Illinois Green Infrastructure Grant for Stormwater Management: Final Project Report

Green Alley Improvements

Village of River Forest

Financial Assistance Agreement No. 1303

This report was prepared using Illinois Green Infrastructure Program for Stormwater Management funding distributed through the Illinois Environmental Protection Agency. The findings and recommendations herein are not necessarily those of the funding agencies.

Draft: January 11, 2016

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Summary

In November of 2013, the Village of River Forest was awarded $484,169 in funds from the Illinois Green Infrastructure Grant (IGIG) program, which was used to make improvements to existing asphalt alley pavement located in the northeast part of the Village using Best Management Practices (BMPs). The design elements included the replacement of existing asphalt alley pavement located in the northeast portion of the Village of River Forest with 25,300 square feet of permeable interlocking concrete pavement.

Stormwater runoff from the alley pavement drains into combined sewers which ultimately discharge to the Des Plaines River which has been assessed as impaired and not supporting aquatic life, fish consumption and primary contact, according to the 2010 Illinois Integrated Water Quality Report and Section 303 (d) List. The overall objective of the Green Alleys project is to maximize the amount of water infiltrating into the ground and minimize the amount of pollutant load and volume of runoff flowing into the combined sewer system and ultimately the Des Plaines River.

Anticipated Results

The approved design included the installation of 25,300 square feet of permeable pavement for the cost of $580,000. It is anticipated that with the installation of permeable pavement the quality of the stormwater runoff entering the Des Plaines River would be improved, leading to enhanced water quality downstream. Permeable pavement acts to filter salt, dirt, and suspended solids from stormwater.

Additionally, the alley improvements aim to reduce potential flooding. The incorporation of BMPs should provide a reduction in the rate of runoff from the project area. Permeable pavement allow stormwater to percolate into the ground beneath and provide additional stormwater infiltration and storage volume during a rain event.

Conclusions

The construction of the permeable pavement was completed in the summer of 2015. Since the construction was completed, there have been noticeable improvements in infiltration and the quality of runoff from the alleys. During the multiple rain events since the alleys were constructed, no ponding occurred in the alleys, and runoff discharged to combined sewer system was clear of typical alley pavement debris.

