URETEK USA

The URETEK Method™
Deep Injection™

July 2, 2024

Ms. Michelle Dunson, P.E., CFM
Deputy City Engineer
City of Madison
100 Hughes Road
Madison, AL 35758

RE: Proposal for Void-fill and Stabilization – Westchester Road – Madison, AL

Ms. Dunson:

URETEK USA, Inc. (URETEK) proposes to fill voids, stabilize soils, and lift the subsided areas of pavement on Westchester Road, utilizing the **URETEK Deep Injection Process**. The repair will be performed utilizing the high-density, hydro-insensitive polyurethane polymer, URETEK 486Star. URETEK will provide all supervision, labor, materials, supplies, insurance, tools, and equipment necessary to complete the repair. Maintenance of traffic is not included in this proposal. A quote for maintenance of traffic can be provided upon your request.

URETEK offers this ground densification process as a permanent repair method to stabilize soil-supported structures. The lightweight nature of the URETEK material when compared to competing cementitious products used for the same purpose, allows for a shallower scope of injections that essentially transfers the loads across weaker layers of soil deeper down without the necessity of injecting full depth to a deeper load-bearing stratum. For this proposal we have assumed the injection elevations indicated in ATTACHMENTS #1 & #2.

Since it is not possible to accurately verify the size and extent of all possible voids and soil conditions in the project area, all work will be performed and invoiced under the unit-price method. However, based on our observations of the project areas and information provided, I would estimate the cost to fill voids, stabilize the soils, and lift the subsided pavement, if required, to be, as follows –

Westchester Road	Estimated URETEK 486Star (Lbs.)	Cost /Lbs.	Estimated Cost
Areas A & B	7,700	$ 6.25	$ 48,125.00
Area C	13,200	$ 6.25	$ 82,500.00
Mobilization			$ 2,000.00
Total Estimated Cost			**$ 132,625.00**

This estimated cost is based upon 20,900 pounds of URETEK 486Star being required to complete the repair. If less than the estimated pounds of URETEK 486Star is required to complete the repair you will only be invoiced for the amount of material actually injected at $6.25 per pound. Due to unknown conditions, should any additional URETEK 486Star be required to complete this repair, it would be invoiced at $6.25 per pound. We will not inject any material above the total estimated pounds without your prior approval.

URETEK USA, Inc.
482 Hannah Road
Newnan, GA 30263

(404) 310-2508
Fax (630) 839-0761
www.uretekusa.com

URETEK developed the URETEK Deep-Injection process for filling voids, stabilizing and increasing the load-bearing capacity of soils under asphalt and concrete pavements utilizing expanding polyurethane polymers. We have been providing these services to Departments of Transportation for the past thirty-six years.

All work under this proposal shall be performed under and subject to the attached Specifications (EXHIBIT I) and the attached Terms and Conditions (EXHIBIT II). Any

Contract or Purchase Order covering work performed from this proposal shall include and reference this proposal, including said Specifications and Terms and Conditions.

The contract, purchase order, or change orders should be made to:

URETEK USA, Inc.
P.O. Box 1929
Tomball, TX 77377-1929

ATTN: Robert D. Emfinger

Email: remfinger@uretekusa.com
Phone: 404-310-2508
FAX: 630-839-0761

We look forward to working with you on this project. If you have any questions or need any additional information, please contact me.

Sincerely,

Robert D. Emfinger

Attachments (4)

EXHIBIT I

PAVEMENT STRUCTURE AND FOUNDATION SOILS STABILIZATION, AND LIFTING WHERE NECESSARY, UTILIZING A TWO-PART 1:1 BY VOLUME, WATER RESISTANT, HIGH DENSITY POLYURETHANE (HDPF)

DESCRIPTION:

This work shall consist of soil densification to strengthen base and sub-base soils under flexible asphalt, concrete, or composite pavement, and structures such as bridge approaches with sleeper slabs, by furnishing and injecting expansive polyurethane material into the foundation soils beneath the pavement through holes or injection tubes inserted into drilled holes at locations and depths, as shown on the plans or as directed by the Engineer or as determined from the results of Penetrometer tests, while monitoring for movement at the surface. If required, injection of material shall continue as needed to lift the pavement to grade.

MATERIAL:

1. The material for stabilizing, raising, filling voids, and undersealing pavements shall be a water blown, closed cell, high-density polyurethane system with the following physical characteristics and properties:

Technical Property	Requirement
Density, min., per ASTM D1622 (air rise)	4.0 lbs / ft^3
Compressive strength, min., per ASTMD 1621	60 psi
Density, max., per ASTM D1622 (air rise)	4.2 lbs / ft^3
Curing Rate	90 percent of compressive strength within 15 minutes after injection

2. Non-shrink grout to patch drill holes. Supplied by an approved manufacturer and used within the shelf life and temperature limitation set by the manufacturer.

