



DEPAVE DETROIT

**Transform your pavement
into beautiful green space.**

**DETROIT
FUTURE
CITY**

October 2020

Depave Detroit is a guide to removing asphalt or concrete from nonresidential properties in Detroit. Transforming part of a property from pavement into green space can improve the quality of life for nearby residents, help the property owner lower their drainage charges, and manage stormwater. A green space is an area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment.

In 2019, the Land + Water WORKS Coalition partnered with the St. Suzanne Cody Rouge Community Resource Center in Detroit to remove part of their underused parking lot, which was in disrepair, and turn it into beautiful green space. Pictures from the St. Suzanne depaving pilot project are highlighted throughout this guide, created to share the lessons learned to make depaving a more simple process for all Detroiters.

This step by step guide aims to help Detroiters more easily access the benefits of depaving. Reach out to Detroit Future City with further questions about depaving, and please enjoy this guide.

TABLE OF CONTENTS

WHAT IS DEPAVING?.....4

 Why does it matter?.....4

SITE SELECTION.....5

PROJECT PLANNING.....6

 Engage your community.....6

SOIL TESTING.....7

BUDGETING.....8

 Sample depaving calculations.....9

 Sample project budgeting.....10

PERMITTING.....12

SITE PREPARATION.....13

 Reduce, reuse, recycle.....13

DEPAVING..... 14

SITE RESTORATION.....15

LANDSCAPING.....16

CASE STUDY.....17

RESOURCES.....19



This guide is brought to you by the Land + Water Works Coalition, which is generously supported by the Fred A. and Barbara M. Erb Family Foundation. Land + Water Works is a coalition of environmental stewards dedicated to a more equitable, more climate-resilient future for Detroit. Depave Detroit was produced to offer a step-by step guide to Detroiters looking to transform their pavement into beautiful green spaces and to save money on their drainage charges.

Thank you to Depave Portland, Detroit Training Center, and St. Suzanne Cody Rouge Community Resource Center for their generous support and partnership in the production of this guide and pilot project.



WHAT IS DEPAVING?

GREEN SPACE (NOUN):

An area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment.

Depaving is removing underutilized pavement from an urban area and returning it to green space. Green space is an area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment. By removing "impervious" or hard surfaces, depaving reduces stormwater runoff and provides a range of environmental, social and financial benefits. This depaving guide aims to give Detroiters the tools to remove pavement on their property and to transform them into beautiful green spaces and reduce Detroit Water and Sewerage Department (DWSD) drainage charges. This guide was inspired in part by [Depave](#), a nonprofit organization based in Portland, Oregon. Since 2008, they have been working to engage communities and reconnect urban landscapes to nature through equitable and action-oriented projects, education, advocacy and stewardship. Follow the steps in this guide on your own depaving journey and learn from our depave pilot project at St. Suzanne Cody Rouge Community Resource Center.

Why does it matter?

Of the 139 square miles that make up Detroit, approximately [75 square miles are impervious surfaces](#). That means over half of Detroit is covered in buildings and paved surfaces. When rain hits pavement, the stormwater runs off into the combined sewer system or directly into our local streams and rivers. The stormwater picks up nutrients, chemicals, and other pollutants from the pavement, which degrades the water quality of our rivers and the Great Lakes. Stormwater also contributes to flooding on our streets and in our basements. One way to reduce harmful effects of impervious surfaces is to remove them!

The DWSD charges residents and property owners a monthly drainage fee based on the amount of impervious surfaces on their site. The drainage charge incentivizes those with oversized or crumbling pavement to save money on their water bills by depaving those areas. By depaving 2,500 square feet, for example, you could save over \$430 in drainage charges on your DWSD bill each year.

Join us to create more green spaces in Detroit, save money on drainage charges, and protect our rivers and Great Lakes by depaving!

SITE SELECTION

Depaving is recommended if you want to have (and maintain) more green space on your property. Start your selection by examining the underused or old/deteriorating pavement on your property.

Current vs. Future Use: Begin by evaluating the current use and condition of your pavement. If there is pavement on your property that is oversized and in poor condition, like a parking lot, depaving some of it could be a good opportunity, especially when it comes time to repave the parking lot! Deciding who the future green space will be for — will this be a public, community space or a private space? — is another key step in evaluating depaving sites.