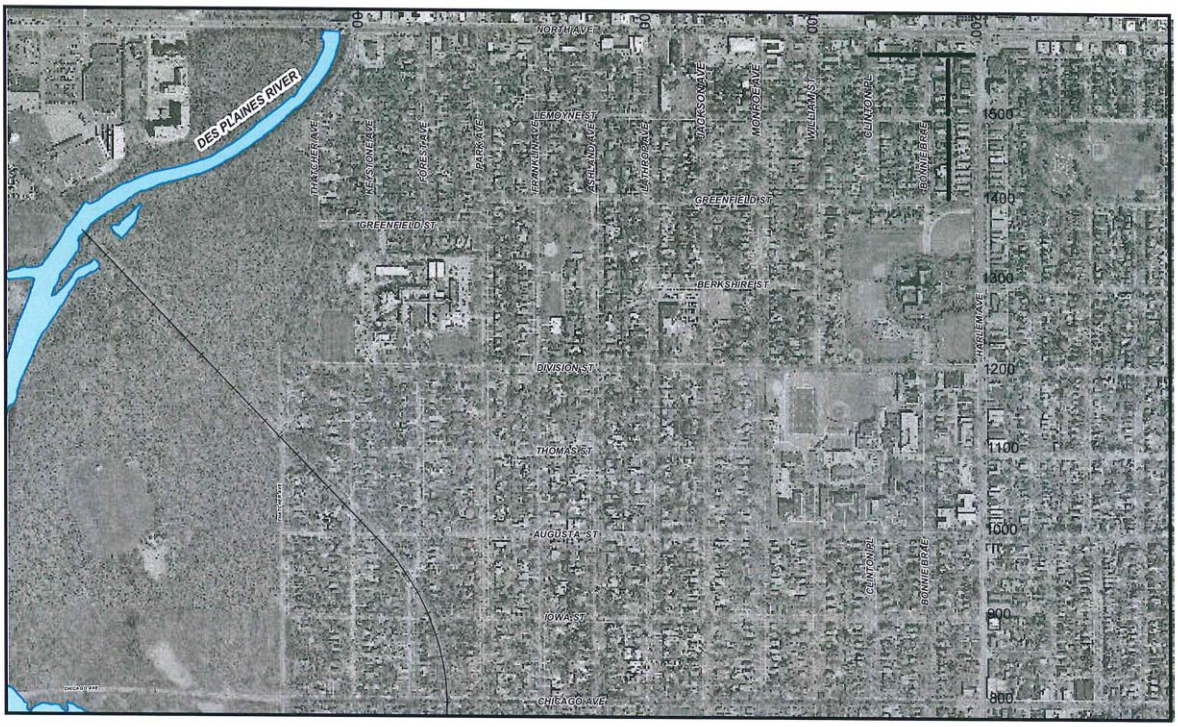
Recommendations

The alleys will need to be continuously monitored to determine the effectiveness of the newly constructed improvements, and maintain the areas as needed. A long term maintenance plan (see Appendix) has been prepared and the Village of River Forest will be responsible for operations and maintenance of the permeable pavement.

Introduction

Project Location

The project site is located in the northeast portion of the Village of River Forest. The project involved the construction of four (4) permeable pavement alleys in the area bounded by North Avenue on the North, Greenfield Street on the south, Harlem Avenue on the east and Clinton Place on the west (see Exhibit 1 below). The Village of River Forest is located 10 miles west of downtown Chicago with a population of approximately 11,200 people. Neighboring communities include the Village of Elmwood Park, Village of Oak Park, Village of Forest Park and the City of Chicago.



VILLAGE OF RIVER FOREST
400 PARK AVENUE
RIVER FOREST, IL 60305

GREEN ALLEYS PROJECT
LOCATION MAP

N W E S
0 375 750 1,500 Feet
DATE: 12/5/11

Purpose

Major threats to the Watershed are flooding, hydrologic modification, fragmentation of habitat, and the spread of non-native and invasive species. The Des Plaines River is one of the most flood-prone waterways in the region, with 1 to 2 damaging floods occurring every 10 years since 1930. Hydrologic modifications such as dams built along the river and the conversion of wetlands into farmland have only exacerbated the problem. Historical flooding in 1986 and 1987 caused over $100 million in damage in communities along the Des Plaines River, including River Forest.

The purpose of the project was to implement a green infrastructure project that will significantly enhance the Village's current efforts to minimize the volume of stormwater runoff entering its combined sewer system. The Village will construct green alleys in an area that experiences particularly severe incidences of flooding during periods of intense rain. The excess runoff in these locations burdens the Village's sewer system leading to flooding, sewer backups and CSOs into the Des Plaines River. The overall objective of the Green Alleys project is to maximize the amount of water infiltrating into the ground and minimize the volume of runoff flowing into the combined sewer system. In addition with this project, the Village of River Forest improved the quality of stormwater runoff from this area which eventually enters the Des Plaines River.

Project Plan

Recognizing a need for improved water quality, the Village of River Forest proposed the replacement of part of the existing alley pavements with permeable pavement in order to promote stormwater infiltration and reduce the amount of polluted runoff into the Des Plaines River. The IGIG funds were used to install permeable paving with a subsurface gravel infiltration bed. This work was accomplished by removing the existing asphalt and its graded base, installing an open grade base and then final installation of the permeable bricks. Table 1 shows a detailed time frame of the project activities.

Table 1. Project Time Frame

Date	Activity
July 23, 2014	Project Advertising, Plans Available for Bid
August 8, 2014	Bids Opening
August 22, 2014	Approval of Award
October, 2014	Construction Began
December 2014	Construction halted for Winter
May 2015	Construction began on remaining alleys
July 2015	Substantial Completion
January, 2016	Final Quarterly Report
January, 2016	Submit Final Project Report to Illinois EPA

Preliminary design, topographic, survey, and geotechnical investigation were completed prior.