EQUIPMENT:

The contractor shall provide at a minimum, the following equipment:

Pumping Units. Truck-mounted pumping unit(s) capable of injecting the high density polyurethane material beneath the pavement. The pumping unit shall be capable of controlling the rate of flow of material as required to lift the pavement and prevent pavement blowouts. The unit shall be equipped with certified flow meters for each chemical component to measure the amount of each chemical injected at each location and for quality control to check the mix ratio. The certified flow meters shall have a digital output in both pounds and gallons.

1. Pressure and temperature control devices capable of maintaining proper temperature and proportionate mixing of the polyurethane component materials.

2. Pneumatic or electric drills capable of efficiently drilling 5/8" diameter injection holes through the pavement without damaging the structural integrity of the existing pavement.

3. Laser levels or dial indicator devices to monitor movement at the surface of the pavement and to lift to proper grade as needed.

4. A portable dynamic cone penetrometer for on-site soils investigation.

5. All necessary light towers, electric generators, compressors, heaters, hoses, containers, valves and gauges to efficiently conduct and control the work.

CONSTRUCTION REQUIREMENTS:

The contractor shall perform the following and obtain approval from the client prior to injection of any polymer:

1. The contractor shall provide a pavement profile from laser level measurements of each area including proposed target elevations to correct the settlement of the pavement.

2. When requested by the client, contractor shall perform a DCP test. The DCP will be used by the client to determine whether or not the process of undersealing / slab lifting will provide a long-term solution.

3. Using the certified flow meters, a quality check shall be performed on the ratio of the two-part chemical system. The part A (Resin) to the part B (ISO) ratio by volume should be 1:1. Prior to performing the work each day, the contractor shall reset the flow meters on the pumping units to zero. The contractor shall perform a test shot of material from 1 injection gun at a time with a minimum of 0.5 gallons of each material, comparing the digital output in gallons of resin to the gallons of ISO to determine the injected ratio. If the ratio is less than 0.95 or greater than 1.05, the system is to be checked for problems, adjusted, and the ratio rechecked until a proper ratio is assured. Contractor shall repeat the quality check for all the injection guns to be used on the project. The Contractor shall submit with other bid documents the most recent calibration documents for the flow meters.

4. Continuous laser level or dial indicator micrometer readings shall be in place and monitored by the contractor during injection to determine proper material usage to lift the concrete to within +/- one-eighth inch of the target elevation.

5. The contractor will be responsible for any pavement blowouts, excessive pavement lifting or pavement damage that may occur as a result of the contractor's work. The contractor shall repair any subject areas to the satisfaction of the engineer at the contractor's expense.

BASIS OF PAYMENT:

The accepted quantities of polyurethane material as displayed by the certified flow meters will be paid for at the contract unit price.

EXPERIENCE:

The Contractor, as well as, the project supervisor proposed for the project must have a minimum of five (5) years' experience injecting expansive polymers beneath concrete pavement. As part of the bid submittal, Contractor must submit evidence of prior experience such as prior specifications and bid documents as well as client references to demonstrate the minimum three-years' experience.

SAFETY:

The Contractor must have a comprehensive Safety Manual pertaining to the equipment, material, and process, demonstrating capability of safely conducting the work.

WARRANTY:

A two-year unconditional warranty against settlement of more than 1/4" of the pavement. If settlement of more than 1/4" in the injected areas occurs, Contractor shall return to inject the affected area to lift to proper grade at no additional charge to the owner. One exception to warranty – if the DCP tests reveal deeper problems and the owner does not authorize payment to address these issues, warranty will not be valid.

EXHIBIT II

TERMS AND CONDITIONS

The Customer understands that the URETEK processes involve drilling 3/4" holes through the pavement, installation of injection tubes, and the injection of URETEK synthetic resins, which expand to fill voids and realign structures and pavement.

URETEK carries workman's compensation and limited general liability insurance.

URETEK will not be responsible for or repair damage to utilities, including but not limited to, electrical or telephone cabling, drain, fire sprinkler, sewer and/or water lines. URETEK will not be held liable for any damage to other parts of the structure or finish work within the work area, which may result from void filling or structure realignment and will not repair such damage.

Area of work will be left free from trash and debris related to the work of URETEK crews.

URETEK makes no representations and will not be responsible for any damage to the repair area caused by ground subsidence or settlement of native soils, subsoil conditions, structural problems, dynamic or static loads much higher than the design loads at the time of the URETEK intervention, damages caused by excavations, product tampering, natural catastrophes (storms, floods, drought, tides, earthquakes, explosions, fire, etc.).