Drainage: Consider how water currently flows on the site, and how drainage could be handled after depaving. There could be an opportunity to [disconnect downspouts](#) from your building and redirect them towards the future green space to manage stormwater and receive additional savings on your DWSD water bill.

Size: An asphalt parking lot is typically at least 4 inches thick, while a concrete parking lot will likely be 6 inches thick. The thickness varies based on site type (e.g. parking lot, driveway, sidewalk/pathway, etc.,) so be sure to do research to help select your project size, especially keeping budget in mind. If you are depaving in order to reduce your DWSD drainage charge, you must remove at least 435 square feet (0.01 acres) of pavement to qualify for a reduction. To calculate annual savings from depaving, multiply the depaving area in acres x \$626 x 12. By depaving 0.01 acres, you'd save \$75/year. If the future depaved area will be a public space, think about what the community has expressed they want — for example, a kid-friendly play area, a community garden, or a rain garden for managing stormwater. Reach out to neighbors to include their voices, and be creative!

In order to reduce the drainage charge on your water bill, you must remove at least 435 square feet of pavement.

Green spaces save money on DWSD drainage charges.

Rain gardens at Stoepel Park.



Photo Credit: Jodee Raines, Erb Family Foundation

PROJECT PLANNING

Create a planting plan to design what your landscaping will look like after depaving. Search for inspiration from the landscape designs in Detroit Future City's [Field Guide to Working with Lots](#). You can also keep things simple with [native grasses and plants](#) — remember that maintenance is the key to success. The [Greening of Detroit](#) also has resources on tree species and planting.

ENGAGE YOUR COMMUNITY!

Make the depaving process fun and educational for the whole community. Promote the project in advance to get your neighbors, friends, and family involved. Having multiple project champions or numerous community members involved in depaving will ensure project success, especially when it comes to long-term maintenance. Depaving doesn't end the day you finish landscaping—the green space will need to be maintained regularly. If you are holding a planting day, ask everyone what they see as the benefits of the depaving project (e.g. improved water quality, lower DWSD drainage bills, more green space to improve air quality, a beautifully landscaped area, etc.) Start a conversation to show your neighbors the many benefits of green spaces in our city. Getting your neighbors, family and friends involved can help turn your depaving project into a community celebration with food, fun, and a little bit of hard work!

Getting neighbors involved in depaving

Neighbors plant tulips at a volunteer planting day at the Northwest Goldberg Cares Holland Maze in the Northwest Goldberg neighborhood in Detroit.



Photo Credit: Daniel Washington, Northwest Goldberg Cares

SOIL TESTING

It is important to understand the soil quality, including potential contamination, of the site before you depave. Consider testing your soil for lead, cadmium, hydrocarbons and arsenic. If you are planning to use the depaved green space to grow food, Keep Growing Detroit offers [free soil testing](#) to members of its Garden Resource Program. MSU Extension also offers [affordable home and commercial soil testing](#). If you find out that the soil is contaminated and you are planning for the public to come into close contact with the future green space (e.g. playground, community gathering space, etc.), you should consider choosing a different area to depave.

Green stormwater infrastructure (GSI) practices (e.g. rain gardens, bioswales, etc.) can earn additional savings on your DWSD bill by managing stormwater from impervious areas on your property (e.g. roof, parking lot, etc.) Over the past decade, GSI has emerged in Detroit as a method to manage stormwater, reuse land, enhance water and air quality, and add beauty to the landscape. GSI is also a great option for saving up to 80% on your DWSD drainage charges. Consider a soil infiltration test to measure your soil's capacity for managing stormwater. Check out DFC's [Detroit Property Owner's Guide to Bioretention](#) to learn more about nonresidential GSI projects.

Soil infiltration testing

Soil infiltration testing equipment at a site in Detroit planning to install a bioswale.