Discussion

Project Tasks

Construction on the alley pavements began in September 2014 in two of the four alleys. Permeable brick pavers were installed. There are significant advantages to using permeable pavers over conventional asphalt. The alleys were previously constructed of asphalt, which has no infiltration capabilities and caused water to pond and flood the surrounding area during heavy rains. Permeable pavers are a form of low impact development, allowing rainwater to percolate into the ground and recharge the groundwater supply. This reduces the amount of stormwater runoff from the site, and also reduces the concentration of pollutants entering adjacent waterways.

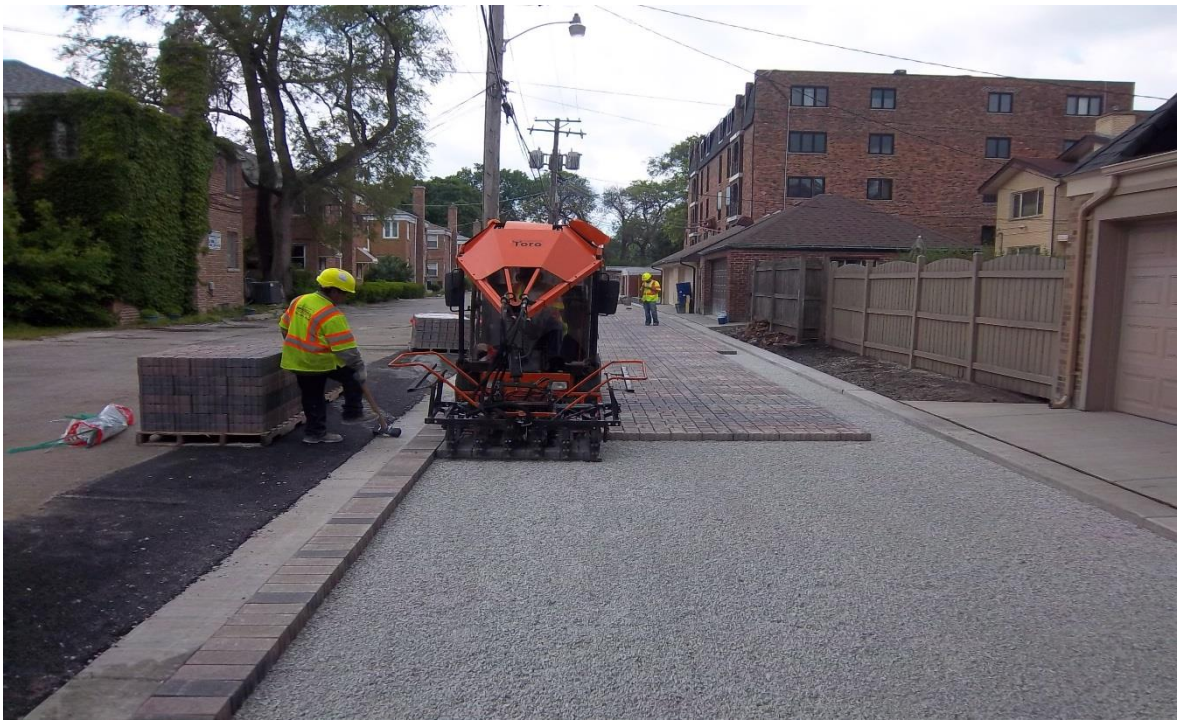
Permeable brick pavers are only durable enough for low speed, low traffic areas such as parking lots, alleys, and driveways. Additionally, permeable pavers can be prone to clogging from sand and other fine debris that fill the voids between the pavers, preventing proper infiltration. For this reason, periodic maintenance of the pavers is critical to its performance as a stormwater management system.

