCES
- TABLE LAMPS
- FLOOR LAMPS
- FLUSH & SEMI-FLUSH CEILING FIXTURES
- OUTDOOR
- HOME ACCESSORIES
- FINISHES
- SHADE OPTIONS
- GLASS OPTIONS
- ROOM SETTINGS

VIEW OUR CATALOG ONLINE opens in another window

Our Outdoor Lighting Family: Dramatic Spaces under the Stars

BASE ITEM NUMBER: 307287

DESCRIPTION: Outdoor sconce with glass options: 24" Forged Vertical Bars, aluminum or aluminum on slate (-SL)

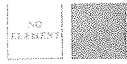
DIMENSIONS: 23.5" h. x 7.8" w.

SOCKET TYPE: medium

BULB: (1) A-19, 100 watt max. Available as Fluorescent

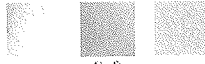
SHOWN IN: Natural Iron finish (-20) with opal glass (G37)

ELEMENTS AVAILABLE:



None -SL

GLASS COLOR OPTIONS:



Opal Stone Soft Amber Pearl

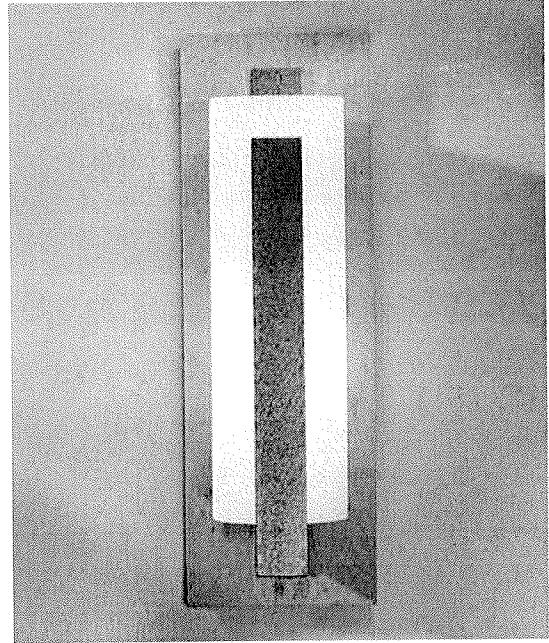


Suitable for Wet Locations

2012 CATALOG PAGE 46

Download Installation Instruction pdf B15

Download Installation Instruction pdf B8



More Photos



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Catalog Number	IDEAL
Notes	
Type	X2 RECESSED CAN

FEATURES & SPECIFICATIONS

INTENDED USE — Typical applications include corridors, lobbies, conference rooms and private offices.

CONSTRUCTION — LP6LN (New Construction): Rugged, 16-gauge galvanized steel mounting frame with torsion spring bracket to mount the finishing module. Vertically adjustable mounting brackets that use 16-gauge flat bar hangers (included), 1/2" conduit or C channel T-bar fasteners. Provides 3-3/4" total height adjustment.

6VL (New Construction): Galvanized steel mounting/plaster frame with torsion spring bracket to mount the finishing module. Integral galvanized bar hangers span up to 24" o.c. and feature built-in T-bar clips and nailers for T-bar or wood joist installations.

6VLR (Remodel): Galvanized steel remodel mounting/plaster frame with torsion spring bracket to mount the finishing module. Four (4) remodel ARC clips included for remodel installation.

All frames are equipped with galvanized steel junction box UL Listed for through wire applications. Junction boxes equipped with two combination 1/2"-3/4" and three 1/2" knockouts for straight-through conduit runs and removable access doors. Capacity: 4 (2 in, 2 out), No. 12 AWG conductors, rated for 90°C.

Post installation adjustment possible from below the ceiling.

Maximum 1-1/2" ceiling thickness.

LED Trim: Rugged, one-piece, die-cast heat sink design for optimum thermal management. Wet location rated lens is tightly fitted to the housing to reduce the ingress of dust.

OPTICS — Precisely designed single-component elliptical upper reflector and micro prism lens, provides precise beam control. Lower splay recesses optical system into the ceiling to reduce glare and provide a traditional PAR look. Standard fixture has a 0.75 spacing criteria. The luminaire is also available with a 1.0 spacing criteria option for use in general/ambient lighting applications.

CRI > 83.

ELECTRICAL — On-board circuitry to ensure against wiring errors.

Thermal protection provided against improper insulation use.

High-efficiency, electronic LED 0-10V dimming driver mounted to the junction box.

The system maintains 70% lumen output for more than 50,000 hours.

Input Wattage is 17.5 W, 56 lumens per watt.

For dimming fixture requires two (2) additional low-voltage wires to be pulled.

LISTINGS — CSA certified to US and Canadian safety standards. Wet location listed.

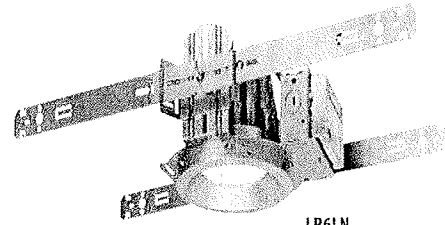
WARRANTY — Five-year limited warranty. Full warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Specifications subject to change without notice.

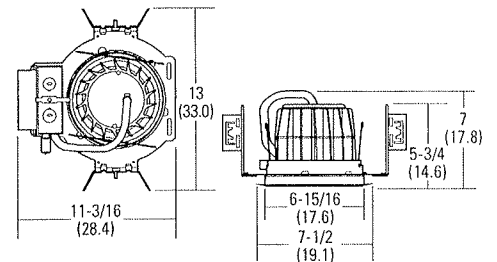
6" LED



Non-IC
New Construction



LP6LN



Specifications

Aperture: 4-3/8 (11.1)

Ceiling opening: 6-15/16 (17.6)

Overlap trim: 7-1/2 (19.1)

Height: 7 (17.8)

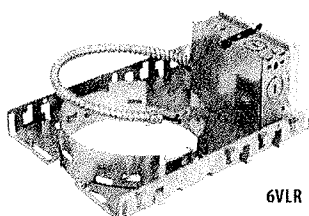
All dimensions are inches (centimeters) unless otherwise noted.

ORDERING INFORMATION

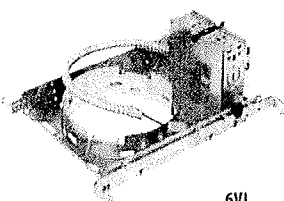
For shortest lead times, configure products using **bolded options**.

Example: REAL6C D6MW 1000L 35K 277 LP6LN

REAL6C D6	MW	1000L	35K				
Series/Finish		Lumen output ¹	Distribution	Color temperature	Voltage	Mounting pan	Options
Series	Finish	1000L 1000 lumens	(blank) 0.75 Spacing criteria 0.75SC	35K 3500K	120 277 347 ²	LP6LN 6VL 6VLR	PFMW Matte white plastic flange ring PFBL Black plastic flange ring ELR ³ Emergency battery pack with remote test switch NSD ⁴ Sensor Switch nLight™ dimming relay GMF Single slow-blow fuse, must specify voltage
REAL6C D6	6" open downlight		1.0SC 1.0 Spacing criteria				
	MW						
	A						
	AZ						
	BLZ						
	WT						



6VLR



6VL

Notes

- Total system nominal delivered lumens.
- Using step-down transformer increases power draw by 15 watts.
- Not available with 347V.
- One 5A relay with one 0-10 VDC dimming output, shipped installed. Requires additional nLight bus power supply.



