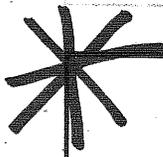


880 Legal Notices



LEGAL NOTICE / PUBLIC NOTICE

VILLAGE OF WESTMONT PLANNING AND ZONING COMMISSION NOTICE OF PUBLICATION

NOTICE IS HEREBY GIVEN that a public hearing has been scheduled before the Westmont Planning and Zoning Commission to be held on Wednesday, October 10, 2012 at 7:00 P.M. in the Westmont Village Hall, 31 W. Quincy St., Westmont, Illinois 60559.

The purpose of the hearing is to consider a request from Brent Sikula regarding the property located at 120 North Grant Street, Westmont, IL 60559 for the following:

(A) Zoning Code Variance Request to permit lot coverage greater than the 35% maximum allowed in the R-3 Single Family Detached Residence District for the purpose of reconstructing a driveway and patio and replacing the concrete surface with pavers.

Legal Description:

LOT 5 IN BLOCK 9 IN ARTHUR T. MCINTOSH AND COMPANY'S FAIRMONT HEIGHTS IN THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 38 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS.

P.I.N. 09-09-213-015

More Common Location: 120 North Grant Street, Westmont, IL 60559

Village Code(s) Applicable: Appendix "A", Section 6.04 (D) Appendix "A", Section 13.07

Note: Any person who has a disability requiring a reasonable accommodation to participate in the meeting should contact Mr. R. R. Searl ADA Compliance Officer, 9:00 A.M. to 5:00 P.M. Monday through Friday, Village of Westmont, Illinois, 60559; or telephone (630) 981-6200 voice, or (630) 981-6300 TDD, within a reasonable time before the meeting.

All interested persons in attendance will be allowed to express their views.

WESTMONT PLANNING AND ZONING COMMISSION Ed Richard Chairperson

September 26, 2012 Suburban Life Publications 2752 WSM

IN THE CIRCUIT COURT FOR THE 18TH JUDICIAL CIRCUIT DUPAGE COUNTY - WHEATON, ILLINOIS

Wells Fargo Bank, NA, PLAINTIFF Vs. Carleen M. Ruffolo a/k/a Carleen Ruffolo; et. al., DEFENDANTS

NOTICE BY PUBLICATION

NOTICE IS GIVEN TO YOU: Carleen M. Ruffolo a/k/a Carleen Ruffolo, N.A. f/k/a Firstar Bank Illinois, f/k/a First Colonial Trust Company u/t/a da 6447, Unknown Owners and Nonrecord Claimants

That this case has been commenced in this Court against you and foreclosure of a certain Mortgage conveying the premises described as foll LOT 55 IN ORCHARD GATE, BEING A SUBDIVISION OF PART OF SE RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN; ACCO RECORDED OCTOBER 4, 1985 AS DOCUMENT R85-85333, I RECORDED APRIL 22, 1986 AS DOCUMENT R86-37263, IN DUPAGE C COMMONLY KNOWN AS: 12 Peach Tree Lane, Westmont, IL 60559

and which said Mortgage was made by: U.S. Bank N.A. f/k/a Firstar B Company, as Trustee u/t/a dated February 24, 1994 a/k/a Trust No. 6447 the Mortgagor(s), to Mortgage Electronic Registration Systems, Inc. as Partners, Inc., as Mortgagee, and recorded in the Office of the Recorder as Document No. R2005-103036; and for other relief; that summons was you as provided by law and that the said suit is now pending.

NOW, THEREFORE, UNLESS YOU file your answer or otherwise file Office of the Clerk of this Court,

Chris Kachiroubas Clerk of the Circuit Court 505 N. County Farm Road P.O. Box 707 Wheaton, IL 60187

on or before October 26, 2012, A DEFAULT MAY BE ENTERED AGAINST DAY AND A JUDGMENT MAY BE ENTERED IN ACCORDANCE WITH PLAINT.

CODILIS & ASSOCIATES, P.C., Attorneys for Plaintiff 15W030 North Frontage Road, Suite 100, Burr Ridge, IL 60527 (630) 794-5300

DuPage # 15170 Winnebago # 531 Our File No. 14-12-22853

NOTE: This law firm is deemed to be a debt collector. 1470863

September 26, 2012 October 3, 10, 20 Suburban Life Publications 2723 WSM

IN THE CIRCUIT COURT FOR THE 18TH JUDICIAL CIRCUIT DUPAGE COUNTY - WHEATON, ILLINOIS

U.S. Bank National Association, as Trustee for Structured Asset Securities Corporation Mortgage Loan Trust 2007-BNC1, Mortgage Pass-Through Certificates, Series 2007-BNC1, PLAINTIFF Vs. Karin R. Dunn a/k/a Karin Dunn; et. al., DEFENDANTS

2010 JCH 29

NOTICE OF SHERIFF'S SALE OF REAL ESTATE

PUBLIC NOTICE IS HEREBY GIVEN that pursuant to a Judgment of Foreclosure and Sale entered in the above cause on 7/20/2012, John Zaruba, the Sheriff of DuPage County, Illinois will on 10/23/12 at the hour of 10:00AM at Dupage County Sheriff's Office 501 North County Farm Road Wheaton, IL 60187, or in a place otherwise designated at the time of sale, County of DuPage and State of Illinois, sell at public auction to the highest bidder for cash, as set forth below, the following described real estate:

LOT 4 IN BLOCK 19 IN ARTHUR T. MCINTOSH AND COMPANY'S FAIRVIEW AVENUE SUBDIVISION, BEING A SUBDIVISION IN THE EAST 1/2 OF SECTION 5, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, AND IN THE SOUTH EAST 1/4 OF SECTION 32, TOWNSHIP 39 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED SEPTEMBER 7, 1923 AS DOCUMENT 169326, IN DUPAGE COUNTY, ILLINOIS.

PIN 09-05-207-015

Improved with Residential

COMMONLY KNOWN AS: 4050 Sterling Road, Downers Grove, IL 60515

Sale terms: 10% down of the highest bid by certified funds at the close of the auction; The balance, including the Judicial sale fee for Abandoned Residential Property Municipality Relief Fund, which is calculated at the rate of \$1 for each \$1,000 or fraction thereof of the amount paid by the purchaser not to exceed \$300, in certified funds, is due within twenty-four (24) hours. The subject property is subject to general real estate taxes, special assessments, or special taxes levied against said real estate and is offered for sale without any representation as to quality or quantity of title and without recourse to Plaintiff and in "AS IS" condition. The sale is further subject to confirmation by the court.

If the property is a condominium and the foreclosure takes place after 1/1/2007, purchasers other than the mortgagees will be required to pay any assessment and legal fees due under The Condominium Property Act, 765 ILCS 605/9(g)(1) and (g)(4).

If the property is located in a common interest community, purchasers other than mortgagees will be required to pay any assessment and legal fees due under the Condominium Property Act, 765 ILCS 605/18.5(g-1).

If the sale is set aside for any reason, the Purchaser at the sale shall be entitled only to a return of the deposit paid. The Purchaser shall have no further recourse against the Mortgagor, the Mortgagee or the Mortgagee's attorney.

Upon payment in full of the amount bid, the purchaser shall receive a Certificate of Sale, which will entitle the purchaser to a Deed to the real estate after Confirmation of the sale. The successful purchaser has the sole responsibility/expense of evicting any tenants or other individuals presently in possession of the subject premises.

The property will NOT be open for inspection and Plaintiff makes no representation as to the condition of the property. Prospective bidders are admonished to check the Court file to verify all information.

IF YOU ARE THE MORTGAGOR (HOMEOWNER), YOU HAVE THE RIGHT TO REMAIN IN POSSESSION FOR 30 DAYS AFTER ENTRY OF AN ORDER OF POSSESSION, IN ACCORDANCE WITH SECTION 15-1701(C) OF THE ILLINOIS MORTGAGE FORECLOSURE LAW.

For information: Examine the court file or contact Plaintiff's attorney: Codilis & Associates, P.C.,

IN THE CIRCUIT COURT FOR THE 18TH JUDICIAL CIRCUIT DUPAGE COUNTY - WHEATON, ILLINOIS

U.S. BANK TRUST, N.A., AS TRUSTEE FOR VERICREST OPPORTUNIT 2011-NPL2, PLAINTIFF VS

ELLERY LICHTER; JOSIE A. LICHTER; UNKNOWN HEIRS AND LEGATE LICHTER, IF ANY; UNKNOWN OWNERS AND NON RECORD CLAIMANT 330 SOUTH LINDEN AVENUE, WESTMONT, IL 60559

NOTICE OF SALE PURSUANT TO JUDGMENT OF F UNDER ILLINOIS MORTGAGE FORECLOSURE

\*\*\*THIS DOCUMENT IS AN ATTEMPT TO COLLECT ON A DEBT. AN BE USED FOR THAT PURPOSE\*\*\*

PUBLIC NOTICE IS HEREBY GIVEN that pursuant to a Judgment of Fc Court in the above entitled cause on July 17, 2012, DUPAGE COUNTY Illinois, will on October 23, 2012, in 501 North County Farm Road, Whe auction and sale to the highest bidder for cash, all and singular, the follow in said Judgment, situated in the County of DU PAGE, State of Illinois sufficient to satisfy said Judgment:

LOT 13 IN ALBERT MISER'S SUBDIVISION OF LOTS 7, 23, 24, 25, 26, IN BLOCK 4 IN ARTHUR T. MCINTOSH'S FAIRMONT PARK SUBDI WEST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 10, TOWNSHIP 38 I THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF DOCUMENT 2933645, IN DUPAGE COUNTY, ILLINOIS.

TAX NO. 09-10-315-018

COMMONLY KNOWN AS: 330 SOUTH LINDEN AVENUE WESTMONT, IL Description of Improvements:

RED BRICK TWO STORY SINGLE FAMILY HOME WITH A TWO CAR DE The Judgment amount was \$270,870.90.

Sale Terms: This is an "AS IS" sale for "CASH". The successful bidder r funds; balance, by certified funds, within 24 hours. NO REFUNDS. The s real estate taxes, special assessments or special taxes levied against said

offered for sale without any representation as to quality or quantity of title e sale is further subject to confirmation by the court. Upon payment in full of receive a Certificate of Sale, which will entitle the purchaser to a Deed to the sale. The property will NOT be open for inspection. Prospective bid court file to verify all information. The successful purchaser has the sole re tenants or other individuals presently in possession of the subject premise unit, the purchaser of the unit at the foreclosure sale, other than a mortga

the legal fees required by The Condominium Property Act, 765 ILCS 605/9 MORTGAGOR (HOMEOWNER), YOU HAVE THE RIGHT TO REMAIN AFTER ENTRY OF AN ORDER OF POSSESSION, IN ACCORDANCE WITH ILLINOIS MORTGAGE FORECLOSURE LAW.

For Information: Visit our website at http://service.atty-pierce.com. Betwee Associates, Plaintiff's Attorneys, 1 North Dearborn, Chicago, Illinois 6060

**NOTICE OF PUBLIC MEETING**

uesday, October 9, 2012 at 3:00 p.m. a meeting icted by Maercker School District 60 will take at Maercker School District 60 Administration r, 1 S. Cass Avenue, Suite 202, Westmont, IL ). The purpose of the meeting will be to discuss district's plans for providing special education es to students with disabilities who attend private/ hial schools or who are home-schooled within t 60 for the 2012-2013 school year. If you are a t of a home-schooled student who has been or be identified with a disability and you reside the boundaries of Maercker School District 60, re urged to attend. Please call 630-515-4860 to te your intention to attend this meeting or if you any questions pertaining to this meeting.