Photo Credit: Susan Rusinowski, Detroit Future City

BUDGETING

Size Selection: Preparing for your project includes making a budget. Some project costs to consider are dumpster rental/removal, labor, equipment, permit fees, soil testing, and landscaping material. Stay flexible for changing the size of your project until after you start depaving and are able to determine exactly how thick your paved surface is (typically 2 to 6 inches) and if there is any gravel underneath (typically 4 to 6 inches.) Concrete is typically thicker than asphalt, and may have rebar beneath the concrete layer.

Once you know the depth and area of removal, you can calculate the volume of material you will be removing and how much soil you will need. Knowing these volumes will allow you to create a budget for disposal—concrete typically weighs 150 lbs per cubic foot and asphalt typically weighs 145 pounds per cubic foot.

Equipment: Consider whether you will hire a contractor or use volunteer labor and rent the equipment yourself. If you are removing concrete, a larger area is typically difficult to remove by hand, so it is recommend to hire a contractor. Asphalt can be removed by hand if your volunteer group has that capacity and if the area is not too large. If you are planning to depave using primarily volunteer labor, check out [Depave Portland's Guide to Freeing Your Soil](#) for tips on what the depaving steps are and what equipment is required.

Ordering dumpsters yourself will likely be less expensive than through your contractor. Dumpster pricing often includes a base rate, an allotted weight for the dumpster, and additional charges for weight over the allotted amount. For example, [GFL](#)'s standard rates are \$50 for delivery and \$325 per dumpster load, and \$35 per ton over 2 tons. Rates are often lowered for repeat customers or if you are under a contract. If you are depaving concrete and it is "clean" or free of debris and uncontaminated, dumpster companies will typically crush and recycle it with no additional tonnage disposal fees. However, if the concrete is contaminated when tested, the concrete will have to go to a landfill and the same rates for disposing asphalt would apply. If you are depaving asphalt, you can add gravel or any other debris to the dumpsters as it will all end up in the landfill. For the depaving process, you should ask your contractor to provide itemized equipment and labor costs in their estimate. It is recommended to obtain estimates from at least three contractors with experience removing pavement with heavy equipment.

Sample depaving calculations

Below are sample dimension calculations for an asphalt depaving project. If your project is depaving concrete, use 150 pounds per cubic foot for the weight calculation.

Sample project dimension calculations

Length	25 ft.
Width	75 ft.
Depth	6 in. (0.5 ft.)
Area = length x width	1,875 sq. ft.
Volume = length x width x depth	938 cf.
Weight = volume x 145 lbs./cf. ÷ 2000 lbs./ton	68 tons

Above are sample calculations for determining how much money your project would save on your DWSD drainage charges by depaving.

Sample project DWSD drainage charge savings calculations

Area (acres) = area (sq. ft.) ÷ 43,560	0.04 acres
Drainage charge savings = \$602/month x 12 months/year x area (acres)	\$289 /year

Pavement disposal

Disposal is likely the most expensive part of your depaving project. Calculate the volume for disposal in order to budget for your project.



Photo Credit: Susan Rusinowski, Detroit Future City

Sample project budgeting

A sample budget is provided below for the same project whose dimensions are calculated on the previous page. This example project depaves 1,875 square feet of asphalt, 6 inches thick. This project does not require a permit from the city or county. If your project does require a permit, contact them for a cost estimate (see more in the permitting section.) A sample budget template is provided on the next page for you to budget for your own project.

Sample Project Budget

Item	Amount	Cost	Notes
Soil testing	Lump sum	\$25	MSU Extension & Keep Growing Detroit offer soil testing.
Disposal	68 tons @ \$35/ton after first 2 tons per dumpster	\$1,960	Weight in tons ÷ 12 tons (typical disposal weight between 9-14 tons) = # dumpsters Cost = (disposal weight in tons - (# dumpsters x 2 tons)) x \$35
Dumpster pick up & removal	6 dumpsters @ \$375/dumpster	\$2,250	Base charge for pickup and removal per dumpster
Equipment	5 days @ \$500/day	\$2,500	If you are renting equipment yourself, fill your rental rate quote in here.
Fuel	5 days @ \$50/day	\$250	Quotes may include fuel, or if depaving with volunteers, you will need to budget for fuel.
Contractor labor	Lump sum	\$2,500	If using a contractor, fill your quote in here.
Topsoil	35 cubic yards @ \$25/cubic yard	\$875	Volume [cubic ft] ÷ 27 = volume [cubic yards]
Seed & straw	1,875 sq. feet at \$0.15/sq. foot	\$281	Approximately \$125 per 1,000 square feet
Plants	Lump sum	\$500	Varies depending on your landscaping plans
Site restoration	Lump sum	\$500	If your pavement is old and part of a larger site, budget for restoration if areas need patching.
Total		\$11,641	