APPROVALS	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
PROJECT ENG:				

The Ideal
502 South Park Street
Madison, WI 53715

Galina Corporation
101 East Main Street, Suite 500
Mount Horeb, WI 53572

PROJECT #: BSE1402-10
PLOT DATE: 06/06/2012

REVISION DATES:

ISSUE DATES:

EXISTING CONDITIONS SURVEY

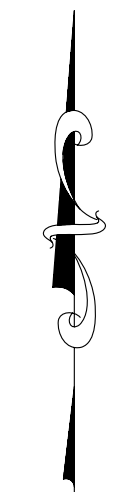
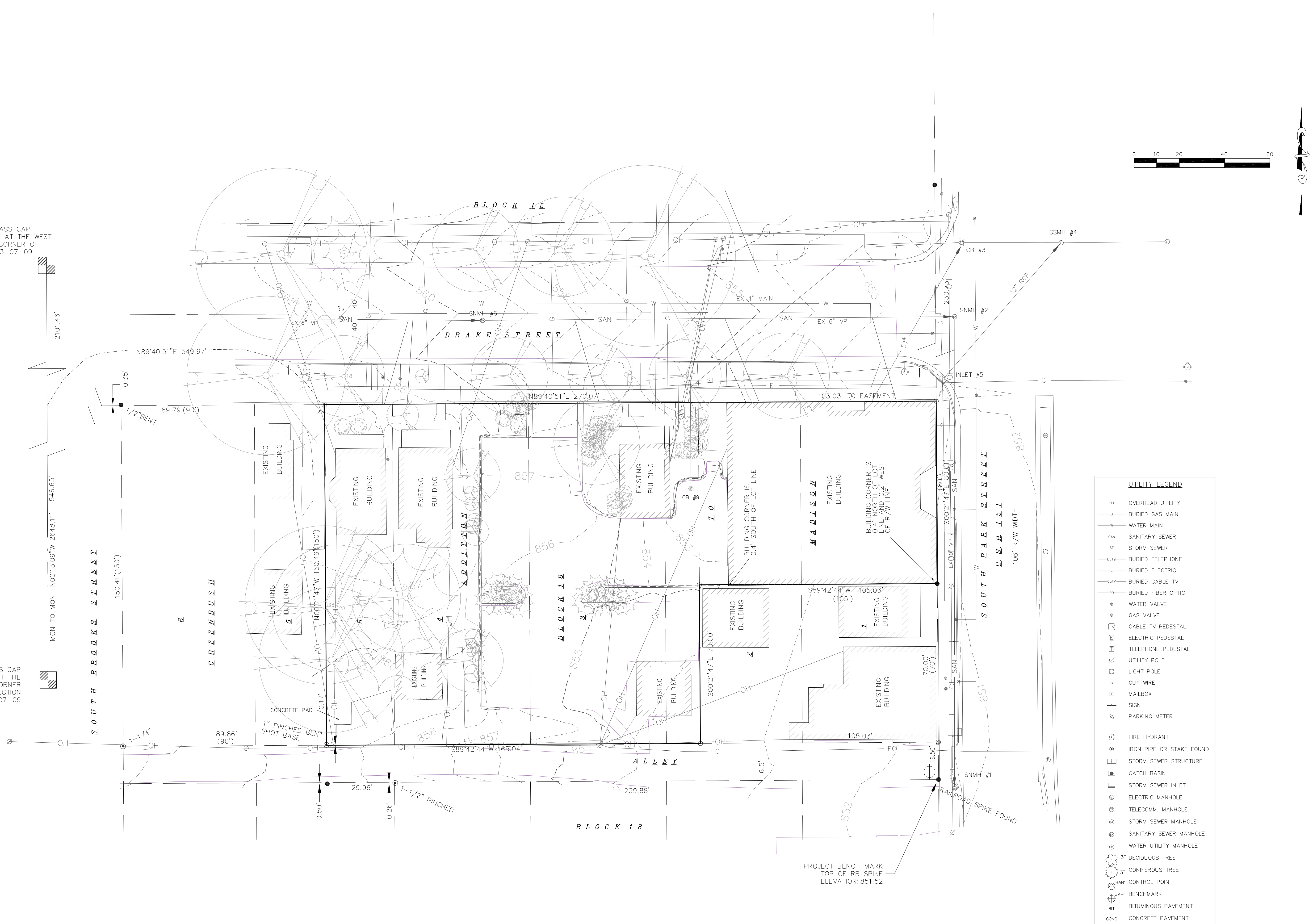
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DRAWING NUMBER

C-100

FOUND BRASS CAP MONUMENT AT THE WEST QUARTER CORNER OF SECTION 23-07-09

FOUND BRASS CAP MONUMENT AT THE SOUTHWEST CORNER OF SECTION 23-07-09



UTILITY LEGEND

- OVERHEAD UTILITY
- BURIED GAS MAIN
- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- BURIED TELEPHONE
- BURIED ELECTRIC
- BURIED CABLE TV
- BURIED FIBER OPTIC
- WATER VALVE
- GAS VALVE
- CABLE TV PEDESTAL
- ELECTRIC PEDESTAL
- TELEPHONE PEDESTAL
- UTILITY POLE
- LIGHT POLE
- GUY WIRE
- MAILBOX
- SIGN
- PARKING METER
- FIRE HYDRANT
- IRON PIPE OR STAKE FOUND
- STORM SEWER STRUCTURE
- CATCH BASIN
- STORM SEWER INLET
- ELECTRIC MANHOLE
- TELECOMM. MANHOLE
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- WATER UTILITY MANHOLE
- DEODOROUS TREE
- CONIFEROUS TREE
- CONTROL POINT
- BENCHMARK
- BT BITUMINOUS PAVEMENT
- CONC CONCRETE PAVEMENT
- TE TRAFFIC ENGINEERING
- BOLLARD

LEGEND

- IRON PIPE FOUND (OUTSIDE DIAMETER NOTED)
- 3/4" SOLID IRON ROD FOUND
- 1-1/4" SOLID IRON ROD FOUND
- 3/4" X 18" SOLID IRON RE-ROD SET, WT. 1.50 lbs./ft.
- SET MAG NAIL
- () INDICATES RECORDED AS

DISTANCES ARE MEASURED TO THE NEAREST HUNDREDTH OF A FOOT. BUILDING DIMENSIONS ARE MEASURED TO THE NEAREST TENTH OF A FOOT.

