HOW TO depave





The Guide to Freeing Your Soil



A PARKING LOTS TO PARADISE PRODUCTION

WELCOME

There are a lot of things you can do to transform an overpaved place in your neighborhood into a greener and healthier space. We hope to inspire you with this guide that explains the process of depaving and the possibilities for regreening.

Depave promotes the removal of unnecessary pavement from urban areas to create community green spaces and mitigate stormwater runoff. Through community partnerships and volunteer engagement, Depave strives to overcome the social and environmental impacts of pavement with the use of action-oriented educational events, community stewardship, and advocacy to reconnect people with nature and inspire others. Depave is a nonprofit organization based in Portland, Oregon.

Why Depave?

Paved surfaces contribute to stormwater pollution, whereby rainwater carries toxic urban pollutants to local streams and rivers, greatly degrading water quality and riparian habitats. Pavement also disconnects us from our natural world. The solution is clear; the removal of impervious pavements will reduce stormwater pollution and increase the amount of land available for habitat restoration, urban farming, trees, native vegetation, and beauty, thus providing us with greater connections to the natural world.

We are here to help and support you in your depaving endeavor! This is a big job and before you under-take such a project it is best you know what you are getting yourself into. There are many aspects that need to be considered and this guide was created to walk you through all the necessary steps and act as a resource to share our knowledge with others and help empower more people to do depavings of their own. Please let us know if you have additional information, questions, ideas, or resources that should be added to this guide, info@depave.org.

PLANNING

You have a site, and have decided you want to depave it. Before you begin tearing things apart, it is important to have a plan for what you want to put in its place.

One of the factors to consider is how water interacts with the site. Walk around your site to do some critical observation and ask yourself a few questions. Closely examine your site and evaluate drainage in and on the perimeter of the potential depave site. How will drainage be handled onto or across the newly-depaved site? Are there downspouts from adjacent buildings? Do the downspouts go into underground pipes? Or do they drain to the pavement? If the latter, where will this water go or concentrate after the depaving. Consider opportunities to disconnect downspouts from sewer lines and utilize the newly-depaved area for on-site infiltration using bio-swales or other low-tech approaches.

Contact your local city or county for guidance on stormwater retrofit information and design. How will removing this section of pavement affect the adjacent sections? Are there drains currently on site, what are they connected to? Now that we have explored managing the water that will fall on the site, it is time to think about what you will use the site for once the pavement is removed. It will be helpful to create a site plan to record your ideas.

For a first time depaving project, we highly recommend starting small, 500 square feet or less. Once the site has been selected…

1. Discuss depaving with the property owner and get written approval for the project.
2. Research the history of your site and test your soil.
3. Create a vision for the future greenspace and depict it in a site plan.

SITE HISTORY & SOIL HEALTH

Soil condition may influence your post-depaving plans, so it is important to take the time to research this prior to depaving. Knowing the history of your site can help determine the condition of the soil underneath the pavement. A good place to start is at your local library or assessor's office with Sanborn Maps. Land deeds are also helpful to acquire information about previous landowners and land uses. For Portland residents, Portland Maps Online - through the City of Portland - is a useful resource.

Lead is the most dangerous contaminant found in urban soils. The number one source of lead contamination is lead paint, from older construction and older houses. The problem of lead contamination grows more severe as one moves eastward across the United States and as one goes into older neighborhoods. Scraping and sanding paint, or chipping and flaking of paint, is the source of soil contamination in the home environment. In commercial and industrial areas, shipbuilding and shipbreaking, bulk oil terminals, old gas stations and old storage sites for leaded gasoline are sources of lead contamination. (Clark Henry, Portland Brownfield Program, January 23rd, 2010)

TESTING SOIL

Depave discourages community members from removing pavement that is covering contaminated soil. If contamination is currently present in the soil, the contamination is capped and is not causing any severe negative environmental or health impacts. Unless there is a cleanup plan in place, removing the pavement may do more harm than good. Therefore, Depave strongly recommends testing the soil under the pavement before the pavement is removed.

What to test for?

If the post-depave plan does not include growing food, Depave recommends testing for: Lead, Cadmium, Hydrocarbons, and Arsenic. If the post-depave plan includes growing food, Depave recommends also testing for organochlorine pesticides.

Refer to Appendix A for our soil testing procedure and how to understand the results of your soil test.