Inspections & Maintenance

Daily inspections were performed to ensure that the drainage voids in the permeable pavement surface were clean and clear from all debris, and to remove debris that had accumulated. After heavy rain events, the voids were inspected and cleared of any organic debris. During the spring and fall, the surface was swept and vacuumed every three months, high pressure hosing was applied, and the voids were filled with clean gravel if needed. During the winter, inspections were completed after significant snowfall had melted, debris was removed and voids were filled as necessary. Construction was finished July 2015.

Photographs of the construction progress are shown on the following pages.

SPEED
LIMIT
10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Intended Goals

Village of River Forest anticipated that the permeable pavement would reduce non-point source pollutants associated with urban runoff in the impaired waterway, the Des Plaines River. By incorporating best management practices, the rate of runoff from the project area will be reduced by 97 percent for a moderate-intensity one-day storm. A moderate intensity storm implies 3 inches of precipitation for the day, approximately a 10% probability or "10 year" storm. The following tables show the expected pollutant load reductions calculated using the Illinois EPA Best Management Practices (BMP) spreadsheet.

Table 2. Pollutant Load Reduction for Permeable Pavement

Parameter	Load Reduction lbs/year
Biological Oxygen Demand	Unknown
Chemical Oxygen Demand	Unknown
Sediment	756
Lead	1
Copper	Unknown
Zinc	1
Total Dissolved Solids	Unknown
Total Nitrogen	13
Total Kjeldahl Nitrogen	Unknown
Dissolved Phosphorus	Unknown
Total Phosphorus	1
Cadmium	Unknown

Results

Water Quality & Stormwater Runoff Improvements

At this time, water quality testing has not been performed to measure the current pollutant levels in stormwater leaving the site. Table 2 (above) shows the expected load reduction per year for the permeable pavement. As a result of the updated infrastructure, it is anticipated that the sediment will be reduced by 1,340 pounds per year. We will likely see reductions in total nitrogen and total phosphorus due to the new permeable pavement.

Project Findings

The main intent was reducing the amount of water entering the Des Plaines River as well as reducing pollutants entering the Des Plaines River through the use of permeable pavement. Ultimately, this project was able to achieve that measure of sustainable success that aligned with the grant criterion.

Cost Effectiveness

Generally, permeable paving construction costs are higher than for conventional asphalt or cement paving, as they are much more labor intensive to install. The associated maintenance costs also need to be taken into consideration, which includes annual vacuum sweeping and monitoring. However, permeable pavers do have various cost benefits over conventional asphalt. Permeable paving reduces the need for stormwater conveyances and treatment structures, and therefore the costs associated with these. Additionally, it reduces the amount of land needed for stormwater management, allowing more development on a site. Permeable pavers require less deicing treatments, which are a significant expense, because melting snow and ice can infiltrate directly into the pavement, facilitating faster melting.

This project involved replacement of part of the existing HMA (traditional) pavement with permeable paver bricks, which totaled about 25,320 square feet of alley pavement area. For the entire permeable area, the cost of construction was approximately $475,000 at a unit cost of about $18.75 per square foot of permeable pavement, which includes the stone base. Traditional pavement for the same area would have cost approximately $330,000 at a unit cost of $13.00 per square foot. Without the IGIG funds, permeable pavement likely would not have been an option for this project.

Through the IGIG program, Village of River Forest received $403,565 for construction which brought the total cost down below the cost of traditional pavement without grant funds. The IGIG funds made the permeable pavement a viable and sustainable option for the Village that will continue to provide long term benefits into the future.

Appendix

Executed FAA IGIG 1303

Operation and Maintenance Plan

Financial Assistance Agreement

State of Illinois
Illinois Environmental Protection Agency
Bureau of Water

AGREEMENT PERIOD:
The period of performance covered by this Agreement shall be from **The Date of Execution** through October 31, 2015. No services will be paid which are performed prior to or subsequent to this performance period.

Assistance Amount $ 484,169.00

Agreement Type IGIG Agreement Number IGIG1303

Recipient Village of River Forest

Address 400 Park Avenue
River Forest, Illinois 60305

Telephone (708) 366-8500
Fax (708) 366-3702

Project Description/Scope of Work

RIVER FOREST GREEN ALLEYS

Under this Agreement, the Recipient shall complete the following tasks.