Your Project Budget - Sample Template

Item	Amount	Cost	Notes
Soil testing		\$	
Disposal		\$	
Dumpster pick up & removal		\$	
Equipment		\$	
Fuel		\$	
Contractor labor		\$	
Topsoil		\$	
Seed & straw		\$	
Plants		\$	
Site restoration		\$	
		\$	
		\$	
		\$	
Total		\$	

PERMITTING

Contact the [Development Resource Center](#) through the Buildings, Safety Engineering and Environmental Department (BSEED) who can help you determine whether any permits are required for your project. For small depaving projects on private property, you likely will not need a permit.

If you are depaving part of a parking lot, be sure to check the zoning ordinances for the number of parking spaces required for your residential or commercial property. For larger projects over 1 acre or within 500 feet of a body of water, you must apply for a [Wayne County soil erosion permit](#).

Obtain permits prior to depaving, if required

A trainee of Detroit Training Center's Heavy Equipment Operator Program removing asphalt at St. Suzanne Community Resource Center Cody Rouge in Detroit.



Photo Credit: Detroit Training Center

SITE PREPARATION

Prepare the site for depaving

Neon paint marks the area to be depaved at St. Suzanne Community Resource Center in Cody Rouge, Detroit.



Photo Credit: Susan Rusinowski, Detroit Future City



MISS DIG utility markings.

If you are planning to hire a contractor, it helps to spray-paint the area you plan to depave first. This line can be used to saw cut the pavement to leave a clean, defined edge for the remaining pavement.

Call MISS DIG at 811 to locate underground utilities in the area. Next, contact GFL Environmental (or another dumpster provider) to order a 10-yard dumpster for either concrete or asphalt dumping and removal. They typically require 24 to 48 hours notice for drop-off.

REDUCE, REUSE, RECYCLE!

A depaving project is a great time to be innovative and thoughtful about how you can reduce waste and your carbon footprint. Come up with some innovative ways to reuse or recycle the materials you're depaving — concrete can often be reused as a creative landscaping material. Make sure before beginning the depaving process, you are planning for how to reuse materials and communicating how to do that (e.g. stockpiling, etc.) with the contractor or your volunteers.

Creative ways to reuse depaved materials

Recycled concrete used to construct a bonfire pit and walkway pavers



Photo Credit: Budget Dumpster



Photo Credit: Artisan Masonry

DEPAVING



Contractor removal of asphalt

Whether it's the day your volunteers are starting to chip away at the pavement, or your contractor is starting on the job, there are a few tips for making the depaving process as successful as possible.

Using a contractor: Make sure to meet on site before work begins to make sure everyone understands the outline of the area to be depaved, where equipment will be staged, the project timeline, how communication will work, and anything else that needs to be addressed. If you are using a contractor, check in frequently with them to understand how the project is progressing. Check in with your contractor at the beginning and end of each day to learn what they plan to work on that day and what they accomplished, respectively. You will also need to be in contact with them to know when to order dumpster pick-ups and drop-offs. Having a good relationship with your contractor is key to a successful project.

Using volunteers: If you are using volunteers to depave, make sure they are competent operating equipment safely. Volunteers should have ample safety glasses, gloves and masks. Always put the safety of your volunteers first.

Your equipment may include a diamond-blade walk-behind saw, wheelbarrows, pry bars, jackhammers, pickaxes, shovels and sledgehammers. The saw will cut straight lines to leave a neat, straight line of pavement left behind. Cutting in a grid is useful so that volunteers can pry up pieces of pavement. The jackhammer will help break the pavement up into smaller pieces so that volunteers can throw small pieces of pavement into the dumpster. Alternatively, you can create or rent a ramp to get larger pieces of pavement into the dumpster. After the pavement is removed, there may be 4 to 6 inches of gravel. If the area is small, you should be able to shovel the gravel into the dumpster, or if it's large, you can rent heavy equipment, like a backhoe or skid steer, to get it done.