SOIL INFILTRATION TEST

An infiltration test will help determine if the soil on the property is suitable for certain types of stormwater management systems, such as a rain garden or dry well. This test measures how quickly water can soak in and flow through the soil. With a few simple materials, this test can be preformed at home.

Refer to Appendix B for detailed step-by-step instructions on how to perform an infiltration test.

SITE DEVELOPMENT IDEAS

STORMWATER MANAGEMENT

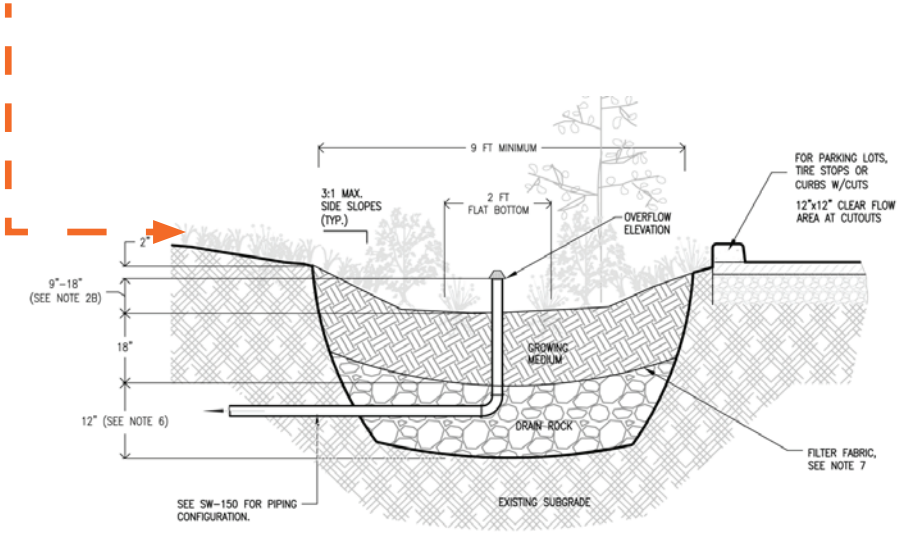
One of the major benefits of depaving is mitigating stormwater runoff through the removal of unnecessary impervious surfaces. Depaving is one of the best ways to reduce stormwater runoff coming from buildings and parking lots. Once depaved, there are a number of methods to help stormwater infiltrate into the soil, keeping contamination out of our rivers and streams and helping to keep nutrients in the soils on site. The most common stormwater management devices are bioswales and rain gardens, which require minimal infrastructure.

Some cities provide financial incentives for on-site stormwater management for commercial and residential properties. For example, the Clean River Rewards Program in Portland, Oregon offers ratepayers a maximum discount of 100% on the on-site stormwater charge. For residential properties, the discount is based on managing stormwater runoff from roof areas only and for commercial properties, the discount is based on managing stormwater runoff from both roof and paved areas. We highly recommend checking with your local water bureau to determine if a stormwater incentive program exists in your city.

The Portland Bureau of Environmental Services has an extensive stormwater management manual and stormwater solutions handbook that provides detailed descriptions and images of stormwater management devices. See our Resources page.

VEGETATED BIOSWALES

Bioswales are gently sloping depressions planted with water-loving native vegetation or grass that treat stormwater runoff from rooftops, streets, and parking lots. As the runoff flows along the length of the swale, the vegetation slows it and allows it to infiltrate into the ground while sediments and other pollutants settle out. There are many design and planting options for a swale and they can often look like a typical landscaped area. Swales can be planted with a variety of trees, shrubs, grasses, and ground covers. Native plants that tolerate both wet and dry soil conditions are best. Bioswales are cost-effective — typically costing less than a standard piped, drainage system — are attractive and can provide wildlife habitat and visual enhancements.



RAIN GARDENS

Rain gardens, or vegetated infiltration basins, are landscaped depressions that are either excavated or created with bermed side slopes. Stormwater runoff is deposited into the basin from an inlet pipe or from a sloped impervious surface (parking lot), where it is temporarily stored until it infiltrates into the ground. Like bioswales, rain gardens can be planted with a variety of trees, shrubs, grasses, and ground covers. Similar to other gardens, rain gardens are likely to need watering and weed pulling during the first one to three years; but with proper construction and maintenance, a rain garden can last indefinitely. For more information and classes about rain gardens in Portland, check out East Multnomah Soil & Water Conservation District's rain garden program.