DESIGN SPECIFICATIONS

1. The Recipient shall prepare design specifications (Design) for the construction of stormwater best management practices (BMPs) to reduce stormwater volume and nonpoint source pollution to the DesPlaines River located in Village of River Forest in Cook County, Illinois. The Design shall include the replacement of 34,800 square feet of existing asphalt in five separate alleys located in the area bounded by North Avenue on the north, Greenfield Street on the south, Harlem Avenue on the east, William Street on the west with 30,500 square feet of permeable interlocking concrete pavement in River Forest, Illinois. The permeable pavement shall be placed in a twelve feet center of alleys right-of- way along with Portland cement concrete edging over a layer of open-graded stone that will serve as the structural base as well as provide temporary storage of runoff before it infiltrates into the sub-grade or slowly drains via perforated pipe in the stone base. The BMPs shall be designed to filter runoff so as to remove suspended sediment, heavy metals, oil and grease, nutrients, and other suspended and soluble nonpoint source pollutants as well as reduce runoff volume and velocity while providing other beneficial hydrologic functions. The BMPs shall be designed to filter rooftop runoff so as to remove suspended sediment, nutrients, and other suspended and soluble nonpoint source pollutants as well as reduce runoff volume and velocity while providing other beneficial hydrologic functions. The BMPs shall be designed so as to uptake and infiltrate smaller rain events.

   The Design shall identify the type and location of selected BMPs, describe the environmental problems associated with the sites and the criteria used to select each practices, and provide a

detailed blueprint for their cost, advantages and disadvantages, location, design, maintenance, installation and construction, and materials used including plant species. The Design shall also include an estimate of pollutant removal efficiency calculated using the Illinois EPA's Estimating Pollutant Load Reductions for Nonpoint Source Pollution Control BMPs workbook. The Design shall meet the requirements of the Illinois Urban Manual and the Native Plant Guide for Streams and Stormwater Facilities in Northeastern Illinois. The Design must be certified by a registered professional engineer or NRCS staff unless the Recipient obtains a waiver of this certification requirement from the Illinois EPA. Two (2) copies of the draft Design and "IGIG BMP Application Form" shall be completed and submitted by the Recipient to the Illinois EPA by January 31, 2014. Two (2) paper copies and one (1) electronic copy of the final Design and IGIG BMP Application Form" shall be completed and submitted by the Recipient to the Illinois EPA by February 28, 2014.

PERMITS & LANDOWNERS AGREEMENTS

2. The Recipient shall secure all necessary permits prior to the implementation of the Design developed under Item 1 of this Agreement. The Recipient shall enter into appropriate legally binding arrangements with participating landowners to ensure that the BMPs are maintained as designed and that the operation and maintenance procedures are implemented for at least ten (10) years from the implementation of the BMPs. The Recipient shall submit a draft of the arrangement to the Illinois EPA by January 31, 2014. The Recipient shall submit a copy of the executed arrangement to the Illinois EPA by February 28, 2014.

DESIGN IMPLEMENTATION

3. The Recipient shall implement the Design developed under Item 1 of this Agreement. The Recipient shall complete the installation and construction of the BMPs by July 31, 2015. Photographic images, including before and after shots of the BMP location, documenting Design implementation shall be completed and submitted by the Recipient to the Illinois EPA by October 31, 2015.

PROJECT EVALUATION AND REPORT

4. The Recipient shall prepare a report explaining the execution of the River Forest Green Alleys (i.e., pre and post conditions, type and location of practices, practice design, methods of practice installation) and evaluating the project's success, including but not limited to improvements in water quality and stormwater runoff reductions. The report shall document the project tasks and summarize the findings of the project, including a discussion of the cost-effectiveness of selected practices in relationship to alternative management strategies. Two (2) copies of the draft report shall be completed and submitted by the Recipient to the Illinois EPA by August 31, 2015. The final report shall be completed and three (3) paper copies and one (1) electronic copy submitted by the Recipient to the Illinois EPA by October 31, 2015.