EXISTING UTILITY STRUCTURE TABLE

STRUCTURE #	R/W/TC	INVERT(S)
SNMH 1	851.35 841.90 S	841.89 N
SNMH 2	852.27 843.92 W	843.63 N 843.60 S
CB 3	852.40	STRUCTURE FLOOR ELEV: 849.04
SNMH 4	852.70	STRUCTURE FLOOR ELEV: 849.05
INLET 5	851.95	849.15 NE
SNMH 6	859.65 851.45 N	849.96 W 849.92 E
CB 9	851.99	849.93 N

- NOTES:**
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES. UTILITIES WERE LOCATED BY OBSERVED EVIDENCE, MARKINGS PROVIDED BY DIGGER'S HOTLINE, AND RECORD DRAWINGS FROM THE CITY OF MADISON.
 - VERTICAL DATUM IS NAVD88 AND WAS TRANSFERRED TO THE SITE USING THE MADISON BASE STATION AND TRIMBLE 5700 ROBOTIC RTK GPS RECEIVER.



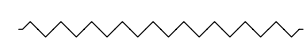

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511 OR 811
TOLL FREE

TDD(FOR THE HEARING IMPAIRED)(800)542-2289

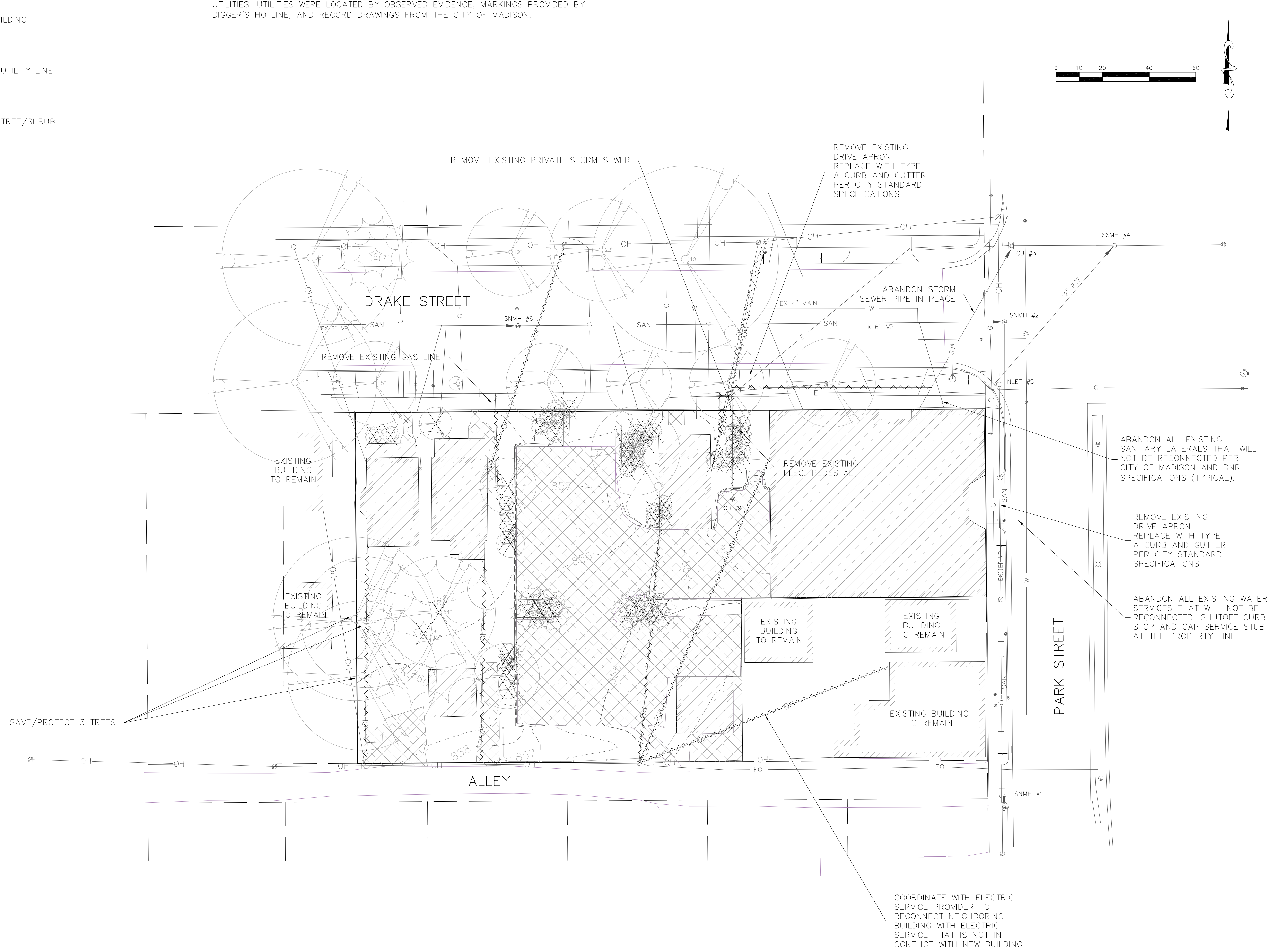
WIS. STATUTE 182.0175 (1974)
REQUIRES MIN. OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE

LEGEND

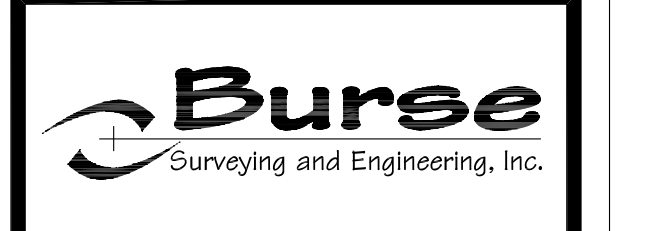
-  REMOVE PAVEMENT
-  RAZE BUILDING
-  REMOVE UTILITY LINE
-  REMOVE TREE/SHRUB

NOTES:
 1. ALL PRIVATE UTILITIES (GAS, ELECTRIC, AND TELECOMMUNICATIONS) SERVING EXISTING BUILDINGS SCHEDULED FOR DEMOLITION TO BE ABANDONED OR REMOVED BY CORRESPONDING UTILITY COMPANY.
 2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES. UTILITIES WERE LOCATED BY OBSERVED EVIDENCE, MARKINGS PROVIDED BY DIGGER'S HOTLINE, AND RECORD DRAWINGS FROM THE CITY OF MADISON.

- UTILITY LEGEND**
- OH OVERHEAD UTILITY
 - BURIED GAS MAIN
 - WATER MAIN
 - SANITARY SEWER
 - STORM SEWER
 - BURIED TELEPHONE
 - BURIED ELECTRIC
 - BURIED CABLE TV
 - BURIED FIBER OPTIC
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 - PARKING METER
 - FIRE HYDRANT
 - IRON PIPE OR STAKE FOUND
 - STORM SEWER STRUCTURE
 - CATCH BASIN
 - STORM SEWER INLET
 - ELECTRIC MANHOLE
 - TELECOMM. MANHOLE
 - STORM SEWER MANHOLE
 - SANITARY SEWER MANHOLE
 - WATER UTILITY MANHOLE
 - 3" DECIDUOUS TREE
 - 3" CONIFEROUS TREE
 - MAN CONTROL POINT
 - BM-1 BENCHMARK
 - BT BITUMINOUS PAVEMENT
 - CONC CONCRETE PAVEMENT
 - TE TRAFFIC ENGINEERING
 - BOLLARD



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 WIS. STATUTE 182.0175 (1974)
 REQUIRES MIN. OF 3 WORK DAYS
 NOTICE BEFORE YOU EXCAVATE



1400 E. Washington Ave, Suite 150
 Madison, WI 53703
 Phone: 608-250-9263
 Fax: 608-250-9266
 e-mail: mburse@bse-inc.net
 www.burseurveyengr.com

APPROVALS	PROJECT ENG.	DESIGNED BY	DRAWN BY	CHECKED BY	M.L.B.	M.L.B.