September 26, 2012  
Suburban Life Publications 2685 DG

**COURT OF THE 18TH JUDICIAL CIRCUIT  
WHEELING COUNTY, WHEATON, ILLINOIS  
FOR THE CERTIFICATE HOLDERS CWABS, INC.,  
SERIES 2004-10, PLAINTIFF,**

}11  
CH  
4705

**VENUE: VILLAGE SQUARE HOMEOWNER'S  
/ CONDOMINIUM ASSOCIATION; COUNTY OF  
SOCIATION, AS TRUSTEE FOR THE C-BASS  
CERTIFICATES, SERIES 2006-SL1; DEFENDANTS  
NOTICE OF SHERIFF'S SALE**

rsuant to a Judgment entered in the above entitled matter on May 21,

/ Farm Rd., Wheaton, IL 60187, will on October 18, 2012 at 10:00AM, at o the highest bidder for cash (ten percent (10%) at the time of sale and ours), the following described premises situated in Dupage County,

taxes, special assessments or special taxes levied against said real ages. The subject property is offered for sale without any representation se to Plaintiff.

haser tendering said bid in cash or certified funds, a receipt of Sale is required, which will entitle the purchaser to a deed upon confirmation. The property is legally described as follows:

WITH AN UNDIVIDED PERCENTAGE INTEREST IN THE COMMON IV CONDOMINIUM IN THE WEST 1/2 OF THE NORTHEAST 1/4 ORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, OF CONDOMINIUM AND PLAT OF SURVEY ATTACHED THERETO MBER 16, 1972 AS DOCUMENT R72-70547, AND CERTIFICATE OF MENT R74-20356, IN DUPAGE COUNTY, ILLINOIS.

ENJOYMENT GRANTED BY DECLARATION OF COVENANTS, EASEMENTS OF VILLAGE SQUARE HOMEOWNERS ASSOCIATION '1, AS DOCUMENT R71-60960 AND BY SUPPLEMENTARY ER 16, 1972 AS DOCUMENT R72-70548.

y, Unit 5, Downers Grove, IL 60516.

00  
lum Association  
1, Bedrooms UNKNOWN, Garage UNKNOWN  
VN

ction prior to the sale. The judgment amount was \$190,969.11.

to check the court file and title records to verify this information.

st community or a condominium unit under subsection (c) of Section shall state that the purchaser of the unit other than a mortgagee shall s required by subdivisions (g)(1) and (g)(4) of Section 9 of the Illinois ent of assessment account issued by the association to a unit owner he Illinois Condominium Property Act, and the disclosure statement Section 22.1 of the Illinois Condominium Property Act, shall state the si fees, if any, required by subdivisions (g)(1) and (g)(4) of Section 9 of

rium, you are admonished to read the responsibilities created under perty Act.

piro, LLC, Attorneys for Plaintiff  
ckburn, IL 60015

DEBT AND ANY INFORMATION OBTAINED WILL BE USED FOR GE THAT IF YOUR PERSONAL LIABILITY FOR THIS DEBT HAS RGE IN BANKRUPTCY OR BY AN ORDER GRANTING IN REM IS PROVIDED SOLELY TO FORECLOSE THE MORTGAGE AND IS NOT AN ATTEMPT TO COLLECT THE DISCHARGED

September 12, 19, 26, 2012  
urban Life Publications 2285 DG

**LEGAL NOTICE / PUBLIC NOTICE**

**NOTICE FOR PARENTS OF HOME-SCHOOLED STUDENTS  
NOTICE OF PUBLIC MEETING**

On October 1, 2012, at 8:00 a.m. a meeting conducted by Community Unit School District No. 201 will take place in the Community Room of Manning Elementary School located at 200 North Linden Avenue, Westmont, Illinois. The purpose of the meeting will be to discuss the district plan for providing special education services to students with disabilities who attend private schools and home schools within the district for the 2012-2013 school year. If you are a parent of a home-schooled student who has been or may be identified with a disability and you reside within the boundaries of Community Unit School District No. 201, you are invited to attend. If you have further questions pertaining to this meeting, please contact Linda McCarthy Klawitter, Director of Student Services, at (630) 468-8250.

September 26, 2012  
Suburban Life Publications 2457 WSM

**LEGAL NOTICE / PUBLIC NOTICE**

**VILLAGE OF WESTMONT  
PLANNING AND ZONING COMMISSION AGENDA**

The Village of Westmont Planning and Zoning Commission will hold its regular meeting on Wednesday, October 10, 2012 at 7:00 P.M., at the Westmont Village Hall, 31 West Quincy Street, Westmont, IL 60559.

1. Call to Order
2. Roll Call
3. Pledge of Allegiance
4. Swearing-in of testifying attendees and reminder to sign in
5. Reminder to silence all electronic devices
6. Approval of Minutes of the September 12, 2012 meeting
7. Open Hearing

**New Business**

**PZ 12-033** Mia L. Curtiss of Cash Closet regarding the property located at 37 W. Quincy Street, Unit B, Westmont, IL 60559 for the following:

- (A) Special Use permit request to operate a resale/consignment shop in the B-1 Limited Business District.

**PZ 12-034** Brent Sikula regarding the property located at 120 North Grant Street, Westmont, IL 60559 for the following:

- (A) Zoning Code Variance Request to permit lot coverage greater than the 35% maximum allowed in the R-3 Single Family Detached Residence District for the purpose of reconstructing a driveway and patio and replacing the concrete surface with pavers.

**PZ 12-035** Dave Wisbrock regarding the property located at 325 North Warwick Avenue, Westmont, IL 60559 for the following:

- (A) Zoning Code Variance Request to permit lot coverage greater than the 30% maximum allowed in a defined development moratorium area.

**PZ 12-036** Cathleen Keating of Martin, Craig, Chester & Sonnenschein LLP, representing SpineCraft, regarding the property located at 777 Oakmont Lane, Suite 200, Westmont, IL 60559 for the following:

- (A) Zoning Code Variance Request to increase the number of allowable signs.

**PZ 12-037** Xuan Hong of Yu's Mandarin Restaurant regarding the property located at 665 Pasquinelli Drive, Unit A, Westmont, IL 60559 for the following:

- (A) Zoning Code Variance Request to increase the number of allowable signs.
- (B) Zoning Code Variance Request to increase the maximum gross square footage of signage.

**PZ 12-038** Cory Feign of China Cat Productions, LLC, regarding the Marriott hotel property located at 3500 Midwest Road, Oak Brook, IL 60523 for the following:

- (A) Zoning Code Variance Request to permit more than three antennas on a structure in the B-3 Special Business District.

**8. Adjourn**

Note: Any person who has a disability requiring a reasonable accommodation to participate in the meeting should contact Mr. R. R. Searl ADA Compliance Officer, 9:00 A.M. to 5:00 P.M. Mon. through Fri., Village of Westmont, IL, 60559; or (630) 981-6200 voice, or (630) 981-6300 TDD, within a reasonable time before the meeting.

All interested persons in attendance will be allowed to express their views.

WESTMONT PLANNING AND ZONING COMMISSION  
Ed Richard Chairperson

September 26, 2012  
Suburban Life Publications 2754 WSM



VILLAGE OF WESTMONT  
ECONOMIC DEVELOPMENT DEPARTMENT  
630-981-6264

Office Use Only  
Applicant #: PZ12-034  
Submission Date: 9-14-12  
Title: Sikula lot coverage variation

APPLICATION FOR:

- Annexation/Pre-Annexation Hearing
- Appeal from Decision of Zoning Official
- Map Amendment
- Planned Development
- Right-of-Way Dedication
- Site/Landscaping Plan
- Special-Use Permit
- Subdivision/Consolidation/Lot Split (Preliminary)
- Text Amendment
- Variation from Zoning Requirement/Land Development Code

VILLAGE OF WESTMONT  
\*\*\* CUSTOMER RECEIPT \*\*\*  
DATE: 09/17/12 TIME: 11:25:00

DESCRIPTION	PAY CD	AMOUNT
ZSF-ZONE/SUBDIVN 120 N GRANT	CK	250.00
	142	
TOTAL AMOUNT DUE		250.00
AMOUNT TENDERED		250.00
CHANGE DUE		.00

TRANS #: 34 CASHIER CODE: 0N2  
BATCH #: 0120917 REGISTER ID: 002

PAID  
SEP 17 2012  
*Yejid*

DESCRIPTION OF SITE:

Common Description (Street Address): 120 N. GRANT STREET, WESTMONT, IL.  
PIN Number: 09-09-213-015 Current Zoning and Land Use: R3/RESIDENTIAL  
Existing Structures: 2 STORY BRICK HOME + DETACHED GARAGE  
Significant natural amenities (slope, vegetation, water bodies, rock outcroppings, floodplain, and other development restrictions): NONE

CHARACTER OF SURROUNDING AREA (zoning/jurisdiction and land use):

North: R3 House East: R3/House  
South: R3/House West: R3/House

PETITIONER INFORMATION:

Petitioner: BRENT SIKULA  
Corporation: NONE  
Street Address: [REDACTED]  
City: [REDACTED]  
State and Zip Code: [REDACTED]  
Daytime Telephone Number: [REDACTED]

REDACTED  
BY LAW

Fax Number: NONE

Email Address: [REDACTED]

Relationship of Petitioner to Property: RESIDENT/OWNER

**PROPERTY OWNER INFORMATION (IF DIFFERENT THAN PETITIONER):**

Names (list all beneficiaries of Trust): [REDACTED]

Corporation: N/A

Street Address: 120 N. GRANT ST.

City: WESTMONT, IL

State and Zip Code: IL 60559

Daytime Telephone Number: [REDACTED]

Fax Number: NONE

Email Address: [REDACTED]

**REDACTED  
BY LAW**

**PROJECT STAFF (if applicable):**

**Developer:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Attorney:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Land Planner:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Engineer:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Architect:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

**Landscape Architect:** \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Email: \_\_\_\_\_

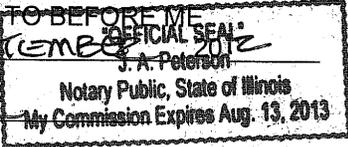
Each Applicant is solely responsible for compliance with the provisions of the Village of Westmont Zoning Ordinance, Land Development Ordinance, and other ordinances, as well as the provisions, laws, and regulations of any other entity having jurisdiction over any facet of matters coming before the Planning and Zoning Commission and Village Board. **Should this be an application for a parking variance in the B-1 Limited Business District, the applicant acknowledges that Ordinance No. 10-67 requires the payment of a cash-in lieu fee for waived parking spaces.**

The undersigned request(s) approval of this petition and further certify(ies) on oath that the information contained herein and in all documents submitted in support hereof, is true and correct to the best of my/our knowledge and belief. By signing below, the applicant and/or property owner grant express permission to Village of Westmont staff and officials to inspect the premises as necessary in relation to this application.

**PETITIONER SIGNATURE:**

Type or print name: BRENT SIKULA.