PLANTERS

There are a variety of planters that can be created post-depaving to beautify the site and reduce stormwater runoff: infiltration planters, contained planters, and flow-through planters.

Infiltration planters are structures or containers with open bottoms to allow stormwater to slowly infiltrate into the ground. They contain a layer of gravel, a layer of soil, and a layer of vegetation. Infiltration planters are not recommended for soils that do not drain well, like clay soils.

Contained planters, are structures filled with soil and plants and collect precipitation only, not stormwater runoff from another source. Contained planter boxes are placed above ground and can be prefabricated pots or constructed in place.

Flow through planters are structural landscaped reservoirs with impervious bottoms or are placed on impervious surfaces. These planters are filled with gravel, soil, and vegetation and are typically waterproofed. They temporarily store stormwater runoff on top of the soil and filter sediment and pollutants as water slowly infiltrates down through the planter. Excess water collects in a perforated pipe at the bottom of the planter and drains to a destination point, which must first be approved by the City.

All three types of planters mentioned on the previous page come in all shapes and sizes, are made of stone, concrete, brick, plastic lumber or wood, and can hold a variety of plants. The cost of planters depends on the size and and type of material used, but generally planters are less expensive than more conventional stormwater management facilities.

Additional stormwater management devices include:

- Rain cisterns for collecting roof runoff
- Soakage trenches placed under any ground-level porous surface such as yards and landscaped areas
- Drywells, which are underground structures that dispose of stormwater runoff by dissipating it into the ground, where it merges with the local ground water.

TREES

Adding trees to landscaping is easy, attractive, and provides many stormwater benefits. Trees hold rainfall in their leaves and branches in a process called evapotranspiration which slows runoff flow, decreasing stormwater runoff volume by 35% or more during small storm events. Generally speaking, evergreen trees will capture more rainwater in winter months than deciduous trees. Costs for trees are low and typically range from $20 to $100. In Portland, local non-profit groups like Friends of Trees often supply free or low-cost trees that are appropriate for the Portland climate.

LEARNING GARDENS

Depave has worked closely with public and private schools to remove asphalt from school playgrounds in order to create learning gardens. Outdoor learning gardens provide plots for teachers and students to experience firsthand growing food and plants in an educational setting. Most schools across America have a high presence of pavement on their property, originally designed to reduce maintenance costs for school districts. As our country becomes more urbanized and children have less access to nature, Depave encourages schools to rethink their function in the lives of students and their families, and if possible, transform schoolyards into outdoor learning gardens. This will help facilitate environmental education and hands-on learning that is both engaging and empowering. Positive change starts with our children, and schools offer one of the best environments to accomplish this!

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FOOD GARDENS

One of the most common uses of newly depaved spaces is to create food gardens to grow fruits, vegetables, nuts, and herbs. Whether you are thinking of a vegetable patch or a perennial fruit forest, there are a number of resources to help you create the garden of your dreams. For residential sites, the most common food garden is a backyard garden either directly in the ground or in raised beds. Raised beds are a good solution for soils with low permeability or if there is any possible soil contamination. If you are working with an institutional site, a community garden with individual garden plots is a great way to create a garden and provide space for community members to come together and get involved.

HABITAT RESTORATION & NATURESCAPING

Another option for post-depaving is to restore your newly freed site to a more natural condition that supports local wildlife and plants. While we cannot expect to restore cities back to pre-settlement conditions, we can take small steps toward incorporate nature back into our communities by creating habitat patches, pocket parks, and wildlife sanctuaries. Naturescaping is the practice of designing a landscape with native plants that restores habitat for native birds, butterflies, and other wildlife, and integrates nature back into your depaved site. Native plants are adapted to local climates and are naturally resistant to native pests and diseases. Native plants require less maintenance, fertilizer and water than non-natives. They greatly reduce stormwater runoff and pollution, and provide food and shelter for wildlife. Naturescaping combines beauty and function, without sacrificing the splendor of a garden.

There are a wide variety of resources to help you learn more about naturescaping and the selection of native plants, including workshops, online manuals, local plant nurseries, and more. In the Portland region, the following resources are available for depavers:

East Multnomah Soil & Water Conservation District Naturescaping: Provides free education and technical information about the advantages and practices of naturescaping. Offers classes and workshops, step-by-step tutorials, and a free online guide, Naturescape in 8 Steps.

Metro Natural Gardening: Offers tips from Metro's experts, workshops, learning gardens, guides and more.