OTHER DIRECTED ACTIVITIES

5. The Recipient shall be available for coordination and progress briefings. The dates and locations of these briefings will be specified by the Illinois EPA in consultation with the Recipient during the course of the project.

6. The Recipient shall submit a written progress report by the fifteenth (15th) of January, April, July and October occurring during the Agreement Period. Whenever practical reports should be submitted printed two-sided.

7. All products produced and all work performed by the Recipient under this Agreement shall be subject to review and approval by the Illinois EPA to determine eligibility and acceptability in meeting the terms and intent of this Agreement.

8. The Recipient and the Illinois EPA retain the right to cite, quote, circulate, and reprint all documents and other materials produced under this Agreement. The Recipient will include in any publications for external general circulation (including all press releases, brochures, newsletters, Web sites, and presentation materials) the following phrase: "Funding for this project provided, in part, by the Governor of Illinois and the Illinois Environmental Protection Agency through the Illinois Green Infrastructure Grant Program."

9. At each site where BMPs are installed under this Agreement, the Recipient shall design and erect a sign which acknowledges the participating agencies and identifies the Illinois Green Infrastructure Grant Program for Stormwater Management as a funding source of the project. Sign design must be approved by, and consistent with the specifications of, the Illinois EPA prior to their installation at any site. Designs for all signs shall be completed and submitted by the Recipient to the Illinois EPA by February 28, 2014. The Recipient shall erect the signs approved by the Illinois EPA prior to the installation of the BMPs at its particular site. The signs shall remain in place throughout the installation of the BMPs and for a period thereafter as mutually agreed upon by the Recipient and the Illinois EPA. The Recipient shall complete the installation of all signs approved by the Illinois EPA by May 31, 2014.

10. The Recipient shall develop Operation and Maintenance Plans (O & M Plan) for the BMPs implemented under this Agreement to ensure their long-term viability (at least ten years). The O & M Plan shall identify regular inspection needs and appropriate management activities such as sediment and debris removal, replacement of vegetation and hardware, chemical treatment, etc. The O & M Plan shall identify both coordinating (i.e., local governments) and participating (i.e., citizen groups, landowners) parties to carry out inspection and management needs and the financial resources necessary for implementation of the O & M Plan. A draft of all O & M Plans shall be completed and submitted by the Recipient to the Illinois EPA by January 31, 2014. The final O & M Plan shall be completed and submitted by the Recipient to the Illinois EPA by April 30, 2014.

Project Schedule

Description	Completion Date
DESIGN SPECIFICATIONS	
1. Draft Design Specifications	January 31, 2014
Final Design Specifications	February 28, 2014
PERMITS & LANDOWNER AGREEMENTS	
2. Draft Permits and Landowner Agreements	January 31, 2014
Final Permit and Landowner Agreements	February 28, 2014
DESIGN IMPLEMENTATION	
3. Design Implementation	July 31, 2015
Submit Photographic Documentation of Implementation	October 31, 2015

PROJECT EVALUATION & REPORT

4. Draft Report	August 31, 2015
Final Report	October 31, 2015

OTHER DIRECTED ACTIVITIES

6. Progress Reports	Quarterly as stipulated
9. Sign Design	February 28, 2014
Install Sign	May 31, 2014
10. Draft O & M Plan	March 31, 2014
Final O & M Plan	April 30, 2013

Estimated Allowable Project Costs

Project Cost Summary	Totals
1. Direct Labor	0.00
Professional	0.00
Technical	0.00
Administrative	0.00
2. Indirect Costs	0.00
Indirect	0.00
3. Equipment, Materials, Supplies	0.00
Equipment, Materials, Supplies	0.00
4. Subcontracts	569,610.00
Design/Engineering	41,000.00
Permitting	0.00
Construction	491,610.00
Construction Oversight	37,000.00
5. Other	0.00
Other	0.00
TOTAL	**$ 569,610.00**

Assistance Amount at	**85%**	**$ 484,169.00**
Recipient Share at	**15%**	**$ 85,441.00**

Comments on Allowable/Excluded Costs

Offer and Acceptance

This Financial Assistance Agreement is subject to all applicable State and Federal statutory provisions, State and Federal Grant Regulations, and the Organization Certifications and Grant Conditions attached hereto and provided as part of the Recipient's Application for Assistance.