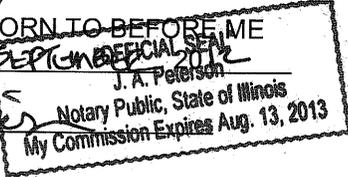
Signature: *Brent Sikula*

SUBSCRIBED AND SWORN TO BEFORE ME  
THIS 14<sup>th</sup> DAY OF SEPTEMBER 2012  
*J. A. Peterson*  
Notary Public  


**OWNER SIGNATURE:**

Type or print name: MELODY SIKULA AS TRUSTEE

Signature: *Melody Sikula*

SUBSCRIBED AND SWORN TO BEFORE ME  
THIS 14<sup>th</sup> DAY OF SEPTEMBER 2012  
*J. A. Peterson*  
Notary Public  


Office Use Only

Provisions of zoning or land development ordinances which apply: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Sikula Residence**  
120 N. Grant Street  
Westmont, IL. 60559  
Parcel No. 09-09-213-015

Dear Planning & Zoning Commission;

Thank you for your time in evaluating our variance application.

Background on the property:

The home was originally built by my grandparents as a 1 ½ story brick cottage in 1929. Over the years five major property improvements have been completed. The first was the construction of brick addition at the back of the home with full basement. This was followed by a second improvement which was the construction of a detached brick 2 car garage with attic. Both improvements were completed during the late 1930's. The third improvement was the construction of a brick screened enclosure off of the patio in the late 1940's. Between 1950 and mid-1980's the property remained unchanged.

In the mid 1980's my mother (Melody,) sister (Laine) and I moved to the home when our family circumstances changed. To accommodate the needs of the next generation of the family, Melody completed the fourth major improvement of the property which included converting the original home's attic into bedroom space for my sister and me. My sister and I grew, went to school and started our own lives. Melody remained in the home.

In 2010, following discussions with my Mom and sister it was agreed that I should take the lead in continuing the family ownership and care of the home. With my architecture & construction management background I designed and contracted the fifth major improvement of the property. The work included complete removal of the attic/roof and the construction of a second floor addition that includes three bedrooms, a sitting area, office / den and full bath. As part of this improvement, the first floor was also demolished to the framing and restored incorporating all of the original homes details (arched openings, oak trim & floors doors / frames etc) including a modern kitchen, pantry and bathroom. As part of the work modern wiring, copper piping, insulation, energy efficient Pella windows & doors, hot water heating, and a space-pak central air cooling system were installed. The original lead water line was also replaced with a larger copper supply as well as a new sewer line to the alley installed. The last item required to complete the restoration is to replace the deteriorated drive & patio.

---

The purpose of our application is to gain the Commission's approval for a Development Permit to replace our deteriorated concrete driveway and patio this Fall. The square footage of the existing drive and patio configuration contribute to our lot coverage exceeding 35%. In a proactive effort toward working to satisfy the current village code we will significantly reduce the area of the patio as shown in our application package as well as install a permeable paver system manufactured by Unilock for both the driveway and patio. The drive & patio replacement is necessary to maintain the character, appearance and value of the home as well as to contribute to the quality of the neighborhood and environment.

Thank you for your time and review.

Sincerely,  
The Sikula Family  
120 N. Grant Street

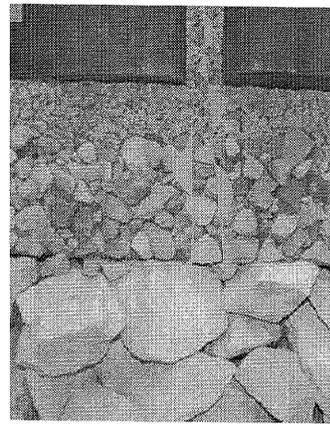


Brent Sikula

# PERMEABLE INTERLOCKING CONCRETE PAVEMENT (PICP) MUNICIPAL OFFICIALS FACT SHEET

## Stormwater Benefits

- Reduces pollutants from rainwater runoff
- Complements buildings and visually unifies streetscape, many colors available
- LEED® points eligible for Sustainable Sites, Water Efficiency, Materials & Resources and/or Innovative Design; Earns Green Globe points
- Meets U.S. Environmental Protection Agency stormwater performance criteria as a structural best management practice (BMP) while providing parking, road and pedestrian surfaces
- Helps meet local, state and provincial stormwater drainage design criteria and provides compliance with the U.S. National Pollutant Discharge Elimination System (NPDES) regulations
- Reduces runoff from common rainstorms by as much as 100%; eliminates surface puddles and local flooding
- Promotes street tree survival
- Snow melts faster on permeable pavement and drains, reducing ice hazards
- Snow plow with typical snow removal equipment; reduce winter ice hazards, de-icing salt use and snow removal costs.
- 50 year life-cycle for surface
- Compatible with underground stormwater storage systems, many slower-draining clay soils and cold climates
- Governments may offer tax incentives, utility fee reductions, expedited permitting or a demonstration project to encourage use.



3 1/8 in. (80 mm) thick pavers with permeable joints

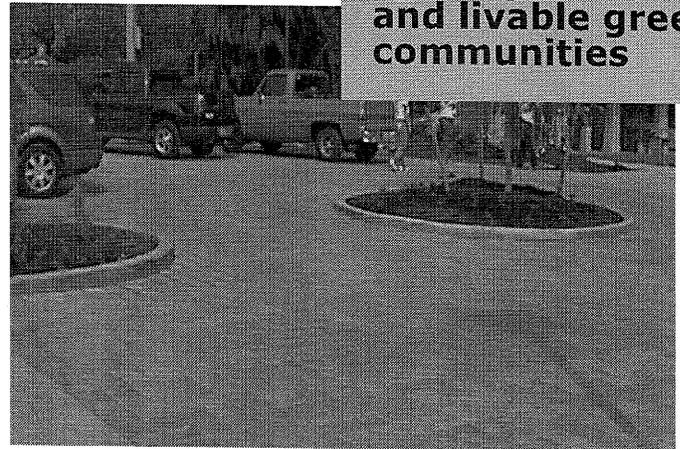
Open-graded bedding course

Open-graded base course (OGB)

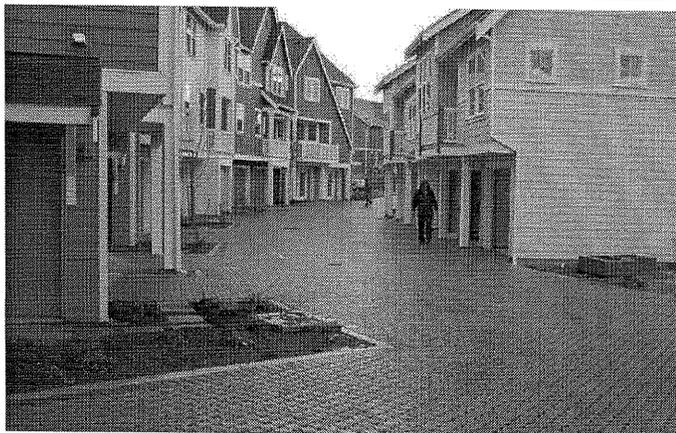
Open-graded subbase on non-compacted soil subgrade

**Permeable interlocking concrete pavement (PICP) with base and subbase for infiltration and storage**

**PICP supports sustainable development and livable green communities**



**Parking at this recreation site on South Whidbey Island, WA eliminates runoff during most rainstorms.**



**PICP's can eliminate street storm drains and sewer pipes as in this redevelopment project in Seattle, WA.**

## APPLICATION OPPORTUNITIES

- **Public Projects:** Office plazas, parks, sidewalk replacement, street tree planting areas, parking lots and outdoor seating areas
- **Private Projects:** Parking lots, parks, driveways, parking bays on roadways, subdivision roads and sidewalks
- **Public-Private Partnerships & Redevelopment Sites:** Parking areas, plazas and public spaces and sidewalks



**Stormwater Management  
Environmentally Sustainable**

**Reduces Urban Heat Island  
Community Development Tool**

# LID INTEGRATED WITH PICP

## PICP Meets LID Goals

- Conserves on-site space: roads, parking, stormwater infiltration and retention all combined into the same space creating more green space or building opportunities
- Preserves wooded areas that would otherwise be cleared for stormwater detention or retention ponds
- Increases site infiltration that helps maintain pre-development runoff volumes, peak flows and time of concentration
- Promotes tree survival and growth
- Contributes to urban heat island reduction through evaporation and reflective, light colored pavers
- Highly visible, cost-effective exemplary demonstration of a cornerstone LID technique for public and private development

## Permeable Interlocking Concrete Pavement: A Low Impact Development Tool

### PICP Supports LID Principles

1. Conserve vital ecological and natural resources: trees, streams, wetlands and drainage courses
2. Minimize hydrologic impacts by reducing imperviousness, conserving natural drainage courses, reducing clearing, grading and pipes
3. Maintain pre-development time of concentration for runoff by routing flows to maintain travel times and discharge control
4. Provide runoff storage and infiltration uniformly throughout the landscape with small, on-site decentralized infiltration, detention and retention practices such as permeable pavement, bioretention, rain gardens, open swales and roof gardens
5. Educate the public and property owners on runoff and pollution prevention measures and benefits

**Municipal civic goals may be met using PICP as part of an integrated approach to development and redevelopment.**

### Extensive green roof retrofit

Disconnected downspout waters infiltration planter

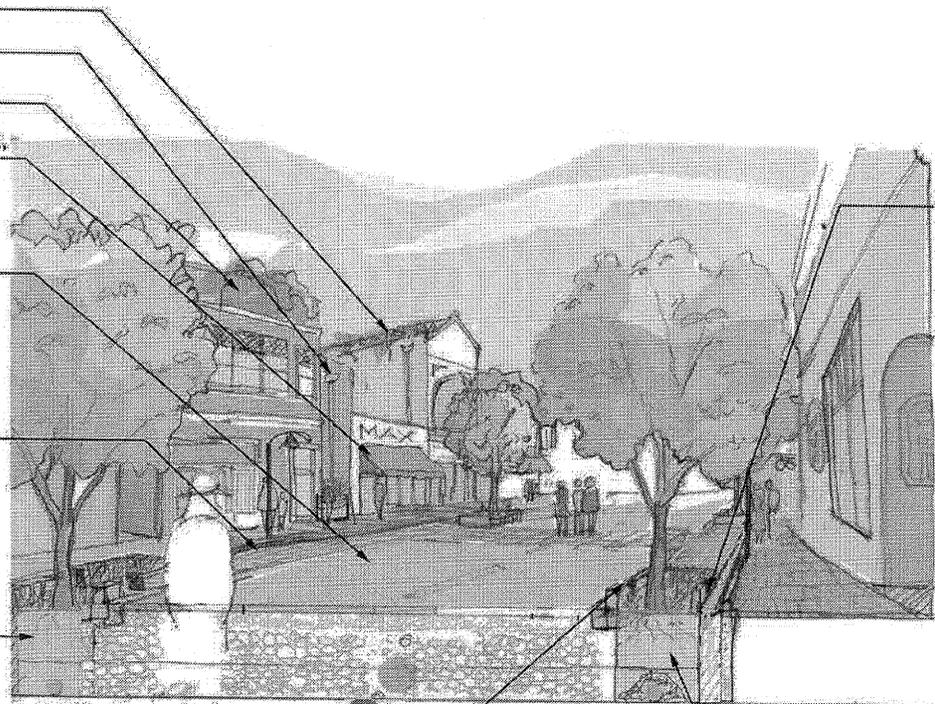
Intensive green roof retrofit

Awning retrofit cools sidewalk, directs water to permeable interlocking concrete pavement

