Executive Summary - Permeable Parking Solutions

This document evaluates two permeable paving systems, TRUEGRID Pavers and Grasspave2, as eco-friendly alternatives to traditional concrete for parking solutions, with a focus on their suitability for park settings like Rollingwood Park. Both systems promote stormwater infiltration, reduce runoff, and align with sustainability goals, but they differ in durability, maintenance, and application.

TRUEGRID Pavers are made from 100% recycled plastic and support heavy loads (8,000+ PSI), making them ideal for high-traffic park areas like parking lots or maintenance vehicle access. They offer superior permeability (>1,000 inches/hour), low maintenance (especially with gravel fill), and a lifespan of 25–60 years. Their versatility allows for gravel, grass, or decorative stone infill, ensuring ADA compliance and aesthetic flexibility. However, they have higher upfront costs, require subbase preparation, and may not match concrete's polished look. Positive reviews from entities like the City of Lavernia and San Antonio River Authority highlight their reliability, though one negative review noted maintenance challenges for gravel-filled systems.

Grasspave2, made from recycled HDPE, is designed for grass infill and supports moderate loads (up to 15,712 PSI), suitable for low-traffic areas like fire lanes or overflow parking. Its lawn-like aesthetic enhances park greenery, and it is more cost-effective upfront than TRUEGRID. However, it requires intensive grass maintenance (watering, mowing), has a shorter lifespan (25–40 years), and is less durable under heavy traffic. Installation is complex, and its grass-only design limits versatility.

Compared to Concrete, both permeable systems reduce runoff, lower heat island effects, and offer long-term cost savings by eliminating drainage infrastructure needs. Concrete, while familiar and customizable, is impermeable, high-maintenance, and environmentally taxing due to carbon emissions and heat retention.

Recommendation: TRUEGRID Pavers are recommended for Rollingwood Park's high-traffic areas due to their durability, low maintenance, and versatility. Grasspave2 is better suited for low-traffic, aesthetic-focused areas like overflow lots, provided maintenance resources are available. Both systems outperform concrete in sustainability and cost-effectiveness, aligning with environmental and budgetary goals.

TRUEGRID pavers

Permeable paving system made from 100% recycled plastic, designed to stabilize gravel, grass, or other fill materials for durable, eco-friendly surfaces. They allow stormwater to infiltrate, reducing runoff and eliminating the need for costly drainage systems. Strong enough for heavy vehicles yet low-maintenance and crack-resistant.
More information: https://texasecopavers.com/
https://www.truegridpaver.com/resources/projects/#0

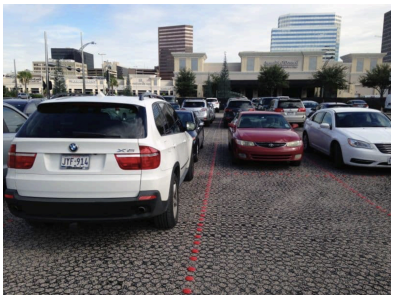
Installation:

https://texasecopavers.com/truegrid-permeable/

Photo Examples:









Grasspave2 by Invisible Structures

A flexible, permeable paving system made from 100% recycled HDPE, designed for grass infill. It consists of 1”-deep plastic grids that support low to moderate vehicular traffic (up to 15,712 PSI with proper base), such as cars or emergency vehicles, while blending into lawns. Used for fire lanes, overflow parking, or pathways, it promotes natural grass growth, reduces runoff, and minimizes heat island effects. Ideal for aesthetic, low-traffic areas, it requires grass maintenance (watering, mowing) and a permeable sub-base for effective drainage.
More information: https://invisiblestructures.com/

Photo Examples:

TRUEGRID Pavers versus Concrete

TrueGrid Pavers

Pros:

- **100% Permeability**: Allows water to infiltrate, reducing runoff, flooding, and the need for detention ponds.Lowers heat island effect.
- **Eco-Friendly**: Made from 100% recycled plastic, supports sustainability, and promotes natural drainage.
- **Low Maintenance**: Resistant to cracking, no need for frequent repairs or resurfacing.
- **Cost-Effective**: Lower installation and long-term maintenance costs; saves on stormwater infrastructure.
- **Durability**: Handles heavy loads, resists UV damage, and withstands freeze-thaw cycles.
- **Quick Installation**: Minimal downtime, often installed in days vs. weeks for concrete.
- **Aesthetic Flexibility**: Can be filled with gravel, grass, or other materials to blend with surroundings.
- **ADA Compliance**: Provides stable, accessible surfaces when properly installed.

Cons:

- **Initial Learning Curve**: Requires proper installation to ensure performance
- **Appearance**: May not offer the sleek, uniform look of concrete, depending on fill material.
- **Debris Collection**: Gravel-filled pavers can trap debris, requiring occasional cleaning.
- **Limited Color Options**: Less customizable in color compared to decorative concrete.