SITE RESTORATION

It is critical to leave the site in the same or better condition than when the project began in order to have a successful project, especially if the future use is for a public, community green space.

If you are not fully depaving the site, it is likely you are planning to save part of the pavement and may be staging equipment or storing the dumpsters on it. If this pavement is already old and crumbling, it is likely that heavy equipment or dumpsters sitting on top of it will further deteriorate the pavement. If this is the case, the property owner will likely want the pavement restored to its original condition, and you may need to do some asphalt patching. The area may also need to be swept after the project to get rid of any debris—you can rent a broom attachment for a skid steer if push brooms won't do the trick.

If nearby lawn or landscaping has been torn up in the depaving process, make sure to lay grass seed and straw in those areas and to grade or level the areas if necessary. Proper planning for staging equipment can help to minimize site restoration work and costs.

Ready for site restoration after depaving

This area of the parking lot at St. Suzanne's was used for equipment staging and was not part of the depaving area. Soil and debris were tracked across this area of the parking lot and the asphalt crumbled under the weight of dumpsters. This site requires sweeping of the debris and patching of the asphalt during site restoration.



Photo Credit: Detroit Training Center

LANDSCAPING

Grab your friends and neighbors for the final part of the project—bringing your green space vision to life! Refer back to the landscaping plan and contact a nursery to order your plants in advance. Wayne State's [Detroit Biodiversity Network](#) has a great, affordable selection of native plants, trees, and shrubs. [Wildtype](#) is another good nursery for native plants. Plan on doing your landscaping during the spring or fall. When you are ready to plant, refer back to the planting plan in order to properly place and space out the plants.

After landscaping, contact DWSD for your [drainage charge reduction](#). If you installed GSI on the green space, you can refer to Section 9 of DFC's [Detroit Property Owner's Guide to Bioretention](#) for steps on how to obtain the additional green credits from DWSD.

Landscaping your green space

Members of the North End Neighborhood Patrol plant a community garden in the North End, Detroit.



Photo Credit: Andrew Potter

CASE STUDY

ST. SUZANNE CODY ROUGE COMMUNITY RESOURCE CENTER

Pilot depaving project in the Cody Rouge neighborhood in Detroit

The Land + Water Works Coalition's (LWWC) depaving pilot project took place at the St. Suzanne Community Resource Center in the Fall of 2019. St. Suzanne's was struggling to pay its large DWSD drainage bills and wanted to see whether green infrastructure practices could help lower their charges and manage stormwater. DWSD recommended depaving several areas on the property, including part of the parking lot. They evaluated the site, realizing that the parking lot was oversized and underused — the parking lot filled to capacity once or twice a year on holidays, and street parking is plentiful.

The Land + Water Works Coalition partnered with [Detroit Training Center](#) (DTC) for this project. DTC specializes in workforce development and construction and offers training programs for Detroiters. DTC used St. Suzanne's depaving project as the location for their heavy equipment operator training program. Their students gained real-life heavy equipment work experience, and St. Suzanne's received donated labor for the depaving project by partnering with DTC's program, making the project more affordable.

Detroit Future City rented dumpsters from GFL and DTC rented heavy machinery from local equipment provider [Sunbelt](#). Once students began depaving, it was clear the pavement was not as thick as originally thought and there was no gravel underneath. Because of this, 7,500 square feet of asphalt was depaved within the budget. The project will achieve over \$1,290 in savings on St. Suzanne's DWSD drainage charges each year.

LWWC partnered with a Detroit- and minority-owned small business, Leonard Fantroy's Lawn Service, to lay grass seed and straw in the fall. St. Suzanne's is finalizing the planting plan for the space and plans to engage volunteers from the community center and church to plant trees on the depaved area. The project calculations and budget are provided on the next page.



St. Suzanne parking lot before depaving.



Removing asphalt and debris.

CASE STUDY



Backfilling topsoil into the depaved area.



Seed and straw laid after depaving.

