

## MEMORANDUM

Date: April 29, 2026

To: Rollingwood Park Commission

From: Maritza A Almada, PE; Abe Salinas, PE, CFM

Re: Rollingwood Park Upper Parking Lot – Pavement Option Drainage and Pavement Considerations

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### Overview

HW Lochner, Inc., serving as City Engineer for the City of Rollingwood, has been requested by the Rollingwood Park Commission to review the proposed pavement options for the upper parking lot expansion at Rollingwood Park and to provide input on the drainage and pavement implications of each. This review is based on the Rollingwood Park Landscape Development Plan dated April 9, 2026, prepared by Sitiodesign, which presents TRUEGRID pervious pavers with an aggregate reservoir and underdrain system as one option. The Park Commission also requested consideration of asphalt and concrete pavement options.

The existing upper parking area consists of asphalt pavement and compacted aggregate base; both should be treated as effectively impervious for hydrologic evaluation. The proposed work is therefore best characterized as redevelopment of an existing impervious surface, with any expansion beyond the existing pavement and compacted base footprint potentially increasing runoff and triggering mitigation requirements.

The objectives of this memorandum are to (1) summarize the drainage considerations associated with each pavement option under the City of Rollingwood Drainage Criteria Manual, (2) summarize the pavement considerations that affect long-term cost and durability, (3) provide a side-by-side comparison of the three options, and (4) offer recommendations to assist the Park Commission in selecting an option to advance to design. This memorandum provides planning-level guidance only. It does not constitute a drainage review or approval of impervious-cover credit for any specific pavement section. Final drainage and water quality requirements should be confirmed during design through hydrologic calculations, drainage layout development, TCEQ applicability review, and City permitting review with supporting documentation prepared by Sitiodesign.

### Drainage and Water Quality Considerations

The City of Rollingwood Drainage Criteria Manual (DCM) governs this project. Section 4.1 of the DCM requires that any project causing an increase in stormwater runoff provide mitigation such that post-development peak flows do not exceed pre-development peak flows along the property perimeter for the 2-, 10-, 25-, and 100-year storm events. The DCM also requires an Operations and Maintenance plan for any drainage facility.

The Rollingwood DCM does not establish a specific impervious-cover value for pervious pavers. However, based on the current Sitiodesign concept, which includes TRUEGRID pervious pavers over an engineered open-graded aggregate reservoir with an underdrain system, it is reasonable for

planning purposes to evaluate the TRUEGRID parking area as 50% impervious for vehicular-use areas. This planning value is consistent with the City of Austin's treatment of vehicular permeable pavement applications and reflects that the system would provide stormwater storage, infiltration opportunity, and controlled release through the aggregate reservoir and underdrain. The remaining 50% should continue to be treated as impervious to account for traffic loading, long-term clogging risk, underdrain discharge, and maintenance dependency. This assumed credit should be used only for planning-level comparison of alternatives. Final impervious-cover credit should be confirmed during design based on the final pavement section, storage volume, underdrain configuration, overflow routing, water quality design, and Operations and Maintenance plan.

Rollingwood lies within the Edwards Aquifer Recharge Zone and is subject to the TCEQ Edwards Aquifer Protection Program (EAPP) under 30 TAC Chapter 213. Because the project includes pavement, drainage, and potential stormwater quality improvements, TCEQ applicability should be confirmed during design based on total disturbed area, new impervious cover, existing park approvals, and whether the work qualifies as a modification, exception, or new Water Pollution Abatement Plan (WPAP) submittal. The Rollingwood DCM requires that, if a BMP is proposed with the site improvements, the applicant identify the BMP method, capture area, runoff storage/detention time, and release rate, if applicable. For planning purposes, if the TRUEGRID section is used as an engineered permeable pavement BMP, it may reduce or potentially eliminate the need for a separate water quality facility for the paver area; however, asphalt, concrete, ADA stalls, drive aisles not constructed as permeable pavement, and any other conventional impervious areas should be evaluated during design for applicable TCEQ Chapter 213 water quality compliance.

