

# GRANT APPLICATION SUMMARY SHEET

**Grant Name:** TDEC Tire Environmental Act Program 18-19  
**Department:** WATER & SEWER  
**Grantor:** TENNESSEE DEPT. OF ENVIRON. & CONSERVATION  
**Pass-Through Grantor (If applicable):**  
**Total Applied:** \$95,617.00  
**Metro Cash Match:** \$75,887.00  
**Metro In-kind Match:** \$19,730.00  
**Department Contact:** Rebecca Dohn  
880-2420  
**Status:** NEW

**Program Description:**

Metro Water Services is seeking a solution to its ongoing maintenance and care challenges for urban tree surrounds in Nashville's downtown tree wells. Metro's proposal is to replace 130 broken and missing cast-iron and aluminum tree grates with flexible porous paving. Approximately 1,197 tires would be recycled and kept out of Tennessee landfills while protecting tree root zones to encourage growth, water infiltration, and protect pedestrians from tripping in tree wells. The materials and labor cost of flexible porous pavement is approximately one-half that of traditional cast-iron tree grates and requires considerably less maintenance.

**Plan for continuation of services upon grant expiration:**

We will continue to ask for grant to utilize matching grant as long as budgetary space is available.

**APPROVED AS TO AVAILABILITY OF FUNDS:** **APPROVED AS TO FORM AND LEGALITY:**

*[Signature]* 9/25/18 *[Signature]* 10/2/18  
Director of Finance      Date      Metropolitan Attorney      Date

**APPROVED AS TO RISK AND INSURANCE:**

*[Signature]* 10/1/18  
Director of Risk Management      Date  
Services



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
 OFFICE OF SUSTAINABLE PRACTICES  
 William R Snodgrass Tennessee Tower  
 312 Rosa L Parks Ave, 2<sup>nd</sup> Floor, Nashville, TN 37243  
 Email: tire.grant@tn.gov

**TIRE ENVIRONMENTAL ACT PROGRAM APPLICATION**  
*(Limit one application per entity, per location)*

**Participant Information | Please provide a description in the text boxes below for each section**

**Application Procedure:**

Applicants must complete and provide the items listed below in their grant request. Details for completing the items below are provided in this grant manual.

- Tire Environmental Act Grant Application
- Project Proposal (maximum five pages)  
 -Selection Criteria
- Budget Page and Budget Justification

**Applicant Name** *(Organization that will enter into the Grant Agreement):* Metro Government of Nashville and Davidson

**Applicant is a:**

- Private Entity
- Government
- Educational Institution
- Other:

**List of Project Partners (if any):**

**List County/Counties location:**  
 Davidson County

**Applicant Address:** 1600 2nd Ave North

City: Nashville Zip Code (9-Digit): 3720 - 8

**Project Location Address:** Downtown Nashville

City: Nashville Zip Code (9-Digit): 37201 -

**Applicant Contact** *(Person responsible for daily management of project):*

Name: Naomi Rotramel

Telephone: 615 - 862 - 4733

Title: Urban Forestry Program Manager

Federal/Tax ID or DUNS No.: 62-0694743

NO Social Security Numbers

Email: naomi.rotramel@nashville.gov

**Project Title:** Downtown Tree Grate Replacement Project

**Project Categories**

- Tire Recycling
- Tire Derived Product Use
- Facility Improvements
- Research, Testing, and/or Development
- Other:

**Brief Project Description** (No more than 500 characters):

Metro Water Services is seeking a solution to its ongoing maintenance and care challenges for urban tree surrounds in Nashville's downtown tree wells. Metro's proposal is to replace 130 broken and missing cast-iron and aluminum tree grates with flexible porous paving. Approximately 1,197 tires would be recycled and kept out of Tennessee landfills while protecting

Project Funding		Source & Amount of Applicant's Matching Funds	
Grant Amount Requested:	\$ 95,617 50 %	General Fund:	\$ 75,887.50
Match (If Applicable):	\$ 95,617 50 %	In-kind Services:	\$ 19,730
TOTAL PROJECT COST:	\$ 191,234 100%	TOTAL MATCH:	\$ 95617

(TOTAL MATCH should equal match in project funding section)

**Grantee Information** (Person responsible for communications and contact):

Name: Rebecca Dohn Address: 1607 County Hospital Road  
Title: LID & Sustainability Coordinator Telephone: 615 566 1328  
E-Mail: rebecca.dohn@nashville.gov Fax:

**Federal Congressional District**  
Congressperson's Name: Jim Cooper District Number: 5th

**State Districts**  
Senator's Name: Thelma Harper District Number: 19th  
Representative's Name: Bill Beck District Number: 51st