URETEK warrants that the materials injected will not shrink or deteriorate for a period of ten (10) years from the date of injection. During the warranty period, URETEK will replace, by re-injection, any material that fails to perform as warranted. This limited warranty supersedes any other warranties, expressed or implied.

Where bonding is required, the Warranty in the Contract will be as follows:
URETEK warrants to the Owner that: (1) materials and labor under this Contract are guaranteed for a period of one year from the date of final acceptance; (2) materials furnished under this Contract will be new and of good quality; (3) the Work will be free from defects not inherent in the quality required.

This proposal is subject to State and local sales and use taxes, as applicable, unless client provides acceptable exemption certification.

Customer will provide –

- Adequate access to the work sites.
- Any necessary authorizations or permits.
- Traffic control lane closures during the work shifts.
- Customer or representative on site during the time work is taking place.

This proposal is valid for 60 days from the date of this proposal.

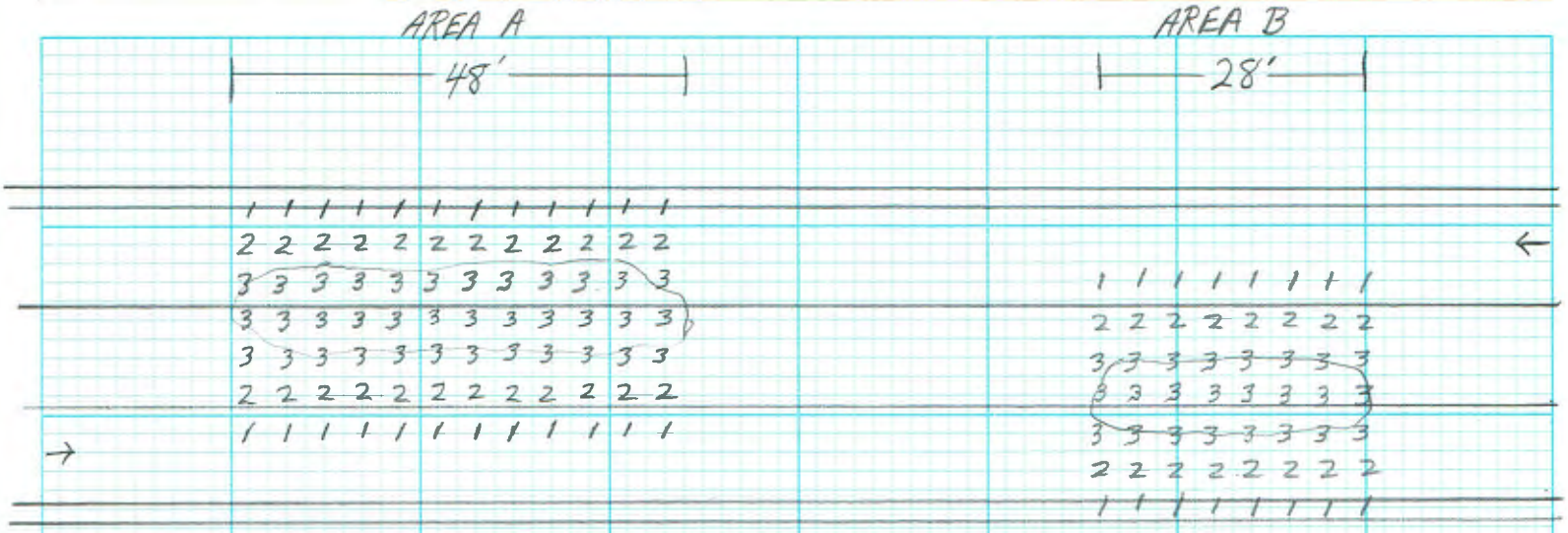
ATTACHMENT #1

URETEK
www.uretekusa.com

Client: CITY OF MADISON
Location: WESTCHESTER ROAD
MADISON COUNTY
By: R. EMEINGER Date: 7/2/24

Title: AREAS A & B
1" = 20'
Scale
0 20' 40'

Notes:
34.67722716/-86.76112073



URETEK DEEP INJECTION -
1 INJECTIONS @ -4'
2 INJECTIONS @ -4' & -8'
3 INJECTIONS @ -4', -8', & -12'

City of Madison **34.67722716 / -86.76112073**
Madison, AL **Madison County**
Westchester Road - Areas A & B

Cost Estimate

Description	Number of Injections	Estimated Lbs. Per Injection	Estimated URETEK 486 (Lbs.)
URETEK Deep Injection -			
URETEK Soil Stabilization @ -4'	140	30	4,200.000
URETEK Soil Stabilization @ -8'	100	35	3,500.000
URETEK Soil Stabilization @ -12'	60	40	2,400.000
Estimated URETEK 486 - Soil Stabilization			7,700.000
@ Cost Per Pound			$ 6.25
			$ 48,125.00
URETEK - Undersealing and Slab Lifting			
Estimated URETEK 486			-
@ Cost Per Pound			$ 6.25
			$ -
Total Estimated Cost			**$ 48,125.00**