The Ideal
 502 South Park Street
 Madison, WI 53715
Galina Corporation
 101 East Main Street, Suite 500
 Mount Horeb, WI 53572

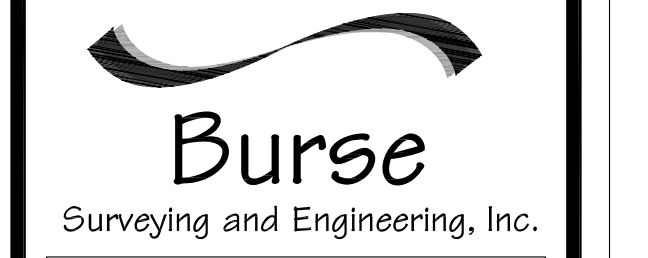
PROJECT #: BSE1402-10
PLOT DATE: 06/06/2012

REVISION DATES:

ISSUE DATES:

06/06/2012

DEMOLITION PLAN



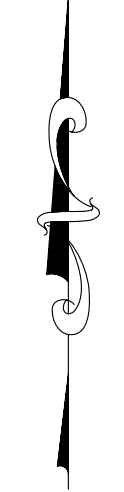
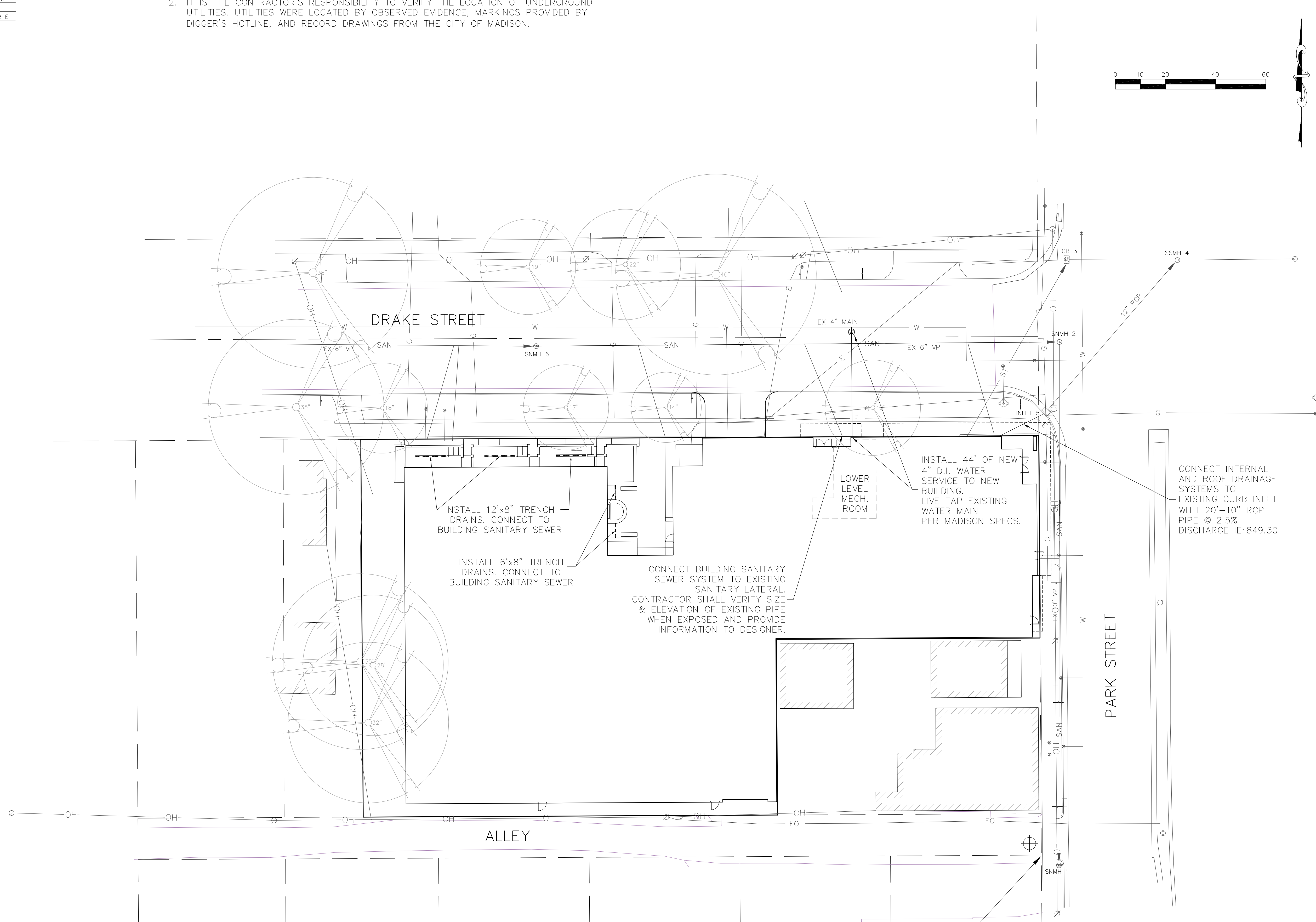
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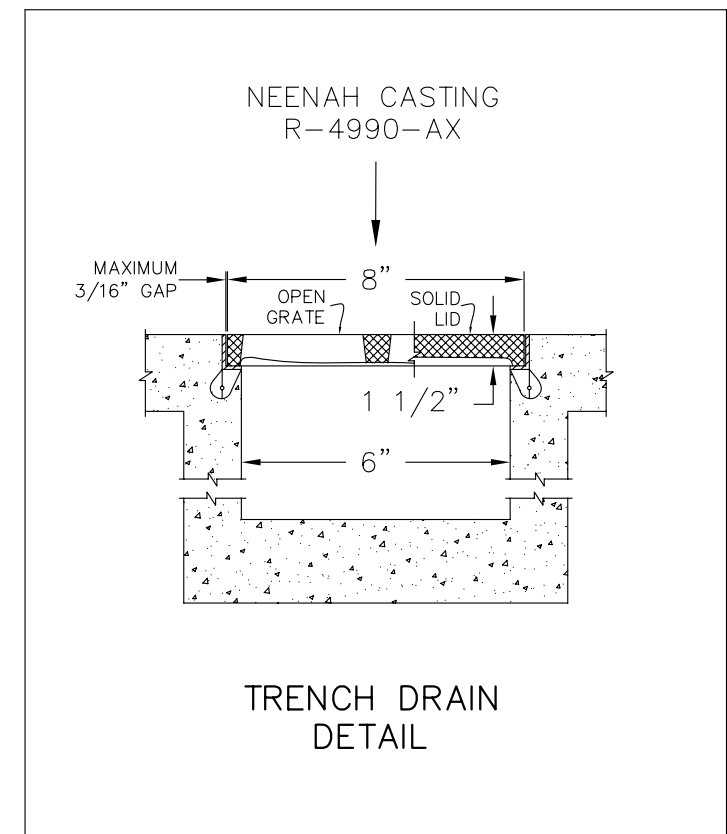
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SNMH 1	851.35	841.90 S 841.89 N
SNMH 2	852.27	843.92 W 843.63 N 843.60 S
SSMH 4	852.40	STRUCTURE FLOOR ELEV. 849.04
INLET 5	851.95	849.15 NE
SNMH 6	851.85	851.45 N 849.96 W 849.92 E
	851.99	849.93 N