Portland Bureau of Environmental Services Naturescaping: Provides information on naturescaping, native plant selection, and invasive plants to avoid.

Native Plant Society of Oregon: Offers frequent field trips and events regarding native plants and occasional classes or workshops on naturescaping.

Audubon Society of Portland Naturescaping with Native Plants: Offers information on native plant retailers, classes and workshops around Portland and native plant books.

Berry Botanic Garden: Promotes Northwest native plants, maintains special plant collections, conserves native endangered plants and offers related educational opportunities.

Leach Botanical Garden: Dedicated to the study of botany and horticulture of the Pacific Northwest region and to the conservation, promotion and display of native plants.

If you live outside of Oregon, visit PlantNative for detailed listings of native plant nurseries, community organizations, and professional resources across the United States and Canada, as well as regional plant guides based on climate and other factors.

PAVEMENT ALTERNATIVES

Still need to park a car on the site but want to reduce stormwater runoff? Pervious pavement is a good way to provide some of the benefits of depaving while also providing the structural support needed for more intensive uses. Pervious pavement is made of either asphalt or concrete, and both materials resemble conventional asphalt and concrete, but have more air spaces that allow water to pass through small voids in the pavement and infiltrate into the ground. It requires significant technical expertise during installation, so contact a local asphalt or concrete expert to learn more about pervious pavement. Limitations include; a high cost; ongoing maintenance (required vacuuming of surfaces to maintain permeability); and grade limitations (most effective on a flat surface where the possibility of sediment buildup is reduced).

Pervious pavers are typically made of pre-cast concrete, brick, stone, or cobbles. Pavers usually form interlocking patterns to allow water to percolate through the pavers, and are placed within a rigid frame on top of a sand bed or above a drainage system. Pervious pavers are available in many colors, shapes, sizes and textures, and can support heavy foot traffic loads and weights. They can replace conventional asphalt or concrete paving in parking lots, roads and sidewalks.

Turf blocks are grass grids that consist of interlocking concrete or plastic cells filled with soil and planted with turf grass or a low-maintenance groundcover. Turf block is best suited for areas of low traffic and infrequent parking, such as patios, walkways, terraces, residential driveways, overflow parking areas, emergency access roads, and street shoulders.

Regardless of what pavement alternative is used, good design and a strong idea of intended use can go a long way to reducing the amount of pavement in a project, even if it is pervious.

CREATING A SITE PLAN

A site plan is a detailed drawing of the site including what changes are being proposed. A detailed site plan is required in order to get a permit from the City. If a permit is not required for the project, the plan will still be very helpful in helping determine what materials will be needed to complete the project, the budget, and how it will look when the project is complete.

Every site plan should include: elevation points at various places on site, building footprints, a scale, a north arrow, water drainages, and any other existing structures on the property. These drawings do not need to be done by a professional but do need to be to scale and detail the existing and proposed site elements. When working within a community there is often an architect, landscape architect, or other relevant professional who is happy to donate their time to the cause and help create a plan. For this reason, and many others, we highly recommend reaching out to the community to collaboratively create a vision — depicted in your site plan — for the future greenspace.

CITY PERMITS FOR YOUR PROJECT

Each city has different rules and regulations regarding permit requirements. We highly recommend calling your local Development Services office to clarify if your proposed project requires a permit.

If the pavement you want to remove is in the 'planting strip' (between sidewalk and curb) or otherwise in the public right-of-way, you will need a permit from your City's transportation department.

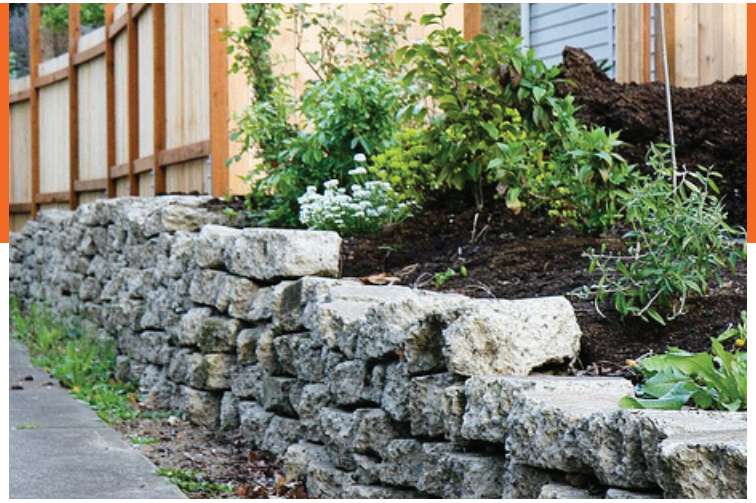
If the land you want to depave is currently considered to be a parking lot, you may also need to get permission from the city. A certain amount of off-street parking is required for many commercial and residential properties. Depending on the size of the project, the City may require a Site Development Plan, and Erosion Control Plan, or others. Consider calling your city's Bureau of Development Services to inquire.