Permeable interlocking concrete pavers (PICP) in travel lanes with storage capacity built into the pavement system

Permeable interlocking concrete pavers in parking lanes with storage capability built into the pavement system

Street tree in infiltration trench 2.5 feet (.75 m) deep with 4 in. (100 mm) underdrain tied to storm sewer



Gutter flows directed into bioretention media along the gutter route

Utilities in center lane under water storage media

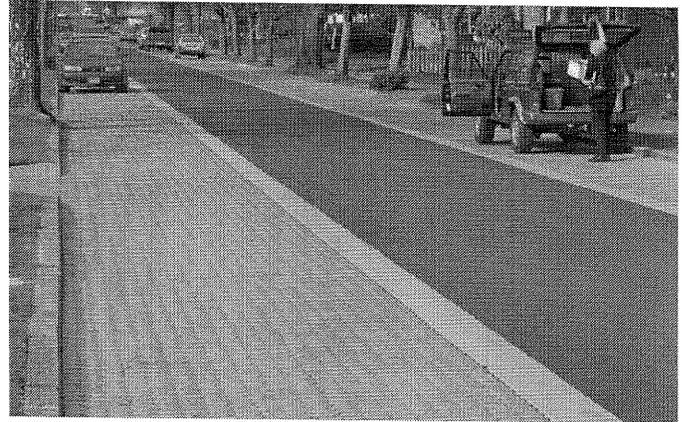
Curbs with curb cuts directed to street planters (Planter width varies, 3 ft (.9 m) minimum)

Bioretention cell adjacent to PICP

# CONSTRUCTION AND PROJECT EXAMPLES



**Prepared subgrade for 20,000 sf (2000 m<sup>2</sup>)  
Portland, OR street retrofit with PICP**

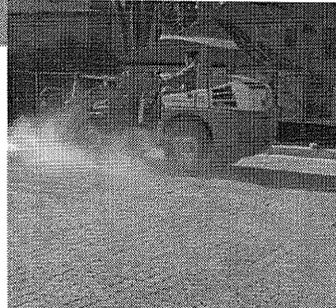
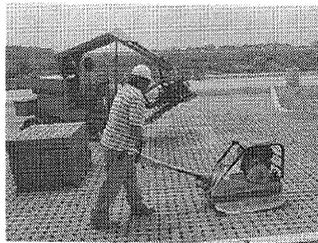


**Portland, OR street project with PICP  
parking lanes**

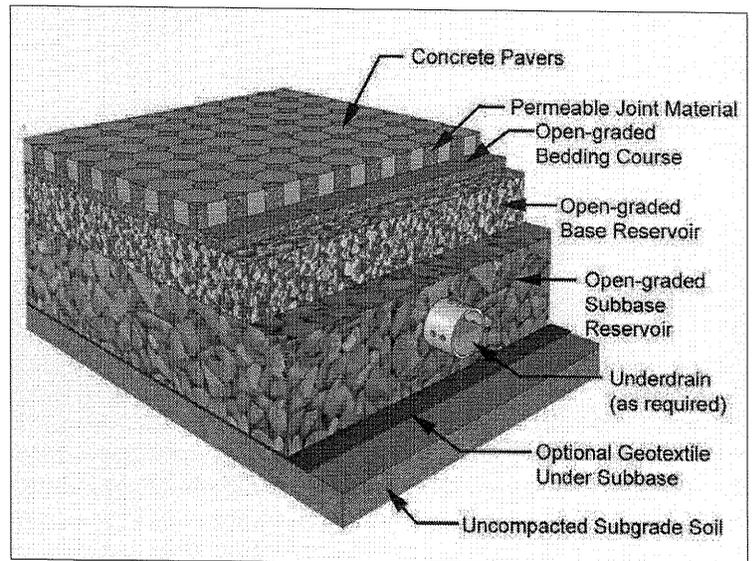


**Base construction  
uses locally available  
materials.**

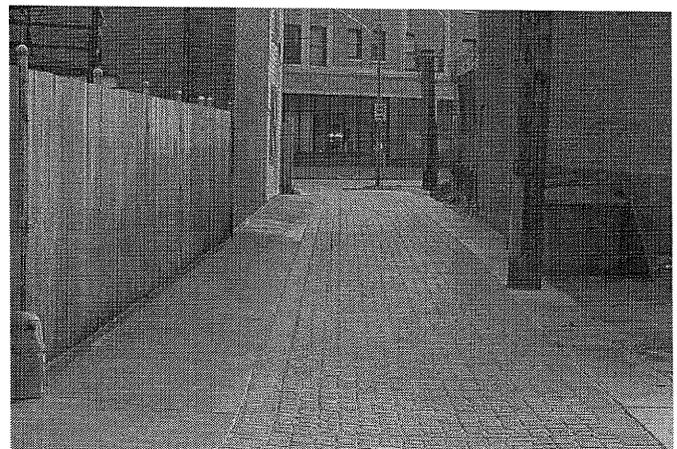
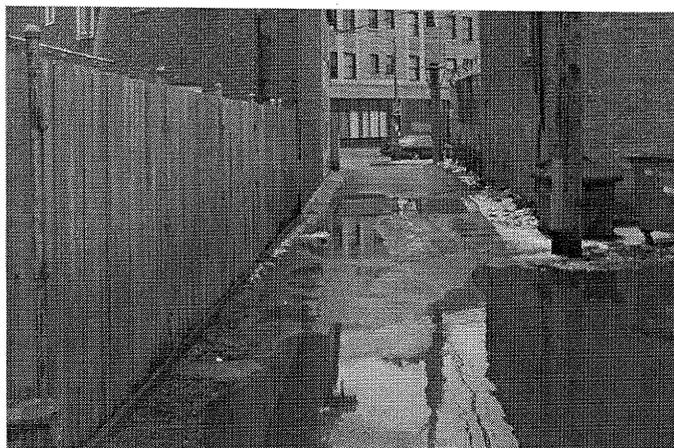
**Mechanical  
installation speeds  
construction.**



**Aggregate base is spread and compacted;  
pavers are delivered ready to install. After  
placement of bedding course, joints and/or  
openings are filled with small aggregate and  
the pavers are compacted. Joints may be filled  
mechanically as shown.**



**Typical PICP cross section**



**Chicago Green Alley Program before and after PICP installation**

*Green Alleys are being implemented to manage stormwater, reduce combined sewer overflows, reduce urban heat in urban areas, and conserve energy. Photos: Courtesy of the City of Chicago*

## PERFORMANCE

### Volume Reduction

- PICP significantly reduces runoff from most storms.
- Runoff volume reductions relieve flooding in storm sewers operating at capacity and relieve sewage treatment plants receiving combined storm and sanitary waste flows.
- Reduced runoff can reduce sewer overflows and stream bank erosion.

### Peak Flow Reduction

- Promotes stream and lake health with decreased erosion
- Reduces water pollution by reducing combined sewer overflow frequency
- Reduces the need for continuous expansion of drainage infrastructure

### Additional Benefits

- Cooler than conventional pavements
- ADA compliant
- May be used on sloped site with proper design
- Simplified surface and subsurface repairs by reinstating the same paving units; no unsightly patches or weakened pavement from utility cuts
- Can be used for traffic calming

### Water Quality Improvement

- 80% or greater TSS removal
- Preserve and increase drinking and recreational water supplies; preserve aquatic and wildlife habitats.
- Gain recognition for innovative design through sustainable BMPs

### FAQs

**Can PICP be used on clay soils?** *Yes. Even in clay soils, PICP reduces runoff and helps to capture "first flush" runoff and reduce pollution.*

**Can PICP be used to replace every kind of pavement?** *PICP is best suited for use in areas of low speed traffic such as parking lots, residential streets, driveways, patios, plazas, sidewalks and parking lanes on busier travelways. Nevertheless, PICP has been successfully used even under heavy commercial loads.*

**Will PICP enhance property values?** *The data from installed PICP projects indicates that PICP meets multiple criteria for project success including enhancing property values.*

**Is Maintaining PICP difficult?** *No. PICP can be maintained through street sweeping and vacuuming based on periodic inspection.*

### REFERENCES

Ferguson, B. K. *Porous Pavements*. Boca Raton, FL: CRC Press, 2005.

Smith, David R. *Permeable Interlocking Concrete Pavements: Selection • Design • Construction • Maintenance*, Washington, DC: ICPI 3rd ed., 2006. [www.icpi.org](http://www.icpi.org).

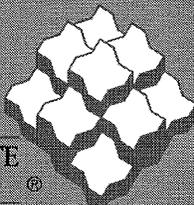
For more information pertaining to permeable interlocking concrete pavement, please visit the Interlocking Concrete Pavement Institute ([icpi.org](http://icpi.org)) or the Low Impact Development Center ([lowimpactdevelopment.org](http://lowimpactdevelopment.org)).

**Other Fact Sheets available for Developers, Design Professionals and Schools/ Universities**



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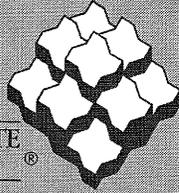


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# ICPI

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# TECH SPEC

NUMBER • 16

## Achieving LEED® Credits with Segmental Concrete Pavement

### Background

Rapidly rising energy and material costs have accelerated energy and natural resource conservation in design and construction. Sustainable development has evolved as a response and ethos to encourage conservation. It is also a framework for creating environments that enhance human existence and natural processes.

Broadly defined, sustainable development meets the needs of the present without compromising the ability of future generations to meet their needs. Within the North American design and construction community, a means for addressing sustainability or 'green building' is through LEED® or Leadership in Energy and Environmental Design. Developed by the U.S. Green Building Council (USGBC) in 1998, LEED® provides voluntary guidelines for reducing energy and wasted resources from building and site design. The Canadian Green Building Council (CGBC) formed in 2003 published similar LEED® guidelines tailored to Canadian climates. U.S. and Canadian guidelines were developed by a range of representatives from the building industry and environmental science.

LEED® establishes a consensus-based means for measuring building and site performance. It promotes designs that integrate energy

and resource conservation. LEED® is being applied to many publicly funded projects and a growing number of private ones. A primary objective of LEED® is to help facility owners reduce maintenance and life-cycle costs. This is accomplished by including all players in an integrated development process during the design stages of a project.

LEED® rating systems have been developed for new construction and major renovations (LEED®-NC), commercial interiors (LEED®-CI), and for the building core and shell (LEED®-CS). Rating systems are under development for residential projects and existing buildings. Like most of the LEED® rating systems, acceptance criteria in LEED®-NC is based on established government or industry standards or guidelines, nationally or internationally accepted laboratory test methods. For current information on these rating systems visit [www.usgbc.org](http://www.usgbc.org) or [www.cagbc.org](http://www.cagbc.org).