Concrete

Pros:

- **Familiarity**: Widely used, with established installation processes and contractor expertise.
- **Smooth Surface**: Provides a uniform, polished look ideal for urban settings.
- **Customizable**: Offers decorative options like stamping, staining, or coloring.
- **Immediate Use**: Can be used soon after curing, with no need for fill material settling.

Cons:

- **Impermeability**: Causes runoff, requiring costly drainage systems and increasing flood risks.
- **High Maintenance**: Prone to cracking, especially in freeze-thaw climates, needing frequent repairs.
- **Expensive Over Time**: Higher maintenance and replacement costs compared to permeable systems.
- **Environmental Impact**: Production and installation contribute to carbon emissions; less sustainable.
- **Longer Installation**: Requires extended curing time, disrupting access for weeks.
- **Heat Retention**: Absorbs and radiates heat, contributing to urban heat island effects.

TRUEGRID Pavers versus Grasspave2

TRUEGRID Pavers

Pros:

- High Durability: Supports heavy loads (up to 8,000+ PSI filled), suitable for park parking lots or maintenance vehicle access. Lifespan of 25–60 years, resisting cracks and wear.
- Superior Permeability: Absorbs >1,000 inches/hour, reducing runoff and flooding, critical for Rollingwood's clay soils and occasional heavy rains. Stores water in subbase for slow release.
- Low Maintenance: Gravel-filled grids need minimal upkeep (occasional raking); grass-filled options require mowing but resist ruts, ideal for high-traffic park areas.
- Versatility: Accommodates gravel, grass, or decorative stone, fitting various park zones (e.g., parking, pathways, picnic areas). ADA-compliant with proper fill for accessibility.
- Fast Installation: Snap-together grids cover large areas quickly (1,000 sq ft/man-hour), minimizing park disruption during construction.
- Eco-Friendly: Recycled material, reduces heat island effect, and filters pollutants via soil bioremediation, aligning with park sustainability goals.
- Proven Use: Trusted for large-scale projects (e.g., commercial lots, public spaces), ensuring reliability for park demands.

Cons:

- **Higher Cost**: More expensive than Grasspave2 or asphalt upfront, potentially straining park budgets, though long-term savings offset costs (less drainage infrastructure needed).
- **Aesthetic Trade-Off**: Gravel or grass may look less formal than concrete for park entrances or plazas, requiring careful fill selection to match park design.
- **Subbase Prep**: Needs 2–8" angular gravel base for stability, adding prep time/cost, especially in clay-heavy Rollingwood soils needing drainage adjustments.
- **Grass Upkeep**: If grass-filled, requires irrigation and mowing, which could burden park maintenance crews in drought-prone periods.

Grasspave2

Pros:

- **Seamless Aesthetic**: Grass infill creates a lawn-like surface, ideal for park open spaces or low-visibility paving (e.g., overflow lots), enhancing Rollingwood Park's green look.
- **Cost-Effective**: Generally cheaper than TRUEGRID for grass applications, fitting tight municipal budgets for smaller park projects.
- **Eco-Friendly**: Recycled HDPE, promotes grass growth, and reduces runoff (high permeability, though less quantified than TRUEGRID). Lowers heat island effect.
- **Flexible Design**: Conforms to uneven terrain, simplifying installation in park areas with minimal grading, like trails or grassy lots.
- **Moderate Strength**: Supports up to 15,712 PSI with proper base, handling light park traffic (e.g., cars, golf carts, emergency vehicles) in overflow areas or fire lanes.

• **Established Niche**: Widely used for grass fire lanes and green parking since the 1980s, reliable for low-impact park uses.

Cons:
• **Limited Load Capacity**: Not suited for heavy or frequent traffic (e.g., delivery trucks, heavy park equipment), risking grid damage or grass wear in busy areas.
• **High Maintenance**: Grass needs regular watering, mowing, and fertilizing, especially in Rollingwood's hot climate, increasing park upkeep costs and water use.
• **Complex Installation**: Requires precise sand/soil base and hydroseeding/sodding, with flexible rolls harder to align than TRUEGRID's grids, slowing large-scale park projects.
• **Less Versatile**: Designed for grass only, limiting use.
• **Durability Concerns**: Flexible grids may deform or crack under repeated loads or extreme weather, with a shorter lifespan (25–40 years) than TRUEGRID.
• **Drainage Dependency**: Effective only with permeable sub-base; Rollingwood's clay soils may need extra gravel or drainage work, raising costs.

Third-Party Reviews of TrueGrid Pavers:

City of Lavernia (+)
Lindsey Wheeler, City Administrator
830-779-4541x 5

City of Hondo (+)
John Naron, City Manager
830-426-3380

San Antonio River Authority (+)
210-227-1373

Wabash Feed & Garden Store (+)
713-863-8322

Honeybee Ranch Events Center (+)
713-208-6222

School in the Hills (-)
512-266-8180
*Ended up using concrete because they did not have an outdoor maintenance staff to replace gravel from time to time.