St. Suzanne's Depaving Dimension Calculations

Length	50 to 115 feet
Width	120 feet
Depth	1.5 to 3 inches
Area = length x width	7,500 square feet
Volume = length x width x depth	1,863 cubic feet
Weight = volume x 145 lbs./cf. ÷ 2000 lbs./ton	135 tons

St. Suzanne's Depaving Budget

Item	Amount	Cost
Mobilization	4 weeks @ 250/week	\$1,000
Demobilization	4 weeks @ 250/week	\$1,000
Diesel fuel	Lump sum	\$810
Dumpster drop-off & pick-up, including 3 tons of disposal per dumpster	13 dumpsters @ \$300/dumpster	\$3,900
Disposal - extra weight	97 tons @ \$35/ton	\$3,395
Contractor labor (donated)	Lump sum	\$0
Topsoil	90 cubic yards @ \$25/cubic yard	\$2,250
Grading	Lump sum	\$840
Seed & straw	833 sq. yards @ \$1.10/sq. yard	\$917
Site restoration - asphalt patching	1200 sq. feet @ \$3.40/sq. foot	\$4,080
Concrete curbs + installation	13 curbs @ \$93/curb	\$1,209
Curb stakes	29 stakes @ \$6.69/stake	\$194
Plants	Lump sum	\$1,000
Total		\$20,595

RESOURCES

Depave — Portland, Oregon

<https://depave.org>

SEMCOG Land Cover Facts

<https://semcog.org/desktopmodules/SEMCOG.Publications/GetFile.ashx?filename=QuickFactsLandCoverInSoutheastMichigan2013May2013.pdf>

DWSD GSI Best Management Practice: Downspout Disconnection

https://detroitmi.gov/sites/detroitmi.localhost/files/2019-06/DCCP%20Site%20App%20-%20Downspout%20Disconnection_WEB.pdf

MSU Native Plants List

https://www.canr.msu.edu/nativeplants/plant_facts/local_info/south_lower_peninsula

DFC's Field Guide to Working with Lots

<https://dfc-lots.com>

The Greening of Detroit Caring for Trees Resources

<https://www.greeningofdetroit.com/caring-for-trees>

Keep Growing Detroit Soil Testing Guide

<https://detroitagriculture.net/wp-content/uploads/2019-SOIL-TESTING-GUIDE.pdf>

MSU Extension Soil Testing

<https://homesoiltest.msu.edu/get-started>

DFC's Detroit Property Owner's Guide to Bioretention

<https://detroitfuturecity.com/wp-content/uploads/2019/09/GUIDE-Property-Owners-Guide-to-Bioretention-September-2019.pdf>

Depave Portland's Guide to Freeing Your Soil

<https://depave.org/wp/wp-content/uploads/downloads/2016/03/HowToDepaveGuide-V3.4-2016.pdf>

GFL Environmental USA

<https://gflusa.com>

City of Detroit BSEED Development Resource Center

<https://detroitmi.gov/departments/buildings-safety-engineering-and-environmental-department/bseed-divisions/development-resource-center>

Wayne County Soil Erosion & Sedimentation Control

<https://www.waynecounty.com/departments/environmental/landresources/soil-erosion.aspx>

Detroit Biodiversity Network

www.detroitbiodiversitynetwork.com

Wildtype Nursery

www.wildtypeplants.com

DWSD Guide to the Drainage Charge Bill Adjustment

<https://detroitmi.gov/Portals/0/docs/DWSD/A%20Guide%20to%20the%20Drainage%20Charge%20Bill%20Adjustment.pdf?ver=2018-02-24-232003-670>

Detroit Training Center

www.detroittraining.com

Sunbelt Rentals

www.sunbeltrentals.com

Let's depave Detroit.

DETROIT FUTURE CITY

Detroit Future City is a nonprofit charged with catalyzing implementation of the DFC Strategic Framework, a 50-year vision for the City of Detroit developed with input from more than 100,000 Detroiters. Our role is to steward equitable implementation of the recommendations made in the Strategic Framework through providing access and information to Detroiters, informing and guiding decision-makers' initiatives and projects, and the coordination of a multitude of stakeholders.

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