### Purpose

USGBC LEED®-NC Version 2.1 (USGBC 2003) and CBGC LEED®-NC version 1.0 (CGBC 2004) are in use. USGBC LEED® version 2.2 is under development at this writing. This Tech Spec reviews LEED®-NC for the U.S. and Canada covering

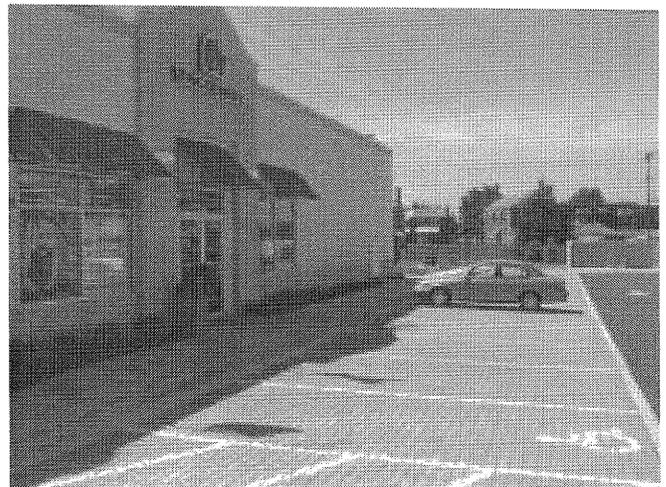
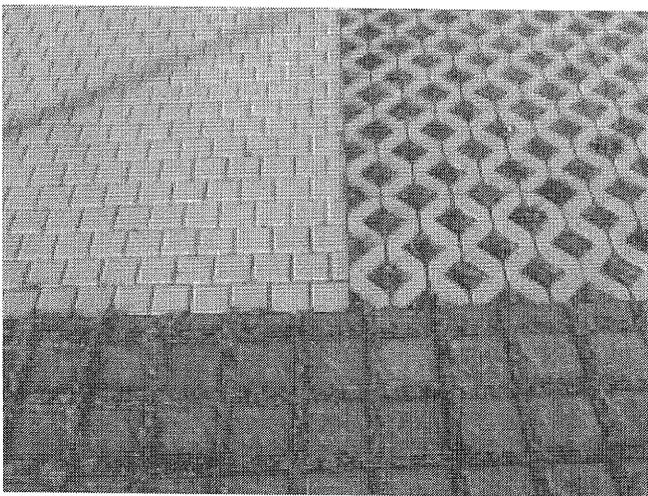


Figure 1. Sustainability for buildings extends to the site with sustainable paving that promotes infiltration and reflects sunlight.

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new construction and major renovation of commercial facilities. It provides guidance on applying the family of segmental concrete paving products to satisfy LEED® requirements. These products include interlocking concrete pavements, permeable interlocking locking concrete pavements (PICP), concrete paving slabs and concrete grid pavements.

### The LEED® Process

The decision to apply for LEED® certification must occur early in the design process. The project owner and designers evaluate categories and associated criteria explained in the rating categories below for compatibility with the project, architectural program, budget and resulting environmental impact. This enables energy and cost-saving synergies for site and building design decisions.

To start the LEED® certification process, the project is registered on the USGBC or CGBC web site with payment of a fee based on the total area of the project plus a registration fee. The web site specifies materials to be submitted such as project plans and documentation. The point of contact seeking LEED® certification is sent a project checklist to evaluate aspects of the project might be eligible for LEED® credits. A letter template is also provided to help standardize documentation of credits. The registration fee enables access to the member-only parts of the web site and to access to the history of credit interpretations.

LEED® documentation can come from all involved on the project team including product manufacturers, contractors, cost estimators, specification writers and designers. Responsibility for managing this process will vary with each project. However, this effort is often coordinated by a LEED® Accredited Professional, one who has taken a course sponsored by USGBC or CGBC and an exam on the credits and their requirements.

Once documentation is submitted with the LEED® application, they are reviewed for acceptance for LEED® credits. Additional documentation can be requested from the USGBC (or CGBC) as needed

and the project team has a specified amount of time to provide this. Final certification is granted within 30 days of receipt of all necessary documentation. LEED® certificates and a plaque are issued to the project design team.

### LEED® Credits

For new commercial construction or LEED®-NC, the US and Canadian Green Building Councils grant certification based on the same number of points earned from each rating system. The minimum number of required points is 26. Higher ratings are shown in Table 1.

New projects and major renovations earn points from six broad rating categories with specific subcategories. The major categories include:

- Sustainable Sites
- Water Use efficiency (for building)
- Energy and Atmospheric Pollutants
- Materials and Resources
- Indoor Air Quality
- Innovative Ideas and Designs

The two primary categories that pertain to segmental concrete paving are Sustainable Sites and Materials and Resources. Within these categories, there are several subcategories for rating various aspects of the building and site for LEED® points. The following provides excerpts from USGBC LEED®-NC version 2.1 (2003) and CGBC LEED®-NC (2004) version 1.0. Product application and documentation guidelines are included.

*Table 1. LEED®-NC Points*

Level	Points
Certification .....	26-32
Silver .....	33-38
Gold .....	39-51
Platinum.....	52 or more

## **Sustainable Sites**

Credits applicable to segmental concrete paving products for sustainable sites include the following:

- Credit SS 6.1 Stormwater Management, rate and quantity
- Credit SS 6.2 Stormwater Management, treatment
- Credit SS 7.1 Heat Island Effect, non-roof
- Credit SS 7.2 Heat Island Effect, roof

### **USGBC LEED® Credit SS 6.1 Stormwater Management: rate and quantity**

*1 Point*

#### **Intent**

Limit disruption and pollution of natural water flows by managing stormwater runoff.

#### **Requirements**

If existing imperviousness is less than or equal to 50%, implement a stormwater management plan that prevents the post-development 1.5 year, 24 hour peak discharge rate from exceeding the pre-development 1.5 year, 24 hour peak discharge rate.

OR

If existing imperviousness is greater than 50%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff.

#### **Submittals**

Provide the LEED® Letter Template, signed by the civil engineer or responsible party, declaring that the post-development 1.5 year, 24 hour peak discharge rate does not exceed the pre-development 1.5 year 24 hour peak discharge rate. Include calculations demonstrating that existing site imperviousness is less than or equal to 50%.

OR

Provide the LEED® Letter Template, signed by the civil engineer or responsible party, declaring and demonstrating that the stormwater management strategies result in at least a 25% decrease in the rate and quantity of stormwater runoff. Include calculations demonstrating that existing site imperviousness exceeds 50%.

#### **Potential Technologies & Strategies**

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing and custodial uses.

The CGBC LEED® credit SS 6.1 is identical except for this addition to Submittals:

### **CGBC LEED® Credit SS 6.1 Stormwater Management: rate and quantity**

*1 Point*

If an audit of this Credit is requested during the certification process:

For sites with less than 50% net imperviousness, provide pre-construction and post construction site drawings. Include area calculations demonstrating no increase in net imperviousness of the site,

OR

For sites with greater than 50% net imperviousness, provide a copy of the stormwater management plan. Include calculations describing how the measures of the plan decrease net imperviousness of the site by 25% over existing conditions.

### Application of Credit SS 6.1

Permeable interlocking concrete pavement (PICP) is a type of pervious paving that can help meet this LEED® credit. Figure 2 illustrates examples of PICP for runoff reduction. A typical design consists of paving units with openings filled with small, open-graded crushed stone. The units are bedded on a 2 in. (50 mm) thick layer of the same filling material. The bedding layer is compacted into the base consisting of open-graded aggregate base and sub-base. They have sufficient space between stones to store water and allow it to infiltrate into the soil. The water storage capacity is typically 30% to 40% of the total volume of the base. This water is allowed to infiltrate into the soil usually within 24 to 36 hours. Water that does not infiltrate can be filtered through the base and drained through perforated pipes at the bottom of the base.

PICP benefits:

- Meet national/provincial/state stormwater regulations: part of best management practice (BMP) mix
- Conserves space: pavement built on detention facility
- Reduce retention requirements
- Filter and reduce nutrients, metals
- Increase groundwater recharge
- Lower peak flows/volume that helps preserve drainage system capacity while reducing downstream erosion
- Reduce runoff temperatures
- Potentially fewer drainage appurtenances
- Reinstatement of surface after repairs
- Filters oil drippings
- Resists frost heave and can be snowplowed
- Visually more attractive than alternatives

An in-depth presentation of design, specification, construction and maintenance is found in the ICPI publication, *Permeable Interlocking Concrete Pavements* (ICPI 2000). Most PICP will infiltrate runoff falling directly on it from 75% to 85% of all storms. The infiltration rate of the soil, base thickness (reservoir capacity) and any runoff from contributing areas will determine if PICP qualifies for reducing the peak discharge to the pre-development 1.5 year, 24 hour peak discharge rate. In many cases PICP will meet this requirement.

Pavement infiltration rates are a function of several factors including permeability of the fill material for the surface openings and for the base materials. No. 8 stone typically used in the openings has an infiltration rate exceeding 500 in./hr (12.7 m/hr). Infiltration rates of Nos. 57 and 2 stone used for the base and subbase well exceed 1,000 in./hr (25 m/hr). Over time, the voids in these materials can become clogged, especially in the voids around the stone in the surface openings. These nearby sources of sediment come typically run onto the pavement. Periodic maintenance with vacuum sweeping will help maintain high surface infiltration rates. Research has shown that high infiltration rates can be maintained by removing the sediment in the first inch (25 mm) of the openings (Gerrits 2002).

Peak discharge rate,  $Q$ , can be calculated using the Rational Method where  $Q = CIA$  where  $C$  = the coefficient of runoff from the catchment,  $I$  = intensity of rainfall in in./hour, and  $A$  = area of the catchment. The Rational Method is a simple, first order method to estimate peak flows from a site with varying degrees of perviousness.

According to Ferguson (2005), the runoff coefficient,  $C$  will vary with each storm. For small storms permeable pavements will infiltrate all of the rainfall rendering a low runoff coefficient. In intense storms, and when the soil is saturated from antecedent storms, the runoff coefficient will be higher. Since most sites are exposed to a range of storm intensities and durations, the overall runoff coefficient of 0.25 to 0.35 can be assumed for PICP.

Concrete grid pavements (see Figure 3) are another type of permeable pavement. They are typically used for less intense vehicular applications than PICP such as overflow parking and emergency fire lanes. Unlike PICP, the base is typically dense-graded, compacted aggregate. The grids are bedded in sand and the openings are filled with aggregate or topsoil and grass. If they have grass in the openings, the surface will require lawn maintenance such as mowing, seeding and fertilizing. *ICPI Tech Spec 8 Concrete Grid Pavements* provides detailed information on applications, design, specifications, construction and maintenance. Concrete grid pavements can be used to earn this LEED® credit for runoff reduction. For Rational Method calculations a  $C$  value of 0.4 can be assumed if the grids are over a dense-graded aggregate base (Day 1980).