City of Madison
Westchester Road - Areas A & B
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City of Madison
Westchester Road - Areas A & B
Madison, AL

34.67722716 / -86.76112073
Madison County

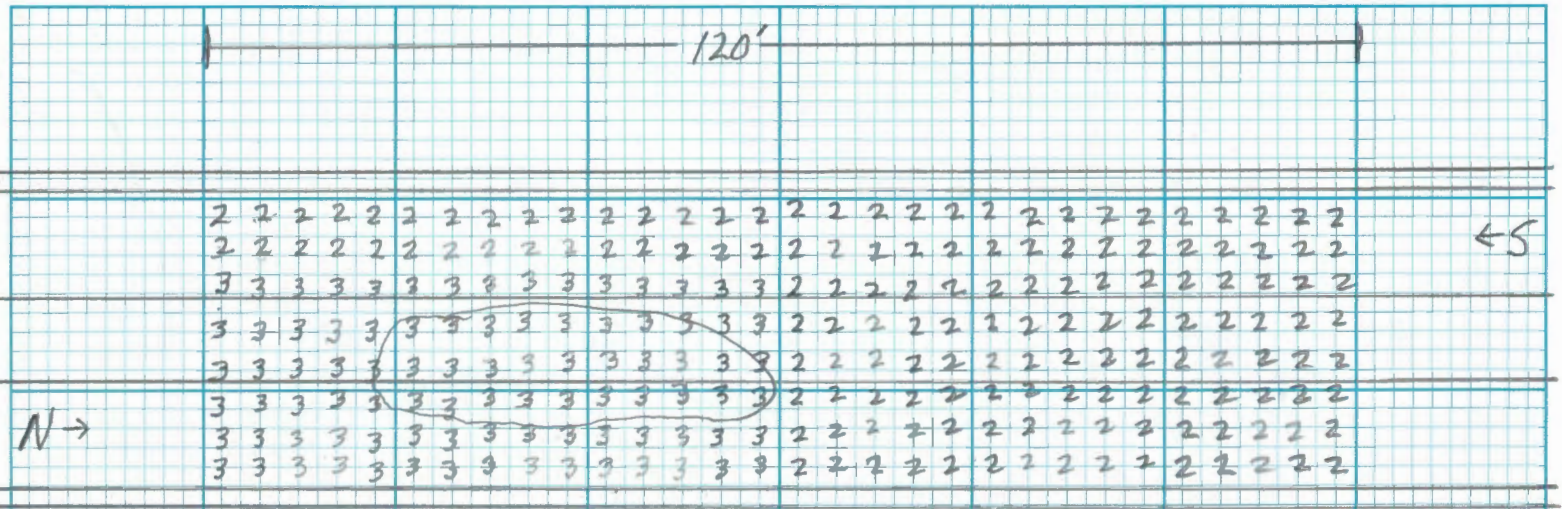

Westchester Road - Areas A & B Stabilization
Madison County
Legend
34.67722716 / -86.76112073
34.67722716 / -86.76112073
Google Earth
Image Landsat / Copernicus
N
100 ft

URETEK
www.uretekusa.com

Client: CITY OF MADISON
Location: WESTCHESTER ROAD
MADISON COUNTY
By: R. EMFINGER Date: 7/2/24

Title: AREA C
1" = 20'
Scale
0 20' 40'

Notes: **ATTACHMENT #2**
34.67608759/-86.76038492



URETEK DEEP INJECTION -
2 INJECTIONS @ -4' & -8'
3 INJECTIONS @ -4', -8', & -12'

City of Madison
Madison, AL
Westchester Road - Area C

34.67608759 / -86.76038492
Madison County

Cost Estimate

Description	Number of Injections	Estimated Lbs. Per Injection	Estimated URETEK 486 (Lbs.)
URETEK Deep Injection -			
URETEK Soil Stabilization @ -4'	240	25	6,000.000
URETEK Soil Stabilization @ -8'	240	30	7,200.000
URETEK Soil Stabilization @ -12'	90	35	3,150.000
Estimated URETEK 486 - Soil Stabilization			13,200.000
@ Cost Per Pound			$ 6.25
			$ 82,500.00
URETEK - Undersealing and Slab Lifting			
Estimated URETEK 486			-
@ Cost Per Pound			$ 6.25
			$ -
Total Estimated Cost			**$ 82,500.00**

City of Madison
Westchester Road - Area C
Madison, AL

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Westchester Road - Area C
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Westchester Road - Area C Stabilization
Madison County
Legend
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Google Earth
Image Landsat / Copernicus
N
200 ft