Permitting in Portland, Oregon

For projects completed on private property, a permit from the City is required if the area being affected is more than 5,000 square feet. No permit is needed if the area to be depaved is less than 5,000 square feet. If a permit is required for the proposed project, the process is fairly simple. We recommend calling or visiting the Bureau of Development Services to determine what exactly is required to obtain a permit.

Refer to Appendix C for more information about permit requirements in Portland.

BREAKING GROUND



SURFACE TYPE

To get started, the impervious surface needs to be broken down into smaller pieces that can be physically lifted. This can be done either using a diamond-blade saw or a jackhammer. A few questions need to be answered in order to determine which one is right for the project:

• How big is the area to be removed?

• Does it border an area that needs be preserved? (Are you removing a square of asphalt in the middle of a playground? Or an entire driveway?)

CONCRETE - REUSE IT!

Concrete is harder than asphalt and also more durable and expensive. Urbanite is a term that refers to broken pieces of concrete. Urbanite can easily be reused just as is to construct walkways, flower beds, fire pits, retaining walls and other outdoor structures. If you or your neighbors can't use your leftovers, you can post an ad on Craigslist or Freecycle and will likely find a taker. Reduce, Reuse, Recycle!

ASPHALT - RECYCLE IT!

Asphalt is softer and lighter than concrete and is not suitable for reuse as a long-lived building material. It is readily recycled by local pavement processing companies into a crushed rock aggregate used in construction projects. In order to ensure the asphalt gets recycled, it is best to keep materials separate; one dumpster for asphalt, and one for gravel and other debris.

CALL BEFORE YOU DIG

The national 'call before you dig' number is 811. This free service is alerts the utility companies to come out and mark your property showing where the water, electric, gas, and any cable lines are buried. Within two business days someone will be sent to tag the street and property. Red is for electricity, cables, conduit, yellow means gas, oil, or petroleum, orange signifies communication, alarm or signal lines, blue and purple indicate water lines and green shows sewers and drain lines. A yellow line across your proposed work site can be dangerous so be careful!!! Gas leaks are no fun.

SURFACE PREPARATION

DIAMOND-BLADE SAW

A concrete saw with a diamond blade is used to create a straight perimeter bordering an area of pavement that is going to be preserved, or for large areas that will be removed by hand. Cutting asphalt up into a grid is the best way to prepare large surfaces for hand removal with pry bars. Concrete saws work well for cutting straight lines. The concrete saw is also appropriate for cutting tree wells or any work done in the public right-of-way in which some of the pavement remains and a neat clean line between the two areas is desired.

The saw and diamond blade can be rented from a local equipment rental store. An open bed truck is needed to transport the saw to and from the site. A hose and outdoor water spigot will be needed to properly run the machine.

JACKHAMMER

The jackhammer is a useful tool for breaking up small plots of concrete. The chisel and point bits are best for concrete, while a wider spade bit is best for asphalt. We recommend getting the heaviest electric hammer that you can safely handle. An 85 lb hammer is a good and useful size. When using the jackhammer, positioning is key. Your job is to keep it from falling over, and angling it when it needs to be angled. First create cracks with the point bit, and then "explore" the cracks using the chisel bit to make them bigger. This is all easier if the concrete or asphalt has room to move (i.e. break), so work from the edges toward the center.

HAND TOOLS

PRY BAR

A pry bar is a long steel bar that works extremely well for prying up pieces of asphalt and concrete. The pry bar is the best depaving tool! Use it in conjuntion with a smaller piece of asphalt placed underneath the bar next to a crack — like a seesaw — to leverage pieces out of the ground and reduce the strength needed to pry up pavement. Pry bars can be purchased at most hardware stores.