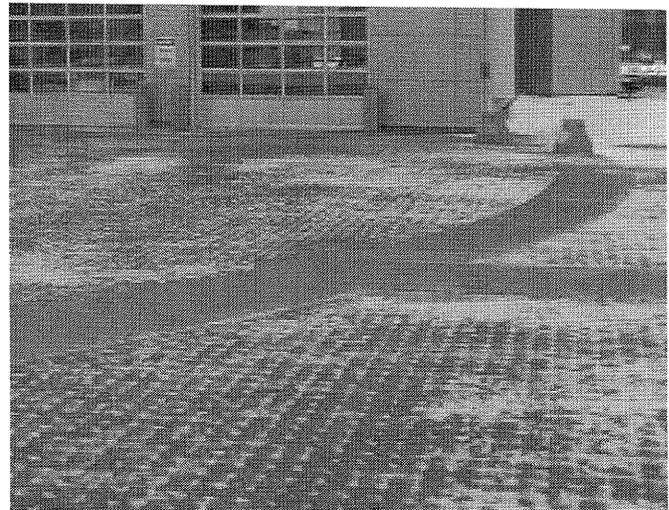
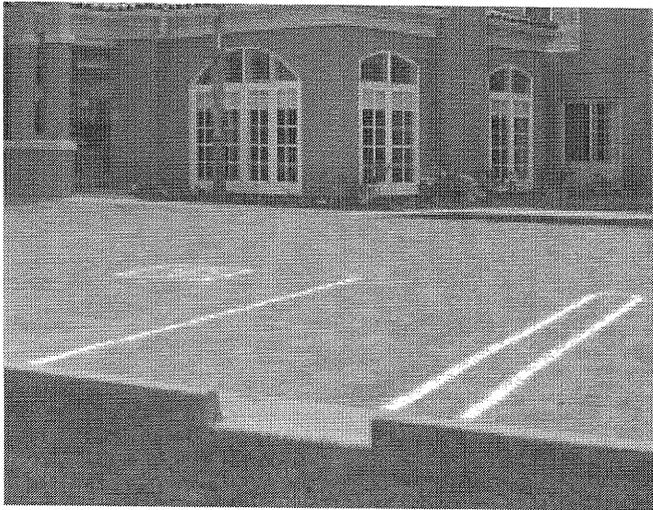


Figure 2. Examples of permeable interlocking concrete pavements for earning LEED points. The photo on the left shows a hotel entrance in southern California. The photo on the right shows the driveway and parking lot for a fire station in Toronto.

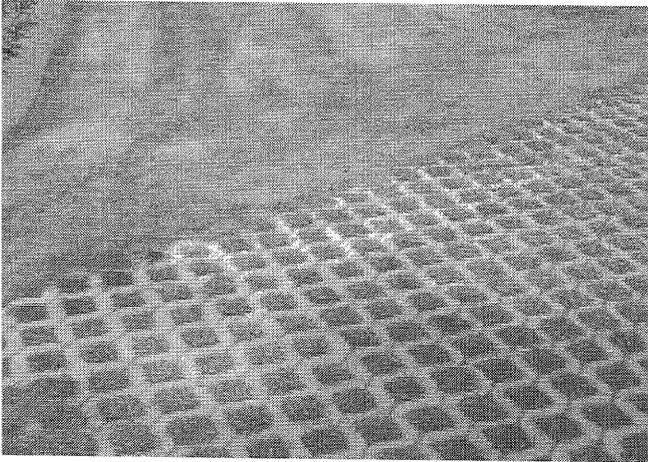


Figure 3. Concrete grid pavement substantially reduces runoff to levels approximating grass cover.

A more sophisticated runoff calculation method for calculating peak flow is the U.S. National Resource Conservation Service (NRCS) TR-55 method. TR-55 relies on development of a Curve Number or CN that characterizes the amount of runoff depth from various land uses within a catchment. The CN for PICP will vary with the infiltration rate of the underlying soil. For example, a typical CN for permeable pavements in sandy soils is in the 40s and for clay soils it might be in the 60s. Bean (2005) has characterized CNs for PICP and grid pavements.

Some municipalities use computer models to characterize urban runoff and project impacts on drainage systems. Models are sometimes calibrated with field measurements of rainfall, runoff, flows and pollutant loads. The hydrological characteristics of PICP and grid pavements can be input into these models to simulate their benefits on urban hydrology. The U.S. EPA Storm Water Management Model (SWMM) has been incorporated into software for computing the infiltration capacity of PICP (James 2003).

For the purposes of calculating site perviousness, PICP should be counted as almost 100% pervious. The rationale is that with an open-graded material in the openings and base, the long-term conservative pavement surface infiltration rate is approximately 4 in./hour (200 mm/hour) (Ferguson 2005). This well exceeds that of a grassed area whose runoff coefficient is often characterized from 0.15 to 0.25 depending on the underlying soil type.

Table 2. Design Case for Calculating Impervious Area

Surface	Area (sf)	Runoff coefficient, C (imperviousness)	Conventional design Impervious area (sf)	LEED® design with PICP & grid pavement	Impervious area, PICP & grid pavement
Asphalt pavement	14,000	0.95	13,300	2,000 (entrance)	1,900
Conventional roof	8,000	0.95	7,600	7,600	7,600
PICP		0.25		12,000 (parking)	3,000
Grid pavement		0.40		400 (fire lane)	160
Total Paved Surface Area	22,000		20,900	22,000	12,660
Total Site Area	40,000		40,000		40,000
Site Imperviousness			52%		32%

If runoff from an impervious area is directed to PICP, then PICP will be handling additional water other than rain falling directly on it. In such cases, calculate the average coefficient of runoff, C from the contributing area and the PICP and use the average for both areas. The averages would be weighted by the area of each surface. In these cases, the coefficient of runoff, C for PICP will likely be 0.25 to 0.4. Low C values should be used in high-infiltration sandy soils and higher values for lower-infiltration silt and clay soils.

Concrete grid pavements with topsoil and grass have lower, long-term surface infiltration rates, typically 1 to 2 in./hour (25 to 50 mm/hour) (Smith, 1984). Like all pervious surfaces, grid pavement will infiltrate runoff from commonly occurring storms and eventually yield 100% runoff when saturated from concentrated high-intensity storms. The advantage of grid and PICP systems is they will store runoff for a period of time and release it at saturation well after adjacent saturated soil and vegetated areas. This storage and delay in generating runoff should be considered in drainage calculations.

A design example (Table 2) follows for calculating imperviousness with PICP and grid pavers for a 40,000 sf (3,716 m<sup>2</sup>) site consisting of roofs and paving. This exemplifies the information required for LEED® documentation (USGBC 2003). The site has sandy soils with high infiltration rates. The following equations apply:

$$\text{Impervious Area} = \text{Surface area} \times \text{Runoff coefficient}$$

$$\text{Site Imperviousness [\%]} = \frac{\text{Total impervious area}}{\text{Total site area}}$$

This example shows 52% site imperviousness reduced to 32% by using PICP and grid pavement. This represents a 38% reduction in impervious cover and a corresponding runoff quantity reduction. If the total site imperviousness for conventional design was less than 50% or less, the engineer must demonstrate that a design with sustainable pavements will have a peak discharge rate not exceeding that from a 1.5 year, 24 hour storm. In this case, the conventional site design imperviousness exceeded 50%. With a 38% reduction in site imperviousness, the designer demonstrated site design with PICP and grid pavement resulted in a minimum 25% reduction in the rate and quantity of runoff.

## USGBC LEED® Credit SS 6.2 Stormwater Management: Treatment

### 1 Point

#### Intent

Limit disruption of natural water flows by eliminating stormwater runoff, increasing on-site infiltration and eliminating contaminants.

#### Requirements

Construct site stormwater treatment systems designed to remove 80% of the average annual post-development total suspended solids (TSS) and 40% of the average annual post-development total phosphorous (TP) based on the average annual loadings from all storms less than or equal to the 2-year/24-hour storm. Do so by implementing Best Management Practices (BMPs) outlined in Chapter 4, Part 2 (Urban Runoff), of the United States Environmental Protection Agency's (EPA's) Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, January 1993 (Document No. EPA-840-B-92-002) or the local government's BMP document (whichever is more stringent).

#### Submittals

Provide the LEED® Letter Template, signed by the civil engineer or responsible party, declaring that the design complies with or exceeds EPA or local government Best Management Practices (whichever set is more stringent) for removal of total suspended solids and total phosphorous.

#### Potential Technologies & Strategies

Design mechanical or natural treatment systems such as constructed wetlands, vegetated filter strips and bioswales to treat the site's stormwater.

The CGBC LEED® credit 6.2 is identical except for this addition to Submittals:

## CGBC LEED® Credit SS 6.2 Stormwater Management: Treatment

### 1 Point

If an audit of the Credit is requested during the certification process:

Provide drawings and specifications describing EPA Best Management Practices implemented for removal of TSS and TP.

Provide calculations to demonstrate that the BMPs meet or exceed the minimum treatment requirements of the credit.

### Application of Credit SS 6.2

Roof, sidewalks, driveways and streets (impervious cover) contribute additional runoff and pollution by denying infiltration of stormwater. These surfaces generate excessive amounts of runoff with sediment (TSS) and water carrying nutrients (TP) and metals. Other pollutants such as pesticides, detergent, fertilizer, oils, other chemicals and salts remain in suspension or solution in the flowing water which can damage wildlife and fish. Increase flows and pollution are directed into waterways polluting decreasing property values, fishing income and recreation opportunities. Some municipalities have older, combined sanitary and storm sewer systems. These discharge raw sewage into rivers when storm flows exceed the processing rate of the local waste treatment plant.

Since PICP reduces runoff through infiltration, it has the ability to reduce TSS and TP. Several studies have demonstrated at least 80% reduction of TSS, a good indicator pollutant treatment. Studies include James (1997) and Rushton (2001). Studies that demonstrate at least 40% TP reduction include James (1997), Rushton (2001) and Bean (2005). All studies compared reductions of pollut-

ants from PICP to that from impervious pavements. These studies provide evidence of the ability of PICP to reduce TSS and TP. In addition, the *LEED Reference Guide (2005)* suggests a 60%-80% removal efficiency for porous pavement.

Pre-treatment and filtering of runoff prior to entering PICP will assist in reducing TSS and TP emissions. Practices such as bioswales and sand filters can receive and filter runoff prior to entering adjacent PICP. These should be considered when PICP is designed to receive runoff from impervious surfaces.

### Integration with Other LEED® Credits

In addition to earning LEED® credits for reducing stormwater runoff and pollution, PICPs may earn points from Credit 7.1, Heat Island Effect, non-roof because the paving units are lighter in color than asphalt. Another point can be earned from Credit 1.1, Water Efficiency under Water Efficient Landscaping when water captured in the PICP base is used for toilet grey water or for exterior irrigation.

## **USGBC LEED® Credit SS 7.1 Heat Island Effect: Non-Roof**

*1 Point*

### **Intent**

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

### **Requirements**

Provide shade (within 5 years) and/or use light-colored/high-albedo materials (reflectance of at least 0.3)

AND/OR

open grid pavement for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, plazas, etc.;

OR

place a minimum of 50% of parking spaces underground or covered by structured parking;

OR

use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area.

### **Submittals**

Provide the LEED® Letter Template, signed by the civil engineer or responsible party, referencing the site plan to demonstrate areas of paving, landscaping (list species) and building footprint, and declaring that:

A minimum of 30% of non-roof impervious surfaces areas are constructed with high-albedo materials and/or open grid pavement and/or will be shaded within five years

OR

a minimum of 50% of parking spaces have been placed underground or are covered by structured parking

OR

an open-grid pavement system (less than 50% impervious) has been used for a minimum of 50% of the parking lot area.

### **Potential Technologies & Strategies**

Shade constructed surfaces on the site with landscape features and minimize the overall building footprint. Consider replacing constructed surfaces (i.e. roof, roads, sidewalks, etc.) with vegetated surfaces such as garden roofs and open grid paving or specify high-albedo materials to reduce the heat absorption.