An additional drainage consideration specific to this site is the discharge condition along the eastern property line. As illustrated in Figure 1, the existing topography indicates that runoff from the upper parking area sheet flows generally to the east and discharges across the eastern property line onto the adjoining Westlake Athletic Club (WAC) property. There is no recorded drainage easement across the WAC property, and runoff originating from Rollingwood Drive is assumed not to be conveyed onto or treated within the parking lot site. The proposed landscape plan shows the underdrain system discharging at the northeast corner of the parking improvements.

The selected pavement option must therefore include drainage controls sufficient to manage discharge at the eastern property line such that post-development peak flows comply with DCM Section 4.1 and the overall discharge condition, including runoff concentration, timing, volume, erosion potential, and water quality, does not adversely impact the WAC property relative to existing conditions. If concentrated discharge is proposed across the property line, a drainage easement or written downstream acceptance may be required.



*Figure 1 - Rollingwood Park Topography*

**Option 1 – TRUEGRID Pervious Pavers**

The pervious paver section as shown on the Sitedesign plans includes an engineered open-graded aggregate reservoir and an underdrain system that captures and slowly releases stormwater. Based on the planning-level 50% impervious assumption for vehicular TRUEGRID areas, the combination of reservoir storage, controlled release, and the existing impervious baseline of the upper parking lot may allow this option to satisfy DCM Section 4.1 without a separate detention facility, subject to confirmation through hydrologic calculations during design.

The pervious paver section may also serve as an engineered permeable pavement BMP for applicable TCEQ Chapter 213 compliance, provided the system is designed, documented, constructed, maintained, and accepted for that purpose. If TRUEGRID is used as a BMP, the Rollingwood DCM requires the BMP method, capture area, runoff storage/detention time, and release rate, if applicable, to be documented for City Engineer review. Discharge from the underdrain at the eastern property line must still be managed to avoid adverse impacts to the WAC property.

The principal risk with this option is that the drainage and water quality benefits are maintenance-dependent. If the system clogs or is not maintained, the City may lose the hydrologic or BMP benefits assumed during design and could be required to restore the system or provide supplemental mitigation.

### **Option 2 – Asphalt**

Asphalt pavement is treated as fully impervious. Within the existing parking lot footprint, replacement of existing asphalt paving areas and compacted aggregate base areas is not expected to create a new impervious-cover impact. Any areas that increase the limits of the existing pavement and compacted base would increase impervious cover and may require detention or equivalent mitigation to demonstrate compliance with DCM Section 4.1. Therefore, if asphalt is selected, the preferred design approach should be to match the existing asphalt and compacted base footprint as closely as practical to avoid or minimize the need for additional drainage mitigation.

A separate water quality BMP may also be required for applicable TCEQ Chapter 213 compliance if new or modified impervious cover is not otherwise addressed by an accepted BMP or existing approval. If a BMP is proposed, the Rollingwood DCM requires the BMP method, capture area, storage/detention time, and release rate, if applicable, to be documented for City Engineer review.

### **Option 3 – Concrete**

From a drainage standpoint, standard Portland cement concrete is treated identically to asphalt: fully impervious, with the same DCM Section 4.1 obligation to mitigate increased runoff and the same potential need for a water quality BMP for applicable TCEQ Chapter 213 compliance. The drainage analysis effort and required mitigation footprint are generally equivalent to Option 2.

## **Pavement Considerations**

Beyond the drainage analysis, several pavement-related factors materially affect the long-term cost and performance of each option. For all three pavement options, long-term performance will depend on subgrade preparation, positive drainage, edge restraint or curb condition, pavement section thickness, anticipated vehicle loading, and construction quality. The final pavement section should be confirmed during design based on anticipated traffic loading, maintenance vehicle access, emergency access, and geotechnical or subgrade condition.

### **Option 1 – TRUEGRID Pervious Pavers**

Anticipated service life is 25 years or more with consistent maintenance, assuming use of the TRUEGRID PRO PLUS commercial-duty product and an engineered pavement section appropriate for public parking lot use. TRUEGRID PRO PLUS is identified by the manufacturer as a commercial-use product for parking lots and heavy loads, with load capacity exceeding H20/HS20 rating when properly filled and installed. The current Sitedesign plans identify TRUEGRID pervious pavers, but the final design should specifically confirm TRUEGRID PRO PLUS or an approved equal, along with the aggregate reservoir section, underdrain configuration, edge restraint, infill material, and design vehicle loading.

