GREEN INFRASTRUCTURE

Building Materials Guidelines

Green Infrastructure at OPS

Green infrastructure (GI) is a way to manage stormwater near where it falls to prevent pollution, flooding and erosion. Most GI uses nature (soil and plants) to capture, slow down and filter runoff.

OPS has made a commitment to include GI into new development and redevelopment where appropriate in order to reap the benefits of this sustainable practice. There are environmental, economic and social benefits to GI no matter where it is installed. However, there are a number of green stormwater infrastructure practices that, particularly when used in conjunction with one another, can enhance traditional lessons with outdoor classroom activities related to native plants, the water cycle, pollination, plant identification, growing cycles, nutrition and more, as well as opportunities to incorporate art, literature and mathematics curriculum.

Why OPS ♥'s Green Infrastructure

Cost Savings
GI is often less expensive than traditional stormwater infrastructure because it uses less concrete, and maintenance costs less over time.

Neighborhood Benefits
GI in Omaha keeps the Missouri River and Papillion Creek clean and reduces flooding, pollution and erosion in neighborhoods. Plus, GI adds beauty, recreational opportunities, and increases property values.

Educational Value
GI on school grounds provides learning experiences for students while making the schoolyard a beautiful place for students, teachers, staff and neighbors.

New GI Elements in the OPS Building Materials Guidelines

Bioretention Gardens – Stormwater is directed to these purposefully planted areas so that the water is filtered and slowed. Typically, these are shallow depressions with amended soils, native plants and an underdrain system to enable 100% drainage within 24-48 hours. Schoolyard bioretention gardens are designed to be aesthetically pleasing, highly visible, easily maintainable and integrated into classroom learning. Site conditions will dictate where and which types of practices are feasible.

Native Landscapes – These installations provide both water quality and quantity management benefits. When landscapes are planted to native plants, there are the added values of biodiversity, habitat creation, and reduced maintenance needs. Site selection and preparation, planting, establishment and maintenance are all considerations for this application.

Soil Conditioning – A best management practice recently added to the Omaha Regional Stormwater Design Manual (ORSDM), soil conditioning is simple yet provides significant benefits. During construction, sites can be significantly altered through grading, vehicles and equipment traffic, and holding or dumping of construction materials. Soil conditioning returns organic matter and decompacts soils, reducing runoff by providing an environment where rain can more readily soak into the ground.

Permeable Surfaces – Permeable surfaces can deliver infiltration opportunities in areas where a harder surface area is needed. Placement of these surfaces can also serve as a visual reminder of the boundaries between safe play areas and locations where vehicular awareness is more necessary. Maintenance and weather impacts will need to be addressed clearly.

Rain Harvesting – Rain harvest systems support storage of runoff and encourage its reuse. Sizing, placement, and reuse opportunities will need to be considered, as well as annual flushing, draining, and other maintenance.

Green Infrastructure Design Considerations
Some schoolyard greening efforts run into challenges with issues of perception, such as concerns regarding appearance and proximity to pests and vehicles, as well as maintenance concerns such as the ability to remove snow or use salt and sand in inclement weather. These can largely be addressed or avoided through a process of careful site selection, well-defined design program development, quality design and appropriate plant selection, routine operations and maintenance activities, and purposeful messaging and outreach to relevant audiences.

Site selection

- Right practice-right place
- Enable exploration, gathering, and grazing while minimizing exposure to pests, pollinators, vehicles
- Be mindful of necessary weather responses and associated equipment and maintenance crew needs

Program Development

- *Consider the intended educational audiences.* Does this include all students? Selected grades? The broader school audience or community? Visitors?
- *Identify area needs/audience demands.* How large will classes be that use areas? Could opportunities for students to conduct their own research be valuable? Would leaving areas available for year-to-year adaptation versus initially scripting their use make sense in garden areas?
- *Marketing Guide.* Be sure to read through the Green Infrastructure Engagement Toolkit for program inspiration and engagement.

Quality Design/Plant Selection

- *Manage expectations.* Acknowledge aesthetic expectations for schoolyard landscape areas; massed plants, dwarf cultivars (avoid floppy plants in high visibility areas and near paths), defined edges, landscape seasonal interest, etc. can all enhance acceptance of native plant/low maintenance landscape aesthetics.
- *Consider alternative design practices.* Traditional design approaches may limit the ability to incorporate green infrastructure into plans. Alternatives, such as altering where and how much turf is involved, not mounding parking islands, and looking for opportunities to connect green stormwater elements can expand best practice options.
- *Select the right species.* Select plants that are best adapted to landscape microclimates (soil, moisture, sun and seasonal conditions), mature size “fit”, high disease resistance, limited aggressiveness, maximized benefits (seasonal color, habitat value, plant community role, curriculum focus), etc.