- NOTES:
- ALL PRIVATE UTILITIES (GAS, ELECTRIC, AND TELECOMMUNICATIONS) SERVING EXISTING BUILDINGS SCHEDULED FOR DEMOLITION TO BE ABANDONED OR REMOVED BY CORRESPONDING UTILITY COMPANY.
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UTILITY LEGEND	
OH	OVERHEAD UTILITY
B	BURIED GAS MAIN
W	WATER MAIN
SM	SANITARY SEWER
ST	STORM SEWER
BT	BURIED TELEPHONE
BE	BURIED ELECTRIC
CBT	BURIED CABLE TV
FO	BURIED FIBER OPTIC
WV	WATER VALVE
GV	GAS VALVE
CEP	CABLE TV PEDESTAL
ECP	ELECTRIC PEDESTAL
TEP	TELEPHONE PEDESTAL
UP	UTILITY POLE
LP	LIGHT POLE
QW	QUI WIRE
MB	MAILBOX
S	SIGN
PM	PARKING METER
FH	FIRE HYDRANT
IP	IRON PIPE OR STAKE FOUND
SS	STORM SEWER STRUCTURE
CB	CATCH BASIN
SI	STORM SEWER INLET
EM	ELECTRIC MANHOLE
TE	TELECOMM. MANHOLE
SM	STORM SEWER MANHOLE
SS	SANITARY SEWER MANHOLE
WM	WATER UTILITY MANHOLE
DT	DECIDUOUS TREE
CT	CONIFEROUS TREE
CP	MAN CONTROL POINT
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CC	CONCRETE PAVEMENT
TE	TRAFFIC ENGINEERING
B	BOLLARD



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 e-mail: MBurse@BSE-INC.net
 www.burseurveyengr.com

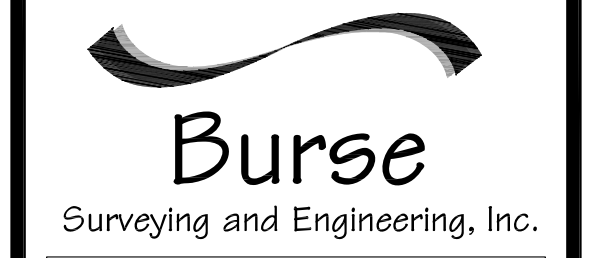
APPROVALS
PROJECT ENG:
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED:

The Ideal
 502 South Park Street
 Madison, WI 53715
Galina Corporation
 101 East Main Street, Suite 500
 Mount Horeb, WI 53572