\_\_\_\_\_  
**Signature of Responsible Party**

\_\_\_\_\_  
**Mailing Address, City, State, Zip Code**

\_\_\_\_\_  
**Printed Name/Title**

\_\_\_\_\_  
**E-Mail**

\_\_\_\_\_  
**Signature of Project Partner (If Applicable)**

\_\_\_\_\_  
**Mailing Address, City, State, Zip Code**

\_\_\_\_\_  
**Printed Name/Title**

\_\_\_\_\_  
**E-Mail**

**When you have completed this form print and sign and make a copy for your records and return the original to the following address:**

Tennessee Department of Environment and Conservation  
Office of Sustainable Practices  
Attention: Tire Environmental Act Program  
William R Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue, 2<sup>nd</sup> Floor  
Nashville, TN, 37243  
Email: tire.grant@tn.gov



## Tire Environmental Act Program

### Grant Application Project Proposal

Metro Government of Nashville & Davidson County, TN

September 10, 2018

Metro Nashville Government is seeking a solution to its ongoing maintenance and care challenges for urban tree surrounds in its downtown tree wells. Metro proposes replacing 130 broken and missing cast-iron and aluminum tree grates with flexible porous paving. With this proposal, approximately 1,197 tires would be recycled and kept out of Tennessee landfills.

#### 1. General Benefit for Waste Tire Use

##### a. Immediate beneficial tire uses

There are a number of immediate environmental and economic benefits to this proposal. Environmentally, Flexi®-Pave uses recycled tire material mixed with rock aggregate and a binder to form a firm, porous surface. In addition to keeping tires out of landfills, the permeable nature of the product allows for rain water to be absorbed into the ground, which reduces stormwater run-off on sidewalks and streets. Economically, this product is less expensive than tree grates and pavers typically used in tree surrounds. Further, installation can be done more quickly and requires fewer personnel.

##### b. Long term beneficial tire uses

Flexible, porous pavement containing recycled tires has long term environmental and economic benefits as well. These long term benefits often combine these two goals. Using a flexible, porous material in tree surrounds allows water and oxygen to flow freely through to the root system at a rate of 40 gallons/square foot/hour. This encourages the tree roots to grow downward giving the tree greater stability and reducing girding roots that prematurely kills trees. In addition to better tree health, roots that grow downward decrease the amount of buckling in the surrounding sidewalk thereby decreasing tripping hazards. Flexi®-Pave material also can be cut as trees grow unlike grates or brick pavers which would need more costly replacement. Because this product is spread over the soil surrounding the tree, it prevents soil compaction caused by daily foot traffic while also being flush to the surrounding sidewalk. This allows the tree well to comply with the standards set forth by the Americans with Disabilities Act. Less compact soil more easily absorbs Stormwater

decreasing runoff into streets and the sewer system. Finally, this environmentally responsible alternative is non-cracking even in freeze/thaw conditions that are occurring with greater frequency as well as being slip resistant due to the use of recycled tires. These features generate savings in maintenance costs and could reduce liability concerns compared to traditional grating.

c. Quantity of Tennessee tires recycled

Approximately 1,197 Tennessee tires would be recycled in this project. This number was determined by reviewing various factors in this project. First, tree wells in the downtown Nashville area range in size from 4'x4' to 5'x10'. A 4'x4' tree well recycles approximately 5 tires while a 5'x10' tree well recycles approximately 17 tires. For this phase of the project, we plan to install 49 tree wells with about half of those be 5'x10' in size diverting approximately 696 tires from landfill. Once this has been completed, we plan to move to the next phase of the project and anticipate replacing approximately 81 grated tree wells of various sizes of trees that are currently being girdled; recycling approximately another 500 tires.

2. Creative/New Technology

a. Unique and emerging technology.

Flexi®-Pave was developed in 2001 by K.B. Industries (KBI) and has gained popularity across the county due to the ingenious way this flexible porous pavement can be used to solve the problem of tree roots buckling sidewalks and grates girdling trees. Flexi®-Pave uses recycled automobile tire chips in construction of the surface layer and tire crumbs in the blending of the pollution control media, with crushed concrete aggregates to create an environmentally-friendly product that qualifies for LEED points.

b. Model for future projects

This project is the first of its kind in Metro Nashville and Davidson County and is serving as a guide for communicating with certified suppliers and installing Flexi®-Pave. For example, Metro Parks is considering Flexi®-Pave for pathways and trails, where the hydrology of natural environments will not be as drastically affected, and our experience will be a resource for them.

c. Expanding the market for tires

Metro is working with Patriot Tire Recycling in Bristol, TN, to source 100% of the tire rubber for this project in state. They will be fully operational by Fall 2018. Once Patriot Tire Recycling is operational, they could investigate becoming a distributor of