PICK AXE

Pickaxes can be useful to pry up the chunks of concrete or asphalt. They usually have one sharp pointed end and one flat end. Use extreme caution when swinging these and always make sure no one is standing behind you.

SLEDGEHAMMER

Sledgehammers can be used to help break up big pieces of asphalt. If the concrete saw didn't quite cut all the way through the asphalt, a sledgehammer will really help to make that last crack. As with the pickaxe, use extreme caution when using a sledgehammer. Always double check to make sure there is no one around you.

WHEELBARROW

Wheelbarrows are used to transport the broken up asphalt or concrete from one area to another. When working on a large area, it is best to work from back to front in order to make sure the wheel barrow has a clear hard surface to roll on.

HAND TRUCK

Hand trucks can be used to transport overly heavy blocks of material. Using a sturdy metal ramp, the hand truck can be wheeled directly into the dropbox for easy unloading of the asphalt blocks.

DEPAVING

TECHNIQUE

Before beginning to remove pavement, it should either be cut into small squares or jack hammered into small chunks. The next step is to get the material off the ground and into a drop box to be hauled away or into a pile to be reused.

If the area was cut into squares using a concrete saw, it is best to start with either a pickaxe or a pry bar. It is helpful when cutting the asphalt if you cut and remove several small triangles at the corners of a few squares to give yourself easy places to start prying. Starting at a corner of one of the squares, use either hand tool to pick away at a corner until the tool can get slightly under the piece of material. For heavier blocks of asphalt, the prybar will work best. Once one end of the bar is slightly under the material, push the other end all the way down until the square starts to come up. Have a helper stick another bar in under the same square and do the same. Both bars working together should be enough to get the heavy chunk off the ground.

Once the asphalt square is separated from the others, at least two people will be needed to lift the block into a wheelbarrow. Wheeling a wheelbarrow full of asphalt can be very heavy and can easily tip over so be careful not to over-fill wheelbarrows.

From the wheelbarrow, the asphalt will need to be placed in a dropbox. Dropboxes are big metal containers provided by a garbage hauling company in order to dispose of construction materials. A standard 10-yard drop box can accomodate about 700 square feet of pavement.

There are two ways to get the asphalt into the dropbox:
1. Using a ramp. You can either use a big piece of plywood or you can rent a metal ramp at any local tool rental location.
2. Throwing the pieces over the edge of the dropbox. This method works if the asphalt chunks are relatively small.

SAFETY

Eye and ear protection are required for all parts of the depaving process. Gloves, a dust mask, closed toed shoes, and long pants are also highly recommended.

POST DEPAVING

SUBSURFACE

Four to six inches of gravel is typically found beneath the pavement. There are a number of ways to remove the gravel in order to get to the soil.

1. With small sites, the gravel can easily be shoveled out of the newly depaved area. Gravel can be used to create walkways through gardens, filling potholes, create drainage areas, etc.

2. For larger sites, the gravel can be removed using heavy machinery. Hiring a local contractor to do this work will probably work best. If kept separate from other materials, gravel can also be hauled away in a dropbox and recycled at a local recycling facility.

SOIL RESTORATION

The biggest problem caused by heavy impervious surfaces is soil compaction. The weight of the asphalt crushes the macropores, creating a hard surface that will not allow water to infiltrate. Macropores are the spaces between the soil aggregates, allowing water and air to move through the soil. Loss of macropores have negative consequences such as restricted aeration, diminished water drainage, and the creation of a dense soil that is difficult for roots to penetrate. A spading fork or a pickaxe should be sufficient to break up the compacted soil enough to start the rehabilitation process. After the soil is properly aerated, mixing in some organic matter such as compost will help bring life and microorganisms back to the dirt.

LANDSCAPING

Now for the fun part! Creating a plant list based on the site plan will help determine how many plants are needed to fill the empty space. Timing is crucial! While the majority of our depaving events occur in June and July, plants don't make it into the ground until late September or October. Determine the best time of year to begin planting in order to ensure the highest possible plant survival rate.