PROJECT #:	
BSE1402-10	
PLOT DATE:	
08/15/2012	
REVISION DATES:	
08/15/2012	

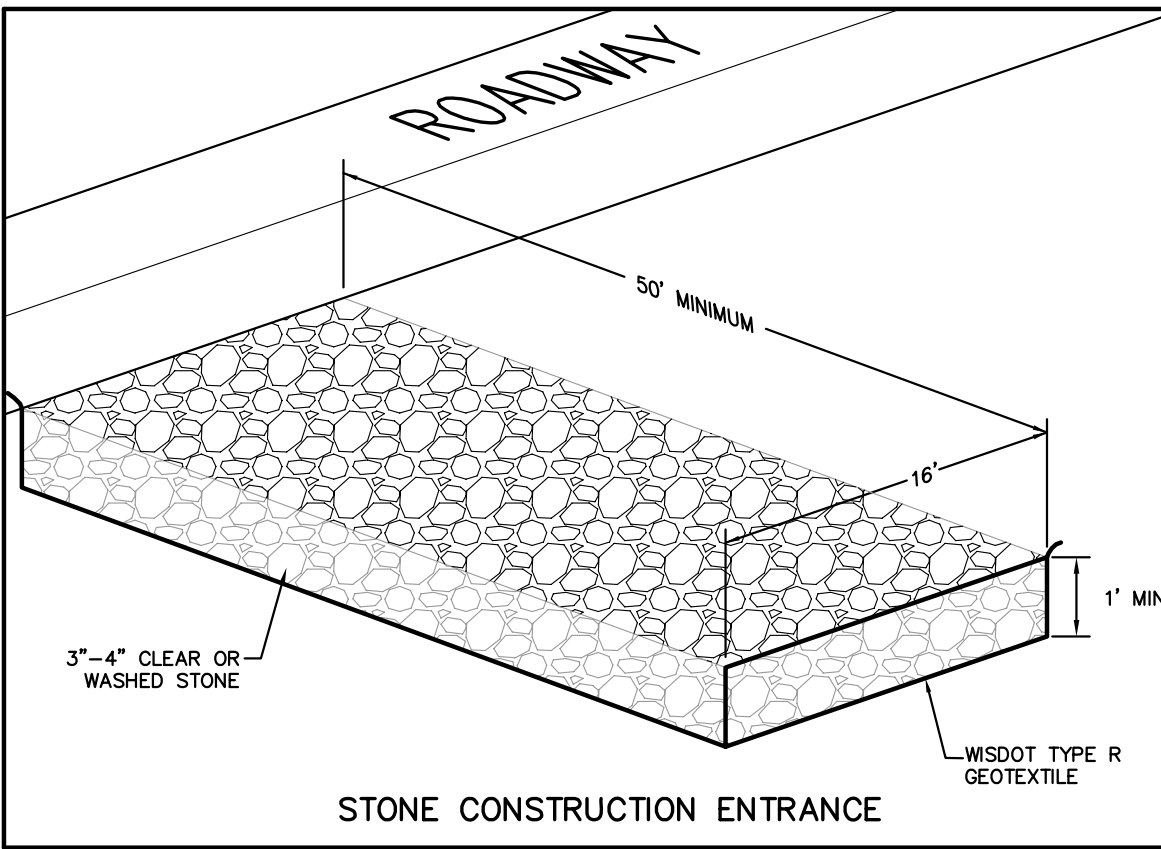
ISSUE DATES:	
06/06/2012	
08/15/2012	

UTILITY PLAN



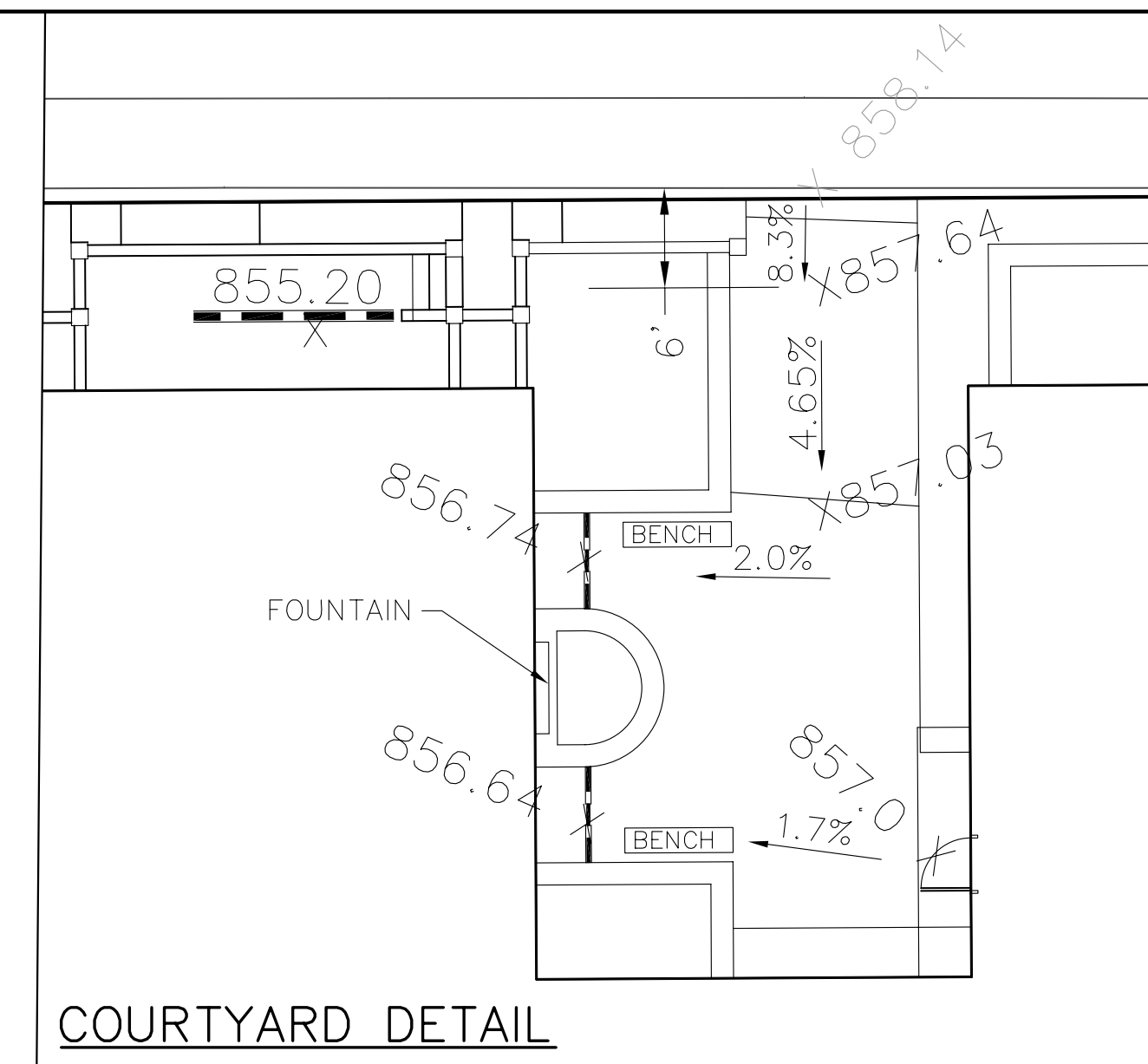
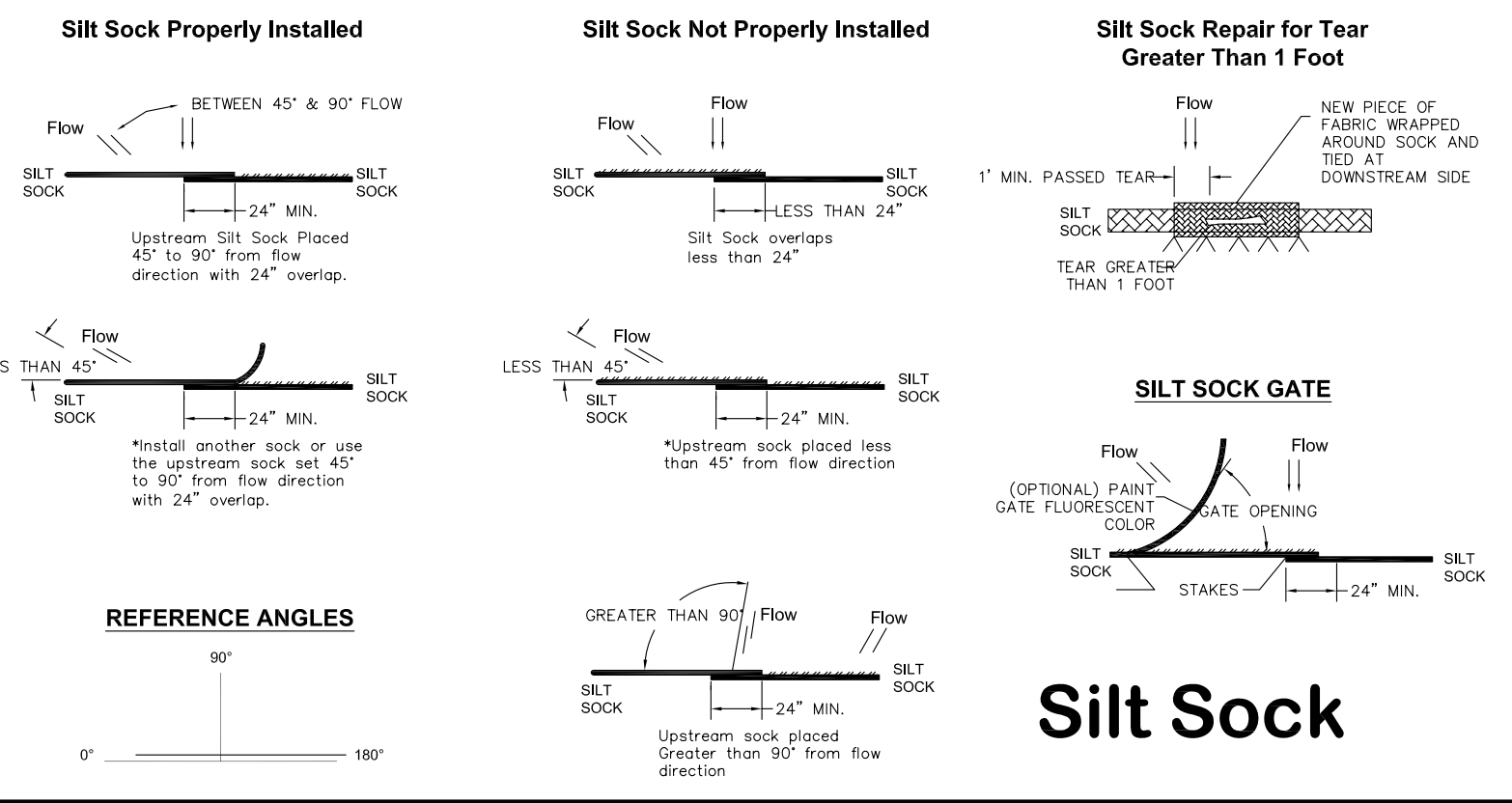
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DRAWING NUMBER
C-102