Flexi®-Pave products for KBI. This would increase the demand for Patriot's product, and its economic impact in its community and potentially create a more centralized distributor for KBI. If this were to occur, a continual supply of recycled tire products for sustainable paving projects would be available throughout the state.

d. Case study development

Metro Nashville has installed twelve tree surrounds in May 2018 and is monitoring them closely for performance abilities. A video of this installation can be viewed at <https://www.youtube.com/watch?v=4QnKqvAAVV0&t=2s>. So far, the product has performed in excellent fashion. We are installing 69 tree wells downtown in August 2018. These tree surrounds will be monitored to ensure that they retain their porosity, ADA compliance, and general shape.

e. Project validation

Due to limited funding and staffing, traditional tree grates typically result in trees growing into grates and dying. A large, mature tree in Nashville's downtown inner loop can infiltrate as much as 5,200 gallons of stormwater runoff per year, save 140 kilowatt hours of electricity for cooling, absorb pollutants and intercept particulate matter, reduce heat island effects, and reduce atmospheric carbon by 702 pounds/year. In order to have all these benefits, it is vital for Nashville to grow its urban forest and care for its trees. Flexi®-Pave is a more sustainable and economic solution to the issues presented in maintaining healthy, vibrant urban trees.

3. Qualifications, Experience, Capabilities, and Scheduling

a. Relevant experience with the technology or process

Metro Nashville will have installed approximately 80 tree surrounds before this phase of the project begins.

b. Strength of team assembled including end-markets as evidenced by letters of commitment or support

Walker Building Group, LLC is a certified contractor of Flexi®-Pave (#TNCL-289) and has completed the installation for Phases 1 and 2 of the Flexi®-Pave installation project.

Patriot Tire Recycling has expressed a strong interest in distributing Flexi®-Pave products and working with Tennessee State Parks to increase the number of Tennessee tires that are recycled.

Finally, Metro Nashville Government as a whole is committed to sustainability and protecting all natural resources that we manage. Our commitment to urban forestry is evident by the numerous grants and pieces of legislation regarding studying, protecting, and re-establishing the city's tree canopy (RS2009-764, RS2013-631, RS2014-952, RS2018-1169) we have applied for and passed. Commitment to urban forestry has been a priority for Metro for a number of year as evidenced by Nashville being recognized as a Tree City USA for the 23rd consecutive year in 2017. Using flexible porous pavement for our downtown tree surrounds is the next step to increasing our green footprint and our commitment to urban forestry by not only using a more environmentally friendly product in our tree wells, but by using a product that keeps tires out of landfills.

- c. Schedule, milestones, and deliverables of project  
By June of 2019, we plan to replace over 130 missing, damaged, and girdling grates in tree wells downtown Nashville made entirely of Flexi®-Pave.

#### 4. Equipment Application

- a. Relevant equipment to produce desired end product  
This project requires minimal equipment. Only a mortar mixer and some concrete trowels are necessary for mixing and spreading the surface material.
- b. Area or space to accommodate equipment and tires  
Existing space can accommodate equipment and tires.

#### 5. Protection of Environmental Resources by Utilizing Existing Resources

This portion of the project will utilize approximately 1,197 existing tires that would have been sent to landfills to protect approximately 130 trees. The protection of trees will protect additional environmental resources by infiltrating stormwater runoff, absorbing pollutants, reducing atmospheric carbon, and saving electricity.

Additionally, a local contractor will complete the installations reducing the amount of fossil fuels that are used by the staff working on the project. Any leftover product will be shared with other Metro Departments that are conducting Flexi®-Pave projects ensuring minimal waste.

- 6. Ability to leverage matching funding to enhance overall project objectives
  - a. The matching funds for this project will come from a stormwater funding.

**Budget for Tennessee State Environmental Act Program**  
*Metro Water Tree Surrounds Project Fall 2018*

**Total Budget**

Material & Labor	\$ 151,774.00
Indirect Costs	
	<u>\$ 39,461.00</u>
Total	<u>\$ 191,235.00</u>

**Breakdown of cost 50/50 Cost share**

State of Tennessee (50%)

Material & Labor	\$ 75,887.00
Indirect Costs	<u>\$ 19,730.00</u>
Total State share	<u>\$ 95,617.00</u>

Metro Water Services (50%)

Material & Labor	\$ 75,887.00
Indirect Costs (In kind)	<u>\$ 19,730.00</u>
Total MWS Share	<u>\$ 95,617.00</u>

Total of Breakdown	<u><u>\$ 191,234.00</u></u>
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Notes:

1.) Material and Labor estimate is from Walker Building group who has completed the pilot program using this product for tree surrounds.

2.) Indirect Costs of 26% are derived from the annual process whereby departments are required to calculate the ratio of indirect to direct costs.