For the State of Illinois Environmental Protection Agency:

The Director (herein called the "Director") of the Illinois Environmental Protection Agency, in accordance with the authority given in the Environmental Protection Act, and in appropriation by the General Assembly made pursuant thereby, hereby offers financial assistance to the Recipient, up to and not exceeding the specified amount, for the support of the efforts contained in the Project Description.

Director Lisa Bonnett **Date** 11/7/13

(Lisa Bonnett - Director)

By Carol Radwine

Printed Name Carol Radwine

Title CFO

On behalf of the Recipient:

I the undersigned, being duly authorized to take such actions, do hereby accept this offer and agree to all terms and conditions including the Organization Certifications and Grant Conditions provided as part of the Recipient's Application for Assistance. I certify under oath that all information in this Agreement is true and correct to the best of my knowledge, information, and belief, that the funds shall be used only for the purposes described in this Agreement, and the award of grant funds is conditional upon such certification.

Recipient_____ **Date** _____

Signature_____

By_____

Printed Name_____

Title_____

For the State of Illinois Environmental Protection Agency:

Therefore, the State of Illinois executes this Agreement this ____day of _____, 2013.

Village of River Forest

Operation and Maintenance Plan for Permeable Brick Alley Pavement

Illinois Green Infrastructure Grant No. IGIG1303

October 2015

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MAINTENANCE 2

EQUIPMENT 3

SEASONAL CLEANING SCHEDULE 4

WINTER MAINTENANCE 5

Typical Maintenance Issues

The following is a list of common warning signs and visual clues to common maintenance issues which must be addressed or remediated to ensure continued surface infiltration.

- Slow Draining/Runoff
- Ponding and Bird Baths
- Surface Crusting
- Weeds
- Covered Joint Material

Maintenance

Preventive Maintenance

Preventive maintenance removes most miscellaneous debris before being trapped in the joint aggregate material causing clogging. This usually does not require removal of any joint material to restore infiltration.

Visual Inspections

Inspection of the green alleys shall be done by the Village Engineer, who must be a Licensed Professional Engineer in the State of Illinois and be a Certified Erosion and Sediment Control Inspector. The Village Engineer shall visually inspect the green alleys to observe if clogging of the aggregate between the pavers exists. These inspections shall take place in every three months from spring to fall (April, July and October. These inspections shall include looking for staining of the pavement which indicates ponding of water, accumulated debris and sediment, missing aggregate between pavers and any cracked or displaced pavers.

Pavers shall be considered clogged when the open space between aggregate particles is no longer visible or when evidence of ponding water exists. If there is evidence that the aggregate is clogged, Break up any crust covering joint aggregate material with hand broom or rotary sweeper and dispose of debris. Then the public works department shall perform a simple test of pouring water from a bucket over the pavers. The water should rapidly and completely disappear into the first joint or opening it finds. Segments that are clogged shall be forwarded to the Village Engineer for further testing.

Green alleys with underdrains shall have the underdrain inspected on an annual basis following a storm event. Underdrain cleanouts/access points shall be inspected for signs of flowing water following a rain event. Clogged underdrains shall be reported to the Village Engineer for further maintenance.

Yearly

Establish a seasonal maintenance schedule (See Seasonal Cleaning Schedule). The yearly activities will extend for 10 years from the date of installation. The results of the semi-annual inspections will be reviewed periodically to determine if an adjustment in the inspection period is warranted and if so the plan will be adjusted. At the end of the 10-year period, it is anticipated that a replacement of the aggregate will be necessary and the inspection period will begin again.