LEGEND

---	852	EXISTING MINOR CONTOUR
---	855	EXISTING MAJOR CONTOUR
---	852	PROPOSED MINOR CONTOUR
---	855	PROPOSED MAJOR CONTOUR
---		PROPOSED STORM SEWER
---		MEDIUM RIPRAP
---		SILT SOCK
---		INLET PROTECTION REQUIRED



- Erosion Control Notes/Specifications:**
- Erosion control devices and/or structures shall be installed prior to clearing and grubbing operations. These shall be properly maintained for maximum effectiveness until vegetation is re-established.
 - Erosion control is the responsibility of the contractor until acceptance of this project. Erosion control measures as shown shall be the minimum precautions that will be allowed. The contractor shall be responsible for recognizing and correcting all erosion control problems that are the result of construction activities. Additional erosion control measures, as requested in writing by the state or local inspectors, or the developer's engineer, shall be installed within 24 hours.
 - All erosion control measures and structures serving the site must be inspected at least weekly or within 24 hours of the time 0.5 inches of rain is produced. All maintenance will follow an inspection within 24 hours.
 - Construction Entrances - Provide a stone tracking pad at each point of access. Install according to WDNR Standard 1057. Refer to WDNR's stormwater web page of technical standards at: <http://dnr.wi.gov/runoff/stormwater/techstds.htm>
 - Temporary stabilization using anionic polymer. After November 1, 2012, anionic polyacrylamide will be applied to all disturbed areas where City of Madison inspectors deem stabilization and/or erosion to be problematic. Application of polyacrylamide will be according to WDNR Conservation Practice standard 1050, Erosion Control Land Application of Anionic Polyacrylamide. Refer to WDNR's stormwater web page of technical standards at: <http://dnr.wi.gov/runoff/stormwater/techstds.htm>.
 - Dewatering - Water pumped from the site shall be treated by using a temporary sedimentation basin, portable dewatering basin, geotextile bag, or an equivalent device. Show on the plan the anticipated locations of dewatering activity, and provide an engineering detail of the dewatering system. Devices shall comply with WDNR Technical Standard 1061 found at <http://dnr.wi.gov/runoff/stormwater/techstds.htm>. This water shall be discharged in a manner that does not induce erosion of the site or adjacent property.
 - Storm Sewer Inlets - Provide WDOT Type D "CatchAll" inlet protection or equivalent. Refer to WDOT Product Acceptability List at: <http://www.dot.wisconsin.gov/business/engineering/pal.htm>. Inlet protection shall be installed prior to the storm sewer system receiving site runoff. Other than for performing maintenance, these devices shall not be removed until plot-level stabilization is complete.
 - Building and waste materials shall be prevented from running-off the site and entering waters of the state in conformance with NR151.12(6m).
 - No solid material shall be discharged or deposited into waters of the state in violation of Ch. 30 or 31 of the Wisconsin State Statutes or 33 USC 1344 permits.
 - Erosion control devices shall adhere to the technical standards found at: <http://dnr.wi.gov/runoff/stormwater/techstds.htm> and comply with all City of Madison ordinances.
 - All debris tracked onto public streets shall be swept or scraped clean by the end of each workday.
 - All building and waste material shall be handled properly to prevent runoff of these materials off of the site.
 - All disturbed areas shall be seeded, sodded, or otherwise restored immediately after grading activities have been completed per the approved landscape plan.

Emergency Contact
 Craig Enzenroth
 Gallina Corporation
 101 E. Main Street, Suite 500
 Mount Horeb, WI 53572
 (608) 437-8300

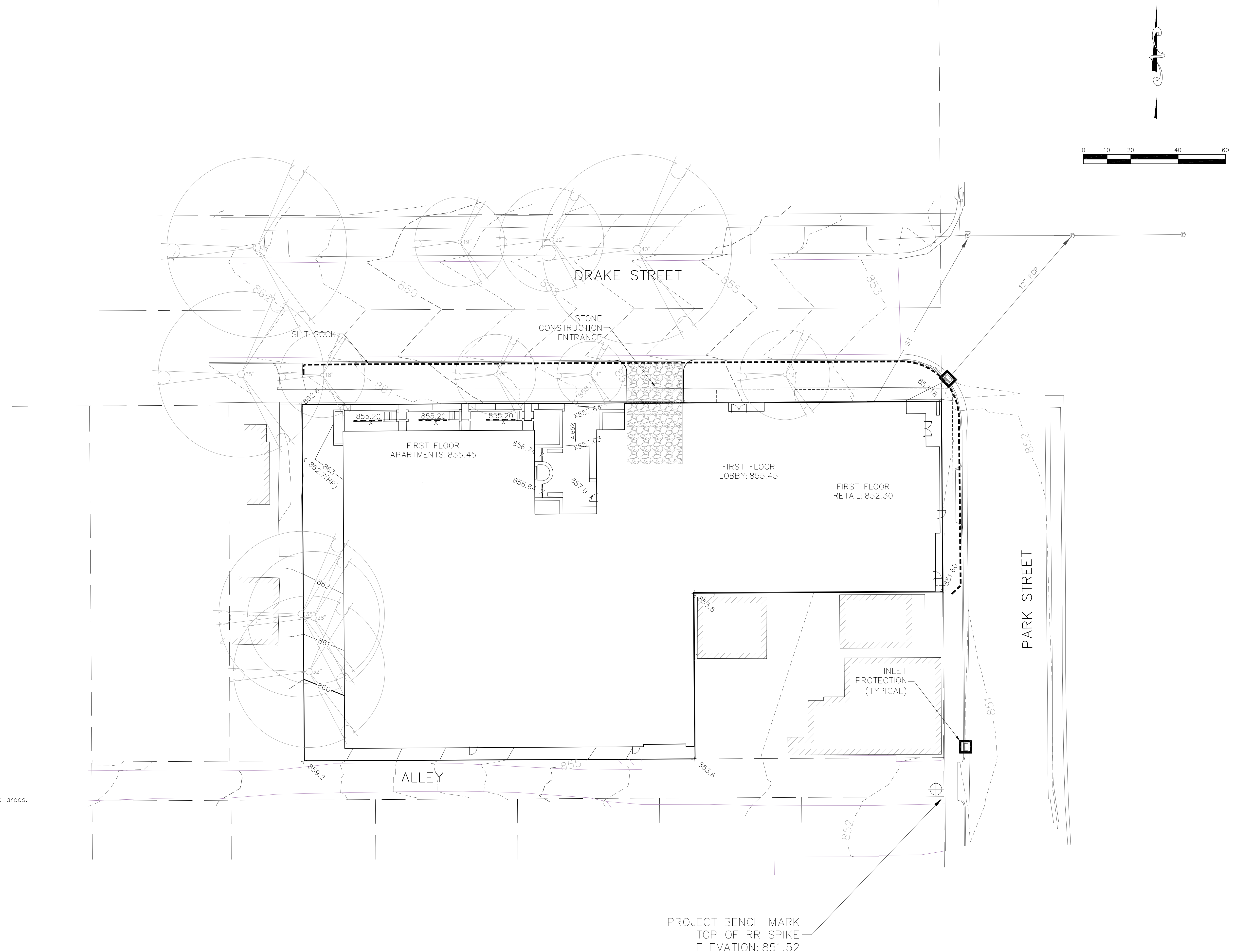
Schedule:

Sept. 10, 2012	Install silt fence and construction entrance.
Sept. 11, 2012	Begin demolition and excavation.
July 1, 2013	Building construction complete. Restore all disturbed areas.
Sept 1, 2013	Vegetation established.

 TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511 OR 811
TOLL FREE
 TDD(FOR THE HEARING IMPAIRED)(800)542-2289

WIS. STATUTE 182.0175 (1974)
 REQUIRES MIN. OF 3 WORK DAYS
 NOTICE BEFORE YOU EXCAVATE



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 Mount Horeb, WI 53572

PROJECT #: BSE1402-10
PLOT DATE: 08/15/2012

REVISION DATES:
 08/15/2012

ISSUE DATES:
 06/06/2012
 08/15/2012

GRADING & EROSION CONTROL PLAN

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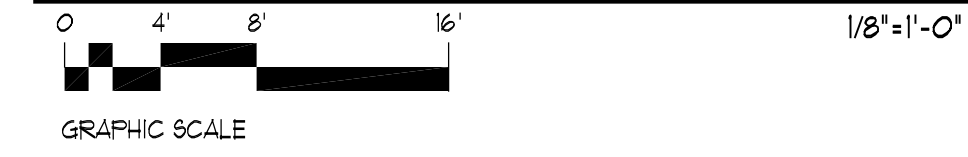
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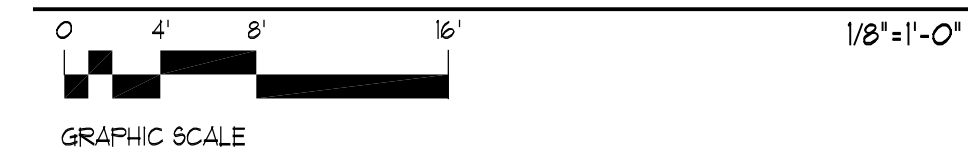




EAST ELEVATION



WEST ELEVATION





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Street View at Park & Drake



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Northwest Aerial on Drake



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Courtyard Aerial



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Southwest Aerial



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Southeast Street View



Courtyard View



Apartment Entry

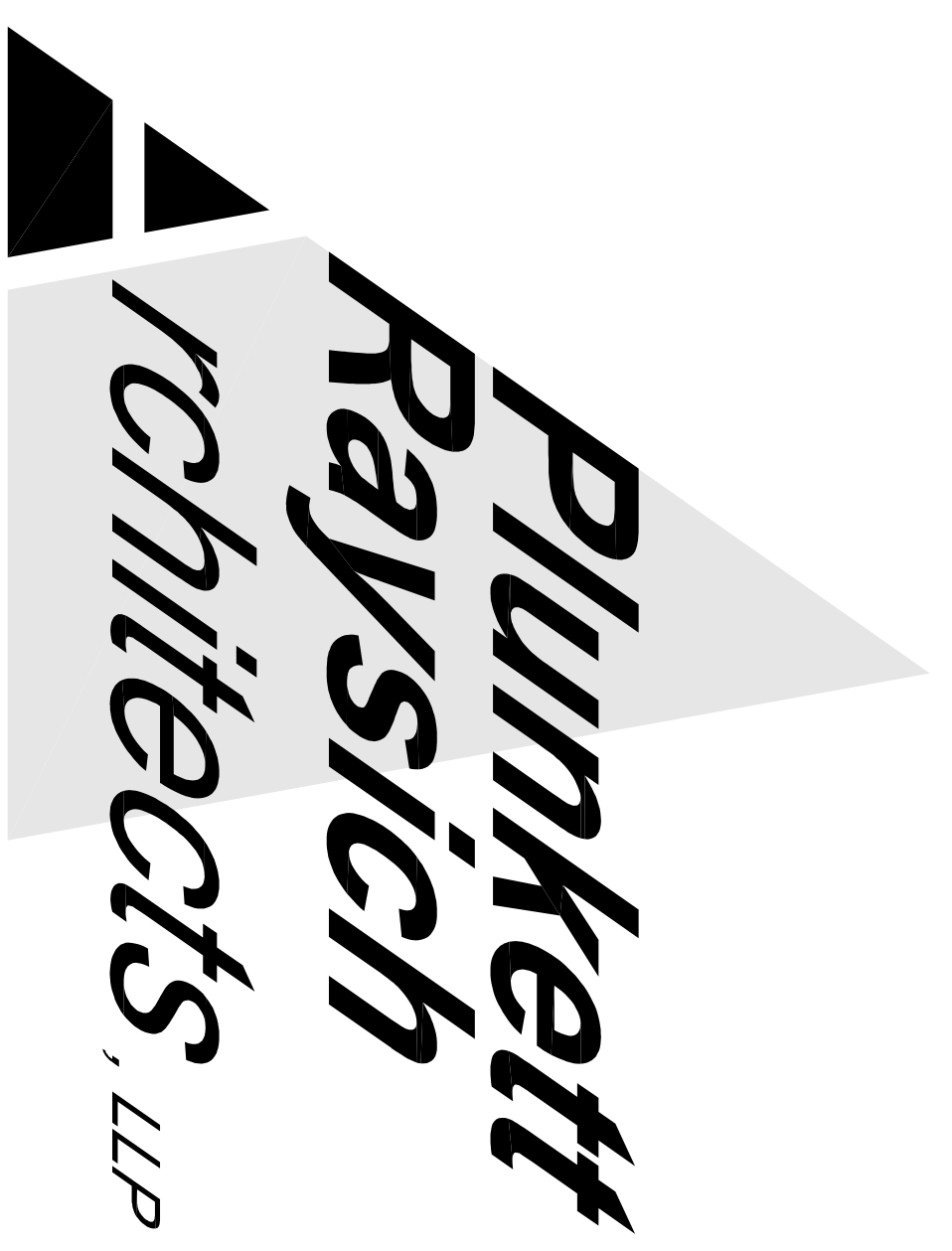


Park Street Retail Entry 1



Park Street Retail Entry 2

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Location Map

Urban Design Submittal - Final Approval

The Ideal
502 S. Park Street
Madison WI

The Gallina Corporation
The Ideal
PRA # 114387-01
2012 - September 12

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Project Information

Project Team

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The Gallina Corporation

ARCHITECT

Plunkett Raysich Architects

SITE/CIVIL

Burse Surveying and Engineering, Inc

LANDSCAPE

Bruce Company

LIGHTING

Hein Engineering