Routine maintenance consists of leaf, sediment, and debris removal; periodic inspection of the surface and underdrain outlets; localized gravel refill; weed control; and spot replacement of damaged paver units. Although routine vacuum sweeping is generally not required for TRUEGRID in the same manner as porous asphalt or pervious concrete, vacuum cleaning or other restorative cleaning may be needed as corrective maintenance if sediment accumulation, ponding, clogging, or reduced infiltration is observed.

Periodic localized refilling of the gravel infill and replacement of individual damaged paver units should be anticipated, particularly in high-use areas, in turning radii, and where heavier vehicles such

as maintenance trucks or delivery trucks impose concentrated loads. Failure to maintain the system may result in clogging, loss of pervious function, and loss of the impervious-cover or water quality benefits assumed during design.

TRUEGRID PRO PLUS is identified by the manufacturer as ADA compliant; however, gravel-filled permeable paver areas should still be specifically detailed and reviewed to confirm that accessible parking spaces and accessible routes provide a firm, stable, and slip-resistant surface. A hybrid section with concrete at the ADA-accessible parking stalls remains the lower-risk solution and is consistent with the Sitedesign plans.

For planning purposes, the installed cost of a TRUEGRID PRO PLUS system is assumed to be on the order of \$15 to \$20 per square foot, pavement system only, based on the plan detail showing TRUEGRID with gravel infill over a 6-inch layer of angular stone and prepared subgrade. This estimate should be confirmed by Sitedesign or a contractor during final design based on the final section thickness, stone gradation, underdrain layout, edge restraint, excavation, and outlet configuration

### ***Option 2 – Asphalt***

Anticipated service life is 15 to 20 years with periodic maintenance, assuming a properly designed commercial asphalt pavement section, adequate subgrade preparation, positive drainage, and routine maintenance. Periodic crack sealing and seal coats every 5 to 7 years are typically required, with an eventual overlay near the end of service life.

For planning purposes, installed costs for asphalt are assumed to be on the order of \$15 to \$20 per square foot, pavement only. This range is based on recent City bid pricing for a heavy-duty asphalt section consisting of approximately 10 inches of Type B hot mix asphaltic concrete pavement and 2 inches of Type D hot mix asphaltic concrete pavement. If a thinner standard parking lot section over compacted aggregate base is selected during final design, the asphalt pavement cost may be lower.

Performance risks include rutting under sustained heat, edge raveling, cracking, and faster deterioration relative to concrete. These risks can be mitigated with a thicker base or pavement section, but doing so would increase construction cost.

### ***Option 3 – Concrete***

Anticipated service life is 25 to 40 years with periodic joint and panel maintenance, assuming a properly designed concrete pavement section, adequate subgrade preparation, positive drainage, proper joint layout, and construction quality control. Based on the pavement section shown in the current plans, the concrete option is assumed to consist of 6 inches of reinforced concrete pavement over 8 inches of compacted flexible base.

For planning purposes, installed costs for this section are assumed to be on the order of \$25 to \$30 per square foot, pavement only. This range is generally consistent with recent bid pricing for 6-inch concrete pavement combined with 8 inches of compacted flexible base.

Life-cycle cost may be lower than asphalt over a 30-year horizon because concrete typically requires less frequent structural maintenance. Performance risks are primarily related to joint cracking, isolated panel repair, subgrade movement, and difficulty of future utility or pavement repairs. Concrete is the most rigid of the three options and is generally the most difficult to repair or modify after construction.

## Summary of Options

The following table summarizes the key differences across the criteria most relevant to the Park Commission’s decision.