Operations and Maintenance

- Daily, weekly, monthly, and annual checklists should be developed by contractors prior to project completion.
- Maintenance agreements with groups or organizations that can supplement school-based efforts should be clearly defined and codified.
- Training for new practices and/or personnel should be planned.

Outreach and Education

- Interpretive signage – For some installations, students could assist in design, drafting, visuals, and construction of these educational pieces. Connecting site signage with web content via Q/R code use can be especially effective.
- Website content and social media could be opportunities for student engagement as well.
- PowerPoint or videos for use with PTA/PTO and other audiences could be a valuable tool.

For more ideas about how to engage students, teachers, neighbors and the community, check out the Green Infrastructure Engagement Toolkit.

SECTION 32 90 00 ??? – Bioretention Gardens

GENERAL

SUMMARY

This section addresses bioretention gardens, which can filter stormwater and direct runoff to vegetated areas. These are typically shallow depressions with amended soils, native plants, and an underdrain system that enable 100% drainage within 24-48 hours. Designing these to be aesthetically pleasing, reasonably maintainable, and functional is critically important, as bioretention gardens tend to be in highly visible areas.

Please reference Omaha Public Schools Department of Buildings and Grounds' *School Garden, Standard Procedure* document for additional information and suggestions, as well as the Purchasing Division's *Protocols for Procurement* for details on garden plan approval and procurement processes.

DESIGN REQUIREMENTS

A. Conduct an inventory of the site to assess the local landscape, soils, topography and drainage patterns, existing vegetation, sun and wind patterns that can create microclimates, maintenance considerations, and where utilities are located.

B. Bioretention gardens should be located a sufficient distance away from the foundation of a building and property lines. Ensure that the site is accessible for maintenance workers and equipment.

C. Determine the hydrologic soil classification (A, B, C, or D) and conduct an infiltration test to determine how quickly the soil drains. Bioretention gardens should not be located in areas with standing water– they should be designed to dry out within 24 hours of a rain event. Ensure sufficient separation from the high water table or bedrock. This exercise can make for an effective outdoor classroom activity.

D. Bioretention gardens are easiest to construct away from slopes, although site grading, retaining walls, or multiple stepped basins can be implemented. Ensure the size and elevations of the inlets, outlets and underdrain are properly set to manage the water flowing into and through the bioretention.

E. Consider the size of the imperious area that will be draining to this facility, including neighboring properties and rooftops, and plan the facility's capacity accordingly. Consider if there is sufficient space available for drainage needs and if multiple facilities will be necessary.

F. Bioretention gardens must be sized to capture the entire contributing area.

G. Consider pretreatment needs to allow settling of sediment and reduction of flow velocity, as well as inlet and outlet design and positioning to address how water will flow into, out of, or around the facility.

H. It is recommended for utility lines that cross the bioretention system to place anti-seep collars at the edges of the system to avoid water flow traveling along the outside of these lines.

I. For applications where siting does not allow for an engineered bioretention facility, consider a traditional rain garden as an alternative.

J. Choose native plant materials. A list of suitable candidates can be found at www.omahastormwater.org. Opt for plants that:

   a. Are well-suited to the site conditions;

   b. Can withstand both drought and inundation for 24 to 48 hours;

   c. Are salt and pollution-tolerant (if the bioretention facility receives parking lot or road runoff)

   d. Have deep root systems that can improve water infiltration as the garden matures;

   e. Can offer extended periods of seasonal interest both in terms of visual appeal and outdoor learning activities;

   f. Provide habitat value for species of interest;

   g. Offer height and scale appropriate to the site and community goals

   h. Avoid choosing plants that are overly aggressive and will outcompete other plants (i.e. cattails) unless only the aggressive plant is desired.

K. Develop a planting plan for vegetation placement considering the following:

   a. Massing similar plants in groupings that accommodate full-size growth can create clean visual lines, enhance landscape structure and order, and streamline maintenance.

   b. Creating a composition that offers diversity in size, scale, color, and texture, and enables unique plants to be featured accents.

   c. Including a certain level of repetition woven throughout the garden to unify the garden.