The CGBC LEED® credit 7.1 is identical except for these additions to Submittals:

## **CGBC LEED® Credit SS 7.1 Heat Island Effect: Non-Roof**

*1 Point*

*If an audit of this Credit is requested during the certification process:*

Provide drawings highlighting all non-roof impervious surfaces and portions of these surfaces that will be shaded within five years. Include calculations demonstrating that a minimum of 30% of non-roof impervious surfaces areas will be shaded within five years.

OR,

Provide specifications and cut sheets for high-albedo materials applied to non-roof impervious surfaces highlighting reflectance of the installed materials.

OR,

Provide drawings and cut sheets for a pervious paving system with minimum perviousness of 50%. Include calculations demonstrating that the paving system covers a minimum of 50% of the total parking area.

### Applications of Credit SS 7.1

All segmental concrete paving can meet three of the four above Submittals. While PICP doesn't provide shade, it can be used as paving around shade trees to allow air and water to reach roots. This indirect benefit ensures a longer tree life compared to impervious pavement that deprives air and water from reaching tree roots. An example of this application in a parking lot protecting an historic tree is found in the ICPI brochure, *Project Profiles – Permeable Interlocking Concrete Pavement* (ICPI 2005).

### Albedo of Segmental Concrete

**Paving Products**—Albedo is the ratio of outbound or reflected solar radiation divided by the inbound radiation. Lighter colored surfaces indicate a higher albedo than dark surfaces. The highest albedo of 1.0 means all solar energy reflects back from a surface with no absorbed energy. The test method for determining albedo is ASTM E 903, *Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres* (ASTM 2005). Reflectance is measured over a range of wavelengths and averaged to provide a single albedo value.

According to the LEED® Reference Guide (2003) new concrete made with gray cement has an albedo of 0.35 to 0.40 and weathered concrete 0.20 to 0.30. New concrete made with white cement generally has an albedo of 0.7 to 0.8 and 0.4 to 0.6 when weathered. White cement is about twice as expensive as grey cement. However, some normal cement can be light in color and be cost competitive. Cement and aggregate colors influence concrete color. For segmental concrete paving products, light colored aggregates and surface treatments with white cement can contribute to a higher albedo. Figure 4 shows an application with light colored paving slabs. By comparison, asphalt reflectance is 0.05 to 0.10 when new and 0.10 to 0.15 when weathered.

According to a study by Lawrence Berkeley National Laboratories (Pomerantz, 2000), new asphalt exhibited an albedo of 0.04 and five year-old pavements 0.12, substantially lower the 0.3 recommended in the LEED® rating system. In their experiments, they found that an increase in albedo of about 0.1 produces a decrease in pavement temperature of about  $4^{\circ} \pm 1^{\circ} \text{C}$  ( $-7^{\circ} \pm 2^{\circ} \text{F}$ ) when there is little wind. Increasing wind speed lowers the surface temperature and diminishes the influence of the change in albedo.

While the study didn't examine unit concrete paving, it can meet the minimum 0.30 albedo requirement in LEED® if manufactured with natural or light colored finishes. Therefore, segmental concrete paving products can contribute to reducing surface temperatures. This helps reduce the urban heat island, the dome of heat over

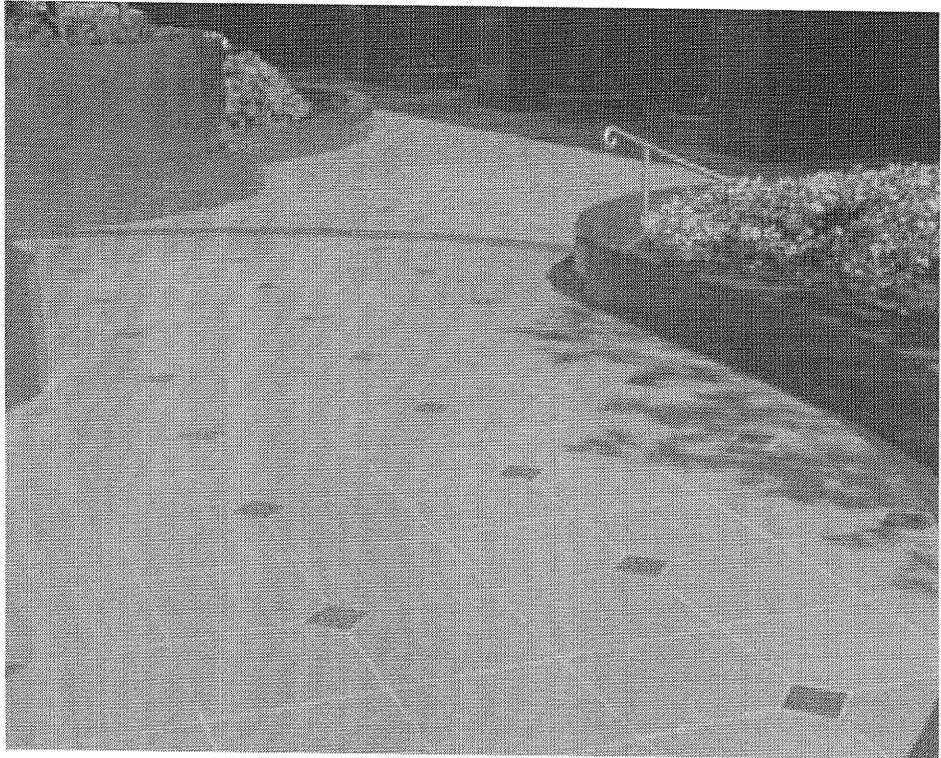


Figure 4. Light colored paving slabs in this office building entrance reflect light and help reduce micro-climatic temperatures.

urban areas that traps air pollutants and increase air conditioning costs.

**Grid pavement**—Concrete grid pavements with grass have been shown to contribute some cooling benefit. Compared to asphalt, grassed grid pavements will reduce surface air temperatures by  $2^{\circ}$  to  $4^{\circ} \text{F}$  ( $1^{\circ}$  to  $2^{\circ} \text{C}$ ) and radiometric temperatures by  $4^{\circ}$  to  $6^{\circ} \text{F}$  ( $2^{\circ}$  to  $4^{\circ} \text{C}$ ) (Smith, 1981). Evapo-transpiration from the grass provides this cooling. Concrete grid pavers are recommended for overflow or intermittent parking areas and aren't intended where cars park regularly. Grids and grass will provide heat reducing benefits without vehicles on the. Areas with regular parking should be paved with PICP.

ICPI members may provide albedo information for specific grid designs with grass or with aggregate in the openings. Like concrete pavers, slabs and PICP, grid pavement can meet the minimum 0.30 albedo LEED® requirement. Light colored aggregate can be used in the openings as needed to contribute to high reflectivity. LEED® defines open-grid pavement as one having less than 50% imperviousness. This includes grids and PICP.

# Detention and Volume Control Opportunities

Using the permeable paving base for stormwater detention is a very efficient use of land. With this system, the surface is pervious, allowing detention to be contained underneath. Detention is under every square foot of permeable paving, as deep as necessary. Traditional surface detention ponds which act as holding facilities for rainfall are a waste of space. For most land uses and all impervious areas, such as roofs, roads and parking lots, stormwater runoff flows through a system of pipes that release it into detention or retention ponds. This valuable surface area could be much more effectively utilized.

Permeable paver systems use crushed, angular, open-graded aggregate base materials. These materials are entirely different from those used for traditional impervious roads and parking lots. Those traditional systems use dense-graded aggregates containing fines, making them extremely slow-draining. Conversely, the use of open-graded aggregates provides a void space or porosity of approximately 40 percent. This is utilized for detention and allows for a rapid surface infiltration rate of over 500" (12,700 mm) per hour (see page 16 for aggregate infiltration rates).

## BASE STORAGE CAPACITY

Criteria				Rainwater Harvest Volume		Base Storage Capacity		Surplus / Storage		% Used
Rainfall In/Hr (mm/hr)	Surface Area FT <sup>2</sup> (m <sup>2</sup> )	Base Depth In (cm)	Void Space	Cubic Ft (m <sup>3</sup> )	Gallons (m <sup>3</sup> )	Cubic Ft (m <sup>3</sup> )	Gallons (m <sup>3</sup> )	Cubic Ft (m <sup>3</sup> )	Gallons (m <sup>3</sup> )	
1 (25 mm)	43,560 (4,047 m <sup>2</sup> )	12 (30 cm)	40%	3,630 (103 m <sup>3</sup> )	27,154 (103 m <sup>3</sup> )	17,424	130,341 (493 m <sup>3</sup> )	13,794 (391 m <sup>3</sup> )	103,187 (391 m <sup>3</sup> )	20.8%
1 (25 mm)	43,560 (4,047 m <sup>2</sup> )	18 (46 cm)	40%	3,630 (103 m <sup>3</sup> )	27,154 (103 m <sup>3</sup> )	26,136	195,511 (740 m <sup>3</sup> )	22,506 (637 m <sup>3</sup> )	168,357 (637 m <sup>3</sup> )	13.9%
3.5 (89 mm)	43,560 (4,047 m <sup>2</sup> )	12 (30 cm)	40%	12,705 (360 m <sup>3</sup> )	95,039 (360 m <sup>3</sup> )	17,424	130,341 (497 m <sup>3</sup> )	4,719 (134 m <sup>3</sup> )	35,302 (134 m <sup>3</sup> )	72.9%
3.5 (89 mm)	43,560 (4,047 m <sup>2</sup> )	18 (46 cm)	40%	12,705 (360 m <sup>3</sup> )	95,039 (360 m <sup>3</sup> )	26,136	195,511 (740 m <sup>3</sup> )	13,431 (380 m <sup>3</sup> )	100,472 (380 m <sup>3</sup> )	48.6%
5 (12 mm)	43,560 (4,047 m <sup>2</sup> )	24 (61 cm)	40%	18,150 (520 m <sup>3</sup> )	135,770 (520 m <sup>3</sup> )	34,848	260,681 (987 m <sup>3</sup> )	16,698 (473 m <sup>3</sup> )	124,911 (473 m <sup>3</sup> )	52.1%
7.4 (188 mm)	43,560 (4,047 m <sup>2</sup> )	18 (46 cm)	40%	26,862 (761 m <sup>3</sup> )	200,940 (761 m <sup>3</sup> )	26,136	195,511 (740 m <sup>3</sup> )	(26,136) (21 m <sup>3</sup> )	(21,529) (21 m <sup>3</sup> )	102.8%

Detention volumes or storage capacities for permeable paving are based on different rainfall events.



Flooded parking lot – Ludington, Michigan, June 2008

Photo supplied by *Muskegon Chronicle*

# Benefits of Infiltration



**Product:** Eco-Optiloc™ **Location:** Chicago, Illinois  
**Project:** Couch Place  
**Design:** Globetrotters Engineering Corporation



**Product:** Eco-Priora™ **Location:** Easton, Massachusetts  
**Project:** Stonehill College South Quadrangle, Plaza Landscaping Project  
**Design:** Landscape Architecture: Brown Sardina  
 Civil Engineering: Nitsch Engineering

Infiltration is extremely important to the groundwater supply. According to the U.S. Geological Survey, one of America's most important natural resources is groundwater. Half of the drinking water in the U.S. comes from groundwater, with the balance coming from lakes and rivers. It is vital to agriculture and other industries, as well as essential for ensuring the health of rivers, streams, wetlands and other water bodies. Urban sprawl contributes to the decrease in pervious area for rainwater infiltration and reduced groundwater levels. Soil infiltration is a simple method for ensuring future water availability.