Consideration	TRUEGRID Pervious Pavers	Asphalt	Concrete
Drainage classification	Planning assumption: 50% impervious for vehicular TRUEGRID areas, subject to final design acceptance	Fully impervious	Fully impervious
Planning-level installed cost	\$15–\$20/sf, pavement system only	\$15–\$20/sf, pavement only	\$25–\$30/sf, pavement only
Service life	25+ years with consistent maintenance	15–20 years with periodic maintenance	25–40 years with periodic joint/panel maintenance
Detention pond / mitigation required	May be avoided, subject to design calculations and City Engineer acceptance	Likely if runoff increases; detention or equivalent mitigation required	Likely if runoff increases; detention or equivalent mitigation required
Separate water quality BMP	May be avoided if accepted as permeable pavement BMP for TCEQ	May be required for applicable TCEQ Chapter 213 compliance if not otherwise addressed by an accepted BMP or existing approval	May be required for applicable TCEQ Chapter 213 compliance if not otherwise addressed by an accepted BMP or existing approval
Ongoing City maintenance	Debris/sediment removal; underdrain inspection; gravel refill; weed control; corrective cleaning if clogged; spot paver repair	Crack sealing and seal coat every 5–7 years; eventual overlay	Joint maintenance; isolated crack/panel repair as needed
Risk if maintenance is deferred	Loss of pervious credit; reduced water quality benefit; potential need for system restoration or supplemental mitigation	Accelerated deterioration	Minor surface cracking; isolated panel deterioration

## Recommendations

Each of the three pavement options is technically viable; the selection should be informed by the City's priorities regarding first cost, life-cycle cost, drainage mitigation footprint, TCEQ Chapter 213 compliance, and willingness to commit to ongoing maintenance.

- If a conventional pavement section and reduced maintenance complexity are the primary drivers, Option 2, asphalt, is a viable option. Asphalt should be considered most favorably if the final design can match the existing asphalt and compacted base footprint as closely as practical, thereby avoiding or minimizing additional drainage mitigation requirements under DCM Section 4.1. The City should anticipate periodic crack sealing, seal coats, and an eventual overlay within the 15-to-20-year service life. If new or modified impervious cover is not otherwise addressed by an accepted BMP or existing approval, a separate water quality BMP may also be required for applicable TCEQ Chapter 213 compliance.
- If long-term pavement durability and lower structural maintenance over a 30-year horizon are the primary drivers, Option 3, concrete, is the recommended conventional pavement option. Drainage requirements are generally equivalent to Option 2 because concrete is fully impervious, but concrete is expected to provide a longer service life with less frequent structural maintenance. The primary tradeoff is higher initial cost, with the current planning-level estimate of \$25 to \$30 per square foot based on the assumed 6-inch reinforced concrete section over 8 inches of compacted flexible base.
- If minimizing drainage mitigation and advancing a more environmentally sensitive pavement approach are the primary drivers, Option 1, TRUEGRID PRO PLUS pervious pavers, is the recommended option. It provides the greatest opportunity to reduce runoff and support TCEQ Chapter 213 water quality compliance, based on a planning assumption of 50% impervious cover for vehicular-use areas. These benefits are subject to final design acceptance and long-term maintenance. A hybrid section with concrete at the ADA-accessible parking stalls is recommended.

The installed cost ranges shown in the comparison table are planning-level values based on the current pavement assumptions, recent City bid pricing where available, and general planning-level pricing for TRUEGRID PRO PLUS permeable pavement systems. Prior to finalizing pavement material selection, we recommend that Sitedesign provide project-specific construction cost estimates for each of the three pavement options. The estimates should include not only pavement costs but also the probable cost of any required drainage mitigation, TCEQ-related water quality BMPs, underdrain outlet improvements, and downstream discharge controls. This will allow the Park Commission to evaluate the full trade-off between capital cost, drainage requirements, pavement service life, and maintenance responsibility.

Once the Commission selects a preferred option, Lochner can assist with formal drainage review, TCEQ applicability coordination, and permitting review during final design.

## Recommended Next Steps

- Confirm existing pavement and compacted base limits and proposed expansion limits.
- Confirm TCEQ Edwards Aquifer Recharge Zone applicability, including whether the work requires a new WPAP, modification, exception, or no separate submittal based on existing approvals.

- Obtain planning-level cost estimates from Sitedesign for all three pavement options, inclusive of probable drainage mitigation, water quality, underdrain, and downstream discharge control costs.
- Park Commission selects a preferred pavement option to advance to design.
- Complete formal hydrologic calculations and confirm whether detention, equivalent drainage mitigation, a TCEQ submittal, or a water quality BMP for applicable TCEQ Chapter 213 compliance is required.
- Develop a drainage layout that controls runoff at the eastern property line and avoids creating an adverse concentrated discharge condition.
- Prepare an Operations and Maintenance plan for any drainage facility or permeable pavement BMP.