Restorative Maintenance

Restorative maintenance requires some removal or complete removal of the joint material to renew infiltration. This occurs after miscellaneous debris has been captured and lodged in the joint aggregate. Restorative Maintenance for alley pavements is accomplished utilizing Vacuum Sweepers or Power Washers in combination with or in conjunction with vacuum sweepers.

Equipment

Preventative Maintenance

Hand Held Bristle Broom

- Use for small isolated areas
- Keeps surface clean

Leaf Blower

- Use for small isolated areas
- Joint aggregate will remain in place while removing debris

Rotary Brush

- Poly bristles only
- Flips debris from joint
- Will require slight refilling of the joint aggregate material

Broom Sweeper

- Typical “street sweeper type”
- Rotating curb brushes with center pick-up
- Poly bristles only
- Do not use water to clean surface as this can have detrimental effects on cleaning

Regenerative Air Sweepers

- Light Duty suction cleaning
- Utilizes streams of air blowing horizontally across surface and vacuuming
- Not rotating brushes

Restorative Maintenance

Vacuum Sweepers

- Heavy duty cleaning
- Complete evacuation of joint aggregate material
- Replenish removed aggregate to lip of paver

Power Washers

- Spray at 30 degree angle approximately 18 to 24 inches above surface
- Will evacuate joint aggregate material
- Replenish removed aggregate to lip of paver

Seasonal Cleaning Schedule

A best practices maintenance program is recommended to ensure longevity of the systems before restorative action is required. The following is a description of the different components of a seasonal cleaning schedule. The need for each of some of these seasonal maintenance components will be dependent on the actual conditions observed in the field.

After Snow Melt - March 1 thru April 15

- Broom, leaf blow rotary brush or sweep entire surface
- Clean debris from paver surface in location of snow stockpiling area
- Replenish joint aggregate material after cleaning
- Every fifth year, vacuum or power wash problem areas and refill joint material

Late Spring – Apri1 1 thru May 15

- Broom, leaf blow rotary brush or sweep entire surface
- Collect any additional debris from areas mulched or planted with annual flowers
- Replenish joint aggregate material after cleaning

Late Summer – July 15 thru August 30

- Broom, leaf blow rotary brush or sweep entire surface
- Collect any additional debris from summer activities such as charcoal coals inadvertently dumped on the permeable surface; beach sand etc.
- Replenish joint aggregate material after cleaning

Late Fall – October 15 thru November 30

- Broom, leaf blow rotary brush or sweep entire surface
- Replenish joint aggregate material after cleaning

Winter Maintenance

Snow Removal

The permeable pavers have beveled edges to help protect the edges from potential chipping by snow clearing equipment. A metal plow edge will not damage the pavers structurally however, some contact between the metal and concrete can leave tiny shavings of metal in the paver surface that will rust and leave brown streaks in the pavers. As a result, it is recommended that snow clearing equipment be should be fitted with a polymer or rubber cutting edge.

Winter De-Icing Recommendations

De-icing substances, such as Sodium Chloride, Calcium Chloride or Potassium Chloride when used in proper amounts, will not damage good quality concrete.

DO NOT USE SAND ON PERMEABLE PAVERS AS IT WILL CLOG THE JOINT MATERIAL.

Financial Resources

Inspections and street sweeping of the green alleys shall be performed by the Village Engineer and Public Works staff and as such no additional personnel costs will be incurred. The Village's street and alley budget will include an annual allotment to cover maintenance, cleaning and testing as well as equipment rental and material that may be necessary to perform these activities. The annual costs will be reviewed during the annual budgeting process and revised based upon anticipated operation and maintenance needs of the green alley system. If the annual maintenance costs exceed the annual budgeted amounts, the Village Engineer will request additional funds from the Village in order to maintain the green alleys as a storm water Best Management Process (BMP) according to the terms of the Financial Assistance Agreement with the State of Illinois (FAA IGIG 1303) for a period of at least 10 years.