Installing a permeable paver system above porous soils allows for stormwater infiltration, reducing runoff and flooding. Most soils, even clay, allow for some infiltration. Soils with high porosity, such as sand, can have a higher infiltration rate than the actual rate of rainfall. For example, if it is raining at a rate of 2" (51 mm) per hour, and the soil has an infiltration rate of 4.5" (114 mm) per hour, the soil will absorb water before it can run off. Even poor soil with a low infiltration rate will work. For example, a soil with 0.25" (6 mm) per hour of infiltration will have complete infiltration after about four hours per inch of rainfall. However, most rainfall events generate only up to 0.5" (13 mm) of water.

*The typical soil infiltration rate at the U.S. Cellular Field parking lot is 7" per hour (see photo opposite).*

## Typical Infiltration Rates of Various Soil Groups

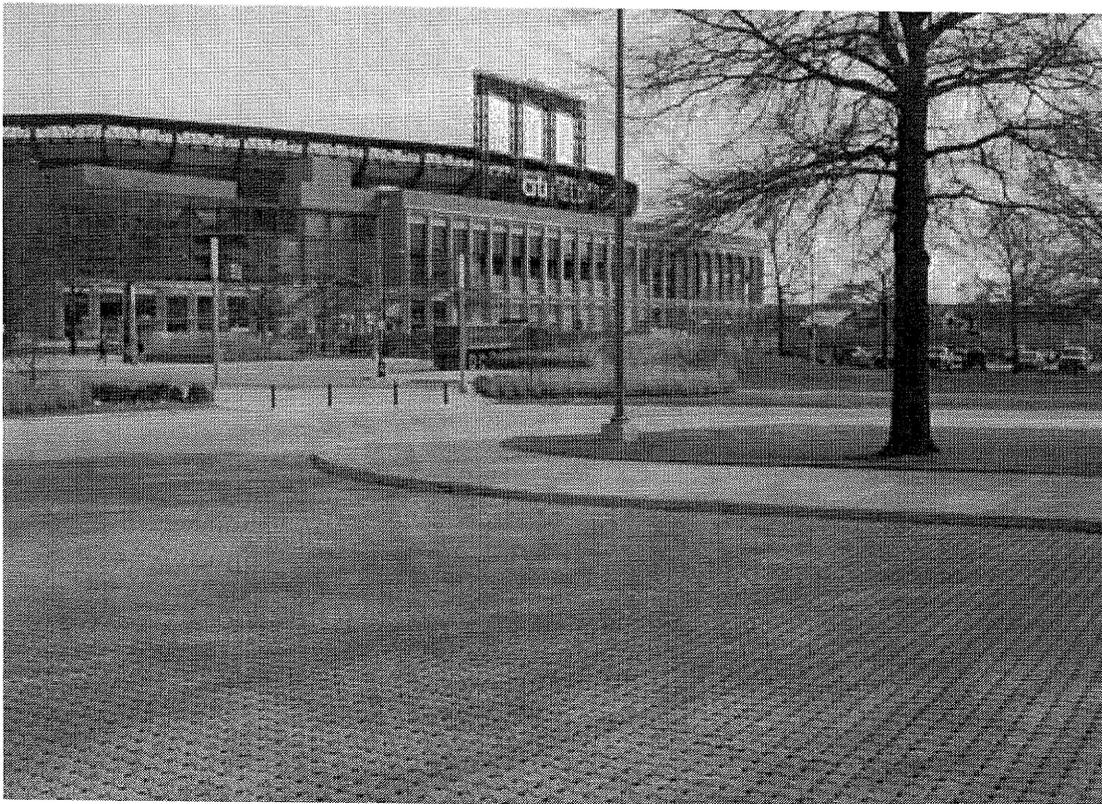
Soil Conservation Service Group	Typical Soil Type	Saturated Infiltration Rate	
		in/hr	mm/hr
A	Sand	8.27"	210 mm
A	Loamy Sand	2.41"	60 mm
B	Sandy Loam	1.02"	26 mm
B	Loam	0.52"	12.7 mm
C	Silt Loam	0.27"	6.8 mm
C	Sandy Clay Loam	0.17"	4.3 mm
D	Clay Loam and Silty Clay Loam	0.09"	2.3 mm
D	Clay	0.06"	1.5 mm

# Permeable Paver Design Considerations

For traditional non-permeable surfaces, rainfall intensity and duration are normally analyzed together. However, with a permeable paver surface, intensity is less of a factor as the surface infiltration rate will exceed the capabilities of most storms. The permeable paver surface infiltration rates are capable of capturing more than 100" (2,540 mm) per hour. The paver joints must be adequately maintained to allow for maximum infiltration. For larger rainfall events, duration is important to recognize, even though many rainfall events only last for several minutes. For example, a heavy rain could fall at 6" (152 mm) per hour, but the duration may only last for 10 minutes with a resulting actual rain amount of only 1" (25 mm). Longer duration events can often be more demanding, even with less intensity. Actual monthly rainfalls in the Midwest, for example, average 4" (100 mm). Permeable paving systems can easily contain most rainfall events.

A runoff coefficient (C value) is used to measure the percentage of water that runs off different surface types. For example, bituminous asphalt has a C value of 0.85. This means that during a rainfall, 85 percent of the water will run off the surface. (Source: Design and Construction of Sanitary and Storm Sewers, American Society of Civil Engineers, New York, p. 332, 1969). In comparison, turf has a C value of 0.15 or 15 percent. The C value of permeable paving, with up to a 5 percent slope, is actually zero, unless the rainfall intensity exceeds the surface infiltration rate or the entire open-graded base reaches capacity. With a properly designed permeable paver system, capacity will rarely be reached. Again, to achieve maximum surface infiltration, maintenance of the joints may be necessary (see charts on pages 16–17).

Soil infiltration is another way to absorb runoff. During the site investigation project phase, conducting a geotechnical or porosity test will determine the soil infiltration rate, which will establish stormwater design requirements. Typical industry recommendations suggest installing an underdrain for soil with less than 0.5" (13 mm) per hour of infiltration. It is possible for underdrain systems to be eliminated for soils with infiltration rates greater than 0.5" (13 mm) per hour.

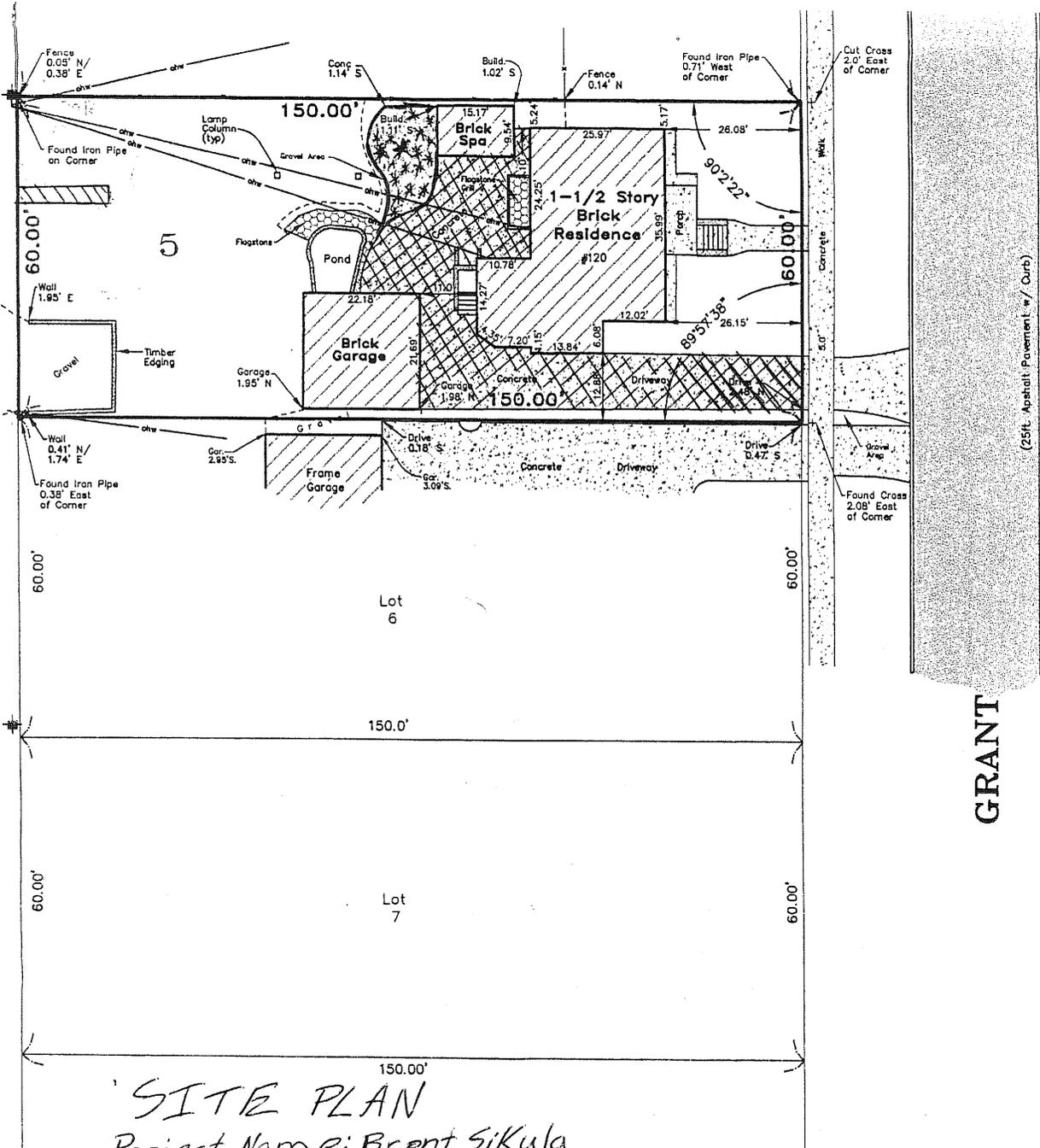


**Product:** Ecoloc®

**Location:** Flushing, New York

**Project:** Citi Field

**Design:** Jack L. Gordon Architects



GRANT

(25ft. Asphalt Pavement w/ Curb)

# SITE PLAN

Project Name: Brent Sikula

Project address: 120 N. Grant St.

Prepared by: Scott Padjasek

CMS Landscapes

Prepared on 9/13/2012

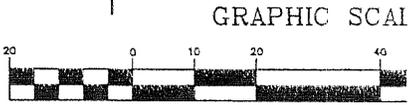
## Site Plan Legend

Remove concrete → \* \* \* \* \*  
install grass lawn

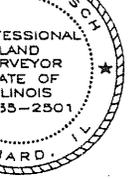
Remove concrete → [Cross-hatch pattern]  
install permeable pavers

Install permeable pavers → [Diagonal line pattern]

Prepared For: Brent Sikula



( IN FEET )  
1 inch = 20 ft.



No.	Date	Revision Description	By.

**GLEN D. KRIS**  
PROFESSIONAL  
1716 South Finley Road  
**SURVEYING - CO**  
Scale: 1"=20' Drawn: MLO