L. Consider the addition of signage that explains the value of the rain garden/bioretention facility and include facts that can dispel concerns about pollinators, pests, and aesthetics. This also provides an opportunity for students to assist in design, drafting, visuals, and construction of these educational pieces.

O&M CONSIDERATIONS

A. Regular watering and weeding will be needed until the plants become well-established. Require two-year maintenance period for installing contractor. The first 60 days after planting can be critical to successful establishment and lessened weed pressure. Automatic irrigation systems may not fully reach all newly-installed landscape plants due to limited plant root systems; all plants should be monitored, and temporary irrigation applied if new plants do not receive adequate natural or system moisture.

B. Pruning of some plants may be needed to enable other plants to grow. Perennial plant material should be cut back late fall or early winter for those plants that do not provide winter interest (i.e. Daylilies, hostas, etc.). Recommended that other perennial plant material should be cut back in late winter or early spring, allowing for winter interest in the landscape. Shrubs & trees should be pruned as needed while dormant.

C. Redistributing mulch disturbed by water flow may be necessary.

D. Removal of debris, trash, and sediment and clearing of inlets and outlets as needed.

E. Replacement of plant material, including consideration of why the loss occurred and if an alternative species is needed.

F. Provide listing of plants provided with pictures to aid in weed removal and replacement of plants that don’t survive.

SECTION ???? – Native Landscapes

GENERAL

SUMMARY

This section addresses native landscapes, inclusive of tree planting, native plants, meadows, and green facades. These practices conserve energy, filter and transpire water, provide animal food and habitat, and provide educational opportunities or living laboratories for students and classrooms.

Please reference Omaha Public Schools Department of Buildings and Grounds' *School Garden, Standard Procedure* document for additional information and suggestions, as well as the Purchasing Division's *Protocols for Procurement* for details on garden plan approval and procurement processes.

DESIGN REQUIREMENTS

A. Meadows

   a. Full sun is required for meadow sites.

   b. Identify and understand the site's soil type by soil test and observations in order to determine which plants will thrive. Fertilizing and amending the soil should be avoided unless there are identified soil deficiencies, as native species can be chosen that will thrive in many existing conditions. If the site is heavily compacted, decompaction may be necessary.

   c. Identify and understand the hydrologic conditions of the site in order to select plant species that will thrive in these conditions. OPS Department of Environmental/Safety can supply guidance.

   d. Proper site preparation is critical to successful meadow establishment given a typical abundance of weed seeds and existing vegetation. Methods to remove existing and unwanted plants through herbicide, repeated tilling, or covering the area to kill plants vary with cost and chemical safety issues, and should be carefully considered to maximize success.

   e. Native grasses should form a major component of meadow plantings, as they stabilize the meadow both functionally and visually. Native perennials and annuals should complement the grasses.

B. Green Facades

   a. Green facades can be created on existing fences by planting climbing vines. They can also be created by installing specially-designed fences or overhead panels. No plants should be attached to buildings. Any garden (including vertical) must be at least 1' from the building.

b. Green facades installed on the west and south walls of school buildings maximize the reduction of air and surface temperatures by providing shade and through evapotransporation.

c. Green facades placed along roadways or parking lots can reduce exposure to noise and vehicle pollution, as well as limit interactions between student activities and moving vehicles. Always consider sight visibility triangles at street/parking lot intersections to eliminate visibility hazards.

d. Green facades can be implemented as a trellis for climbing vegetation or support for indeterminate plant varieties when produce gardens are appropriate or desired.

e. Plants should be chosen based on climactic tolerance, plant growth and climbing habit, seasonal characteristics (evergreen vs. deciduous), and by desired maintenance levels. A mix of species can guarantee against poor performance and provide year-round interest.

C. Native Plants

a. Native plants should be chosen based on site conditions, including amount of sun or shade, moisture, soil type, and water requirements, and on intended application. A list of suitable candidates can be found at www.omahastormwater.org.

D. Tree Planting (Please note: Schoolhouse Planning in Buildings and Grounds must be contacted prior to planning any tree planting)

a. Trees should be located a sufficient distance from buildings, sidewalks, and parking lots so they have room to grow and limit students' abilities to climb to unsafe surfaces.

b. Trees that will become large at maturity should not be planted under or near overhead wires.

c. Trees should be planted in holes which are no deeper than the soil in which they are grown and with a diameter three times that of the root ball or container.

d. Consider planting trees on the south or west side of buildings or playgrounds to maximize shade and cooling benefits.

e. Where suitable conditions exist, consider planting trees in a manner than will slow stormwater runoff and reduce erosion of surface soil.