RESOURCES

American Community Garden Association www.communitygarden.org
Audubon Society of Portland www.audubonportland.org/backyardwildlife/backyardhabitat/resources/nativeplants
Berry Botanic Garden www.berrybot.org
Community Watershed Stewardship Program www.portlandonline.com/bes/index.cfm?c=43077
Creative Science School www.creativescienceschool.org
Depave www.depave.org/work/submit-site
East Multnomah Soil & Water Conservation District www.emswcd.org
Ecumenical Ministries of Oregon www.emoregon.org/food_farms.php
Environmental Protection Agency www.epa.gov/compliance/environmentaljustice/grants
Friends of Trees www.friendsoftrees.org
Growing Gardens www.growing-gardens.org
Holy Redeemer Catholic School & Church www.holyredeemerpdx.org
Home Orchard Society www.homeorchardsociety.org
Janus Youth Program www.janusyouth.org
Leach Botanical Garden www.leachgarden.org
Native Plant Society of Oregon www.npsoregon.org
New Day School www.newdayschool.org
Oregon Department of Environmental Quality www.deq.state.or.us/wq/nonpoint/grants.htm
Oregon Metro www.oregonmetro.gov
Plant Native www.plantnative.org
Portland Brownfield Program www.portlandonline.com/bes/index.cfm?c=35008
Portland Bureau of Environmental Services Naturescaping www.portlandonline.com/bes/index.cfm?c=50367&a=40355
Portland Bureau of Environmental Services Stormwater Retrofits www.portlandonline.com/bes/index.cfm?c=34598
Portland Community Gardens www.portlandonline.com/parks/index.cfm?c=39846
Portland Fruit Tree Project www.portlandfruit.org
Portland Maps (site history research) http://www.portlandmaps.com/
Urban Farm Collective www.urbanfarmcollective.com
Vestal Community Garden www.vestalcommunitygarden.blogspot.com

THX!!! — Direction: Maren Murphy | Design: Maggie Gardner | Editing: Maia Nativ | Production: Eric Rosewall

APPENDIX A - TESTING SOIL

SUPPLY CHECK LIST

• Hand held concrete saw or core drill. We recommend using a hand held, gas powered concrete saw. Although using a core drill will create a cleaner sample hole, it is much more time consuming.

• Water source and hose for operating the concrete saw.

• Safety Gear – safety glasses, ear protection, work gloves, long pants and protective shoes.

• Digging & Sampling Tools – You'll need tools that can work in tight spaces to dig out core debris, fish out rocks and gravel, and eventually get to the soil to pull out viable samples. Use at least one larger tool, such as a thin garden spade or a hori hori knife, in order to get out major scoops. An old butter knife and table spoon also work as well.

• Sampling Jars – These are needed when collecting a soil sample. Ideally, these jars should be cleaned to laboratory grade standards (rather than just dishwashed at home). The soil testing company should provide jars.

• Cooler – A cooler is the best way to store and transport a soil sample. Heat can break down certain pollutants that can be found in soil, thereby compromising the integrity of the sample.

SOIL SAMPLING INSTRUCTIONS

The first step in testing your soil is to contact a soil-testing lab that will take and test the soil samples. Next, holes will need to be cut in the asphalt in order to expose the soil.

Cutting (with hand held concrete saw) – Ensure the saw is running with the water fully connected. Turn on the saw and then slowly drop the spinning blade onto first hole location. Do not press hard on the saw as it starts to grind into the paved surface. Let the saw blade do the work. After a while, you may feel the blade passing through into a different strata (possibly bumpy if it is a stone layer, or smoother if it is straight into soil). In this manner, make two more cuts to form a triangle. Using a digging tool, carefully remove the asphalt triangle and fish out pavement debris and any stones that might be found in the subgrade beneath the paved layer.

Sampling - Using a clean spoon or other small implement, collect a soil sample. Use laboratory grade jars when possible. Once the sample is collected (4 ounces is the recommended minimum), seal jar lid and place in an iced cooler (ideal) or shaded area. We recommend taking samples from three locations on the property and mixing the samples to create a composite sample.

Clean Up – Replace pavement triangles back in holes, fill remainder of holes in with pea gravel or sand. Tamp down with foot — do your best to eliminate a tripping hazard. Give the area a quick broom sweep to clear any remaining debris.

Send in sample – The soil testing company will tell you the best way to return the samples to them. One to two weeks after they receive your sample, they will send you the results.

According to the Oregon Department of Environmental Quality, urban residential maximum levels are:
Lead: 400 ppm, Cadmium: 78 ppm, Arsenic: 1 ppm

These are the maximum levels for urban residential soils. This does not mean that it is safe to grow edible plants in these soils. This safety limit is based on the typical exposure to contaminants in a home setting. Please see Appendix A for a much more detailed list of soil contaminant levels, provided by the US EPA.