E. Planters

a. Planters should have an adequate drainage system to direct excess water to a desirable location and ensure plants do not drown.

b. Planters should be sized to accommodate children and be wheelchair-accessible.

c. Plants should be chosen which are tough and drought-tolerant. However, irrigation may still be necessary in hot and dry weather. Distance to the nearest faucet and/or hose length should be taken into account when locating planters.

d. Planters should be designed so as not to tip over onto children.

e. Planters cannot be built out of treated lumber, which leach toxic chemicals. Use of treated lumber is not allowed by OPS.

O&M CONSIDERATIONS

A. Meadows
   a. Weed control will be necessary during the establishment of the meadow. Mowing a seeded meadow during the first year every six weeks to a height of 4-6” will prevent weeds from seeding and also ensure seedlings have enough light.

   b. After the first year, meadows should be mowed annually in late winter or early spring and spot treatment of weeds by hand-pulling or herbiciding should be performed. Use of any herbicides is only acceptable after consulting with the Department of Environmental/Safety.

B. Green Screens
   a. Watering will be necessary until plants are established.
   b. It may be necessary to prune vines periodically.

C. Native Plants
   a. Native plants will require watering until established. Once established, they will require little supplemental water.

   b. Weeding will be required in the first six months to ensure establishment. Weeding in successive years will continue to be needed, but frequency will diminish as the plants fill in.

D. Tree Planting
   a. Trees will require routine inspection and occasional pruning for tree health, clearance, and safety.
   b. In the case of deciduous trees, leaves will be dropped and may need to be cleaned up in the fall.

E. Planters
   a. If annual plants are chosen, planters will need to be re-planted every spring. If perennial plants are chosen, dead stalks or leaves will need to be cleaned up after the plants stop growing in the late fall.
   b. Planters may require supplemental water and fertilizer depending on plants chosen and climactic conditions.

F. Identification
   a. Plan to provide signage to identify the plantings used and proper maintenance to teach staff, students and neighbors that the plantings do not need to be kept manicured.

SECTION 32 91 13.19 – Soil Conditioning

GENERAL

SUMMARY

This section addresses soil conditioning, a practice designed to improve soils that have been disturbed or have low organic qualities. The process of restoring the health of highly disturbed soils by adding amendments such as compost can assist in reestablishing the soil's long-term capacity for infiltration, improving vegetative performance, and removal of pollutants. This reduces runoff generation from highly compacted land and enhances the performance of runoff receiving areas, such as grass channels, filter strips, or where downspouts have been directed.

DESIGN REQUIREMENTS

A. Soils should be tested to ascertain preconstruction soil properties considering density, pH, salts and nutrients at a depth of one foot below the proposed area every 5,000 square feet.

B. For soil conditioning applications:
   a. Compost is typically used for amendment, but other materials can include mulch, manures, sand, or manufactured microbial solutions.
   b. A soil test is recommended to best determine the full extent of amendments needed.
   c. Minimum criteria is incorporation of two inches of compost into the top six inches of soil or as-needed per the soil test.
   d. Soil restoration is not recommended for slopes greater than 30%. Deep-rooted vegetation to increase stability is preferred in these applications.
   e. Avoid this practice near and within tree drip lines to prevent root damage.
   f. Applications procedures typically include rototilling the area, removing rocks, distributing the compost, and repeating rototilling to spread the amendment.
   g. Roll the area of soil conditioning in perpendicular passes, two passes total. This will firm the soil the soil into place but avoid over-compaction

C. For subsoiling applications:
   a. This practice should be reserved for dry soils only where compaction by equipment operation has left soils desiccated and crusted, or where need to address erosion rills.
   b. The practice should be performed after all grading is completed, but prior to application of any compost.
   c. Subsoiling should not be performed within tree drip lines, in areas with underground utility or drainage lines are installed.

D. Compost shall be locally created Oma-Gro compost. If not, it must be derived from plant material and meet the general criteria set forth by the U.S. Composting Seal of Testing Assurance (STA) programs follows:

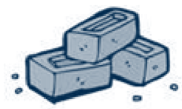
   a. Material must pass through a half-inch screen;
   b. Material pH should be between 5.5 and 8.5;
   c. Material should contain less than 1% inert material by weight;
   d. Material should contain more than 35% organic matter;
   e. Material salt content should be less than 6 mmhos/cm;
   f. Material should meet STA standards for maturity and stability;
   g. Material carbon to nitrogen ration should be less than 25-to-1;
   h. Material must meet EPA standards for heavy metals; and,
   i. Material dry bulk density should be between 40 to 50 lbs per cubic foot.[1]

E. A follow up soil test and soil core should be conducted after the compost has been incorporated into the soils to determine whether additional nutrients, pH adjustment, or organic matter is needed. This can be done in conjunction with any final construction inspection to ensure tilling or subsoiling has achieved design depths.

O&M CONSIDERATIONS

A. Soil restoration (i.e. aeration and/or application of compost) may need to be repeated periodically depending on the extent to which the existing land use causes compaction.

[1] Adapted from www.compostingcouncil.org.



SECTION 32 14 33 ??? – Permeable Surfaces

GENERAL

SUMMARY

This section addresses permeable surface systems, including pervious concrete pavement, porous asphalt pavement, permeable pavers, and pervious rubber surfaces. Like typical pavements, these surfaces are used for the movement of cars, trucks, other vehicles, pedestrians, and bicyclists. Unlike typical pavements, these systems reduce the amount of runoff by allowing water to infiltrate through the pavement, through an aggregate base, and into the soil below. The volume of runoff is reduced and water quality is improved by capturing pollutants in the pavement structure and the subsoil. Must obtain approval from Schoolhouse Planning (SHP) in Buildings and Grounds for any locations of permeable surfaces. (i.e snow removal concerns, delivery truck weight, etc.)

DEFINITIONS

A. Pervious Concrete: Open graded Portland cement concrete surface.

B. Porous Asphalt: Uniformly graded hot mix asphalt.

C. Permeable Pavers: These come in two general types:
   a. Monolithic units without void areas in the pavers.
   b. Manufactured paving units (‘block pavers’) with void areas that are filled with pervious materials such as gravel or grass.

D. Pervious Rubber: Poured in place polyurethane-bound synthetic rubber structure.

E. Cellular Confinement Systems: Systems typically created with HDPE that form a honeycomb-like structure that holds aggregate, soils or other media in small cells to minimize compaction, reduce erosion and create a stable, load-bearing surface.

DESIGN REQUIREMENTS

A. Determine the underlying geology and assess the chemical, physical, and engineering properties of the soil for suitability. The soil must remain stable while saturated and while bearing the weight of the intended users (pedestrians, vehicles). Minimize compaction of surrounding in-situ soils during construction to maintain their infiltration.

B. Determine the infiltration rate and the NRCS hydrologic soil classification for the site (A/B/C/D) along with depth to the seasonal high ground water table and/or bedrock. If the infiltration rate is low, the depth of the aggregate storage layer may be increased and/or an underdrain may be necessary. Design the underdrain system appropriately for the site and to maximize the storage available in the aggregate storage layer.

C. Calculate the catchment area that drains to the permeable pavement, including roof area and impervious and pervious surfaces. The aggregate subbase below the permeable pavement will act as a temporary storage for runoff, and can be sized to hold runoff according to the desired storm event.

D. Slopes of paved areas should be gentle to allow for infiltration instead of runoff. The excavated area for the aggregate storage layer should be level or terraced depending on slopes. This will ensure even distribution of stored water and maximize storage.

E. Determine the vehicular traffic level of the surface. Design will need to include consideration of traffic loads, soil classification, and strength in order to determine the thickness of aggregate base materials for structural support. Confirm SHP approval of plans.

F. Examine the contributing drainage area for excessive sediment runoff and pretreat as necessary. The single largest contributing factor to the failure of permeable pavement is sediment clogging. It is also critical to prevent sediment from entering the pavement during or immediately after construction. Ideally, the rest of the site will be stabilized before the permeable pavement is installed.

G. The use of permeable pavements in winter conditions is excellent but special considerations should be considered. With the open-graded aggregate layers, snow-melt & other precipitation will flow into the system and have adequate void space to accommodate freeze/thaw conditions. A salt and sand application of the pavement surface is not advised due to clogging potential. Deposits from vehicles and adjacent pavement salt and sand are expected, with proper cleaning of the system in the spring any clogging can be addressed.

H. If damage from tree roots and clogging from leaves is a concern, trees and shrubs should be set back from permeable pavement.

I. Permeable pavements should be set back or have an impermeable liner installed approximately ten feet from buildings and should meet local requirements for underground utility clearance.

O&M CONSIDERATIONS

A. Pavements should only be used where regular maintenance can be performed. Maintenance manuals should clearly specify how to perform maintenance tasks and suggested intervals.

B. Vacuum sweeping must be done frequently to remove sediment and debris, at least once or as needed annually with a commercial cleaning unit. With rapid drainage rates of permeable pavements, ponding water on the surface after a rain event likely indicates clogging.

C. Drainage pipes, inlets, stone edge drains, and other structures should be cleaned out regularly.

D. Permeable pavement should not be treated with salt or sand in the winter for ice control, as it can lead to premature clogging. If an application is necessary, use a de-icing material that is free of sand and the least corrosive. Clean the system in the spring. Consider that use of sand and salt will be necessary for main entry locations.

E. Permeable pavements should not be sealed or repaved with non-permeable materials.

F. Bare ground in the catchment area should be addressed promptly to avoid eroded sediment from building-up on the pavement. Reseed to prevent erosion as needed.

G. The surface should be inspected for deterioration annually.

SECTION 32 90 00 ??? – Rain Harvesting Systems

GENERAL

SUMMARY

This section addresses rain harvest and reuse practices through the use of rain barrels (see note below), which can capture excess run off that can be used for watering lawns, trees, flowers, planters, and other green schoolyard elements.

A. Consider only subsurface collection vessels. Must obtain approval from Department of Environmental/Safety for any consideration on use of rain barrels due to safety concerns.

B. Must have all necessary permits to allow for use (i.e. plumbing code).

DESIGN REQUIREMENTS

A. Systems should have secure points of water entry and exit that are screened to minimize mosquito habitat and include a spigot that can be turned on and off to enable use of water as well as routine flushing of the system.

B. Implement a pre-treatment system to capture debris prior to entering the rain harvesting system. This can vary depending on type of system utilized, but ensure the pre-treatment system is easily accessible for regular maintenance.

C. When sizing the system, each square foot of capture surface should be anticipated to produce more than a half-gallon of runoff per inch of rainfall (approximately .62 gallons per sq/ft per inch of rain).[2] Linking cisterns and/or rain barrels can expand capture capacity when single units are insufficient to handle anticipated flows.

D. Consider rain barrel placement in regards to other design elements that can make good use of the water captured. Placing these elements in reasonable proximity facilitates water use and clearing the capacity of the system. Due to the potential for contaminants in roof runoff, this should not include potable uses.

E. Include emergency overflows that allow water to escape when the rain harvesting system is full. This can be flexible pipe or PVC that directs water to a desirable location or a storm sewer if necessary.

F. Use dark color harvest vessels to prevent sunlight penetration and algae growth.

G. When using recycled containers, use food grade vessels that have never held or transported chemical

2 http://www.twdb.texas.gov/publications/brochures/conservation/doc/RainwaterHarvestingManual_3rdedition.pdf

H. Elevating a rain barrel enables gravity to increase water pressure to the spigot or hose exit points, as well as allows easier access for students filling watering cans or buckets. This gravity feed is rarely powerful enough for use with soaker hoses.

I. Ensure the barrel is stable and secure. A 55-gallon rain barrel, when full, will weigh more than 450 pounds.

J. Include signage that explains the value of harvesting rain water while also clearly stating that water in the system is not potable. Signage should also provide a way to inform school officials of any concerns or observed issues with the system. This also provides an opportunity for students to assist in design, drafting, visuals, and construction of these educational pieces.

K. Consider how the rain harvesting system can be incorporated into outdoor classroom or other curriculum requirements. This routine engagement can ensure that any issues with the system are more readily identified and addressed.

O&M CONSIDERATIONS

A. Avoid debris in the rain harvest system, routinely cleaning gutters and downspouts.

B. Routinely check the system for leaks and repair as needed, particularly at connection points

C. Drain and flush system annually.

D. Include harvest system maintenance in routine school community workdays such as spring and fall clean-ups.

E. Provide written document indicating winterization procedures. These should include:

   a. Ensuring that the system has been emptied;

   b. Ensuring that any conveyance piping or lines are also clear; and,

   c. Disconnecting the system from any components that divert water into the system to ensure that snowmelt cannot enter the disabled system.

Wichita State University
Hugo Wall School of Public Affairs
Environmental Finance Center

Environmental Finance Center

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