FRENCH & PARRELLO ASSOCIATES

ENGINEERING AND CONSULTING **SINCE 1974**

Report of Subsurface Exploration &
Geotechnical Engineering Assessment

Stillwater Elementary School
1988 Building Addition

Stillwater Township
Sussex County, New Jersey





Ms. Rene Metzgar
Business Administrator / Board Secretary
Stillwater Township
904 Stillwater Road
Stillwater, NJ 07875

May 28, 2026| FPA No. 25047.001
700 Grand Avenue, Suite 5A, Hackettstown, NJ 07840

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May 28, 2026

Ms. Rene Metzgar
Business Administrator / Board Secretary
STILLWATER TOWNSHIP
904 Stillwater Road
Stillwater, NJ 07875

Re: Report of Subsurface Exploration
& Geotechnical Engineering Assessment
Stillwater Elementary School – 1988 Building Addition
Stillwater Township, Sussex County, New Jersey
FPA Project No. 25047.001R1

Dear Ms. Metzgar:

INTRODUCTION

French & Parrello Associates, PA (FPA) is pleased to present the results of our Subsurface Exploration and Geotechnical Engineering Assessment performed in connection with the ongoing settlement and distress of the 1988 Building Addition at the Stillwater Elementary School located at 904 Stillwater Road in Stillwater Township, Sussex County, New Jersey. A map indicating the regional location of the project site is presented on Drawing No. 1, "Regional Location Plan".

Based on our discussions with the Client, a school building addition, constructed circa 1988, has experienced on-going settlements since the completion of construction. Numerous evaluations and repairs have been performed looking for a cause and, in an attempt to alleviate the impacts of these settlements, to no avail. Based on our review of a previous evaluation performed by Sor Consulting Engineers, Inc. (Sor), the building addition was constructed on unconsolidated fill materials. We note the original geotechnical evaluation, performed by Melick-Tully Associates (MTA), for the proposed building addition did not indicate the presence of unconsolidated fill materials. The purpose of our geotechnical evaluation was to confirm the reported underlying conditions through the advancement of a subsurface exploration program, office investigation of records, Ground Penetrating Radar (GPR) scan of the gym floor, our engineering analysis and to provide recommendations for the proposed remedial efforts. Our scope of work was performed in accordance with our proposal dated March 27, 2026.

PREVIOUS EVALUATIONS

MTA performed 8 test borings as summarized in their report dated May 6, 1986. Sor performed 7 test borings and 2 test pits as summarized in their report dated December 12, 2023. These explorations have been included within our current evaluation. The referenced logs are attached as Appendix A.

SUBSURFACE EXPLORATION

FPA observed the performance of six test borings performed on April 20 and 21, 2026, to characterize the subsurface soil and groundwater conditions in the vicinity of the 1988 Building Addition. The test boring locations were cleared of underground utilities through an NJ One-call markout and by Board of Education facilities personnel. The drilling was accomplished by a test boring subcontractor while under the full-time technical observation by a representative of FPA. The approximate as-drilled boring locations are presented on Drawing No. 2, "Test Boring Location Plan." The test borings, designated FPA-1 through FPA-6, were advanced to depths ranging from approximately 32 feet to 42 feet below the existing grade using mud-rotary drilling procedures. Soil samples were obtained using a 2-inch outside diameter split-spoon sampler advanced in accordance with ASTM Test Method D-1586, The Standard Penetration Test (SPT). All soil samples were classified in the field using the Burmister Soil Classification System. The samples were returned to our in-house laboratory for further review and will be stored for a period of 6-months following completion of this report. The static groundwater level was estimated based upon the relative moisture content of the retrieved soil samples. No groundwater monitoring wells were installed. Specific details pertaining to the drilling techniques utilized, soil classifications, estimated depth to groundwater and SPT results are presented on the test boring logs in Appendix B.

GPR Scan & Sounding Survey

A GPR scan and sounding survey was performed over the existing gym's concrete floor to determine structural properties of the installed slab, to investigate the potential presence of loose zones or voids located immediately below the slab and to look for anomalies in the underlying subsoils. The GPR scan was performed by our subconsultant under the technical oversight of our representative. The results of the GPR scan show no voids were present beneath the existing slab-on-grade and therefore the slab appears to be in sufficient contact with the subgrade soils throughout. An anomaly was noted beneath the northeast exterior building footing at depths from approximately 2.5 feet to 3.5 feet below the top of slab elevation. We attribute this anomaly to a tight grouping of cobbles and boulders, and should pose no issues to the proposed remediation program. The GPR scan report is presented in Appendix C.

The sounding survey was performed by our representative through repeated blows performed on the surface of the existing floor with a "dead-blow" hammer, listening for "hollow sounds" indicative of open voids immediately beneath the existing slab. The hollow sounds would generally indicate portions of the slab are not in-contact with the underlying subsoils and therefore are "floating." Our sounding survey did not detect the presence of any hollow or floating portions of the existing slab.

SITE CONDITIONS

Regional Geology

Based on our review of published geologic literature and our prior experience in the project area, the site soils should consist of recent alluvium overlying glacial stratified drift materials flowing from the Wisconsin glacier. The recent alluvium should be highly variable but consisting of mostly coarse to fine sand and gravel with sporadic cobbles and occasional boulders, while the glacial soils should consist of homogeneous, stratified layers of sand and gravel size particles. The underlying bedrock depth is variable but will probably be encountered at depths of 20 feet or deeper in the project region and is mapped as Allentown Dolomite belonging to the Kittatinny Supergroup.

Subsurface Conditions

In general, the native soil conditions encountered during our subsurface exploration were consistent with those reported in the published geologic literature. The test borings encountered a surficial layer of primarily granular, manmade fills overlying native glacial soil deposits. The manmade fills were encountered from the existing ground surface to depths ranging from approximately 25 feet to 35 feet and consisted of coarse to fine sands and gravel with varying amounts of silt and clay. Primarily granular, glacial soils were encountered immediately below the manmade fills and extended to the terminating depth of each test boring. Based on the SPT testing, the relative density of manmade fills was found to be variable as summarized below:

- Loose
  - FPA-5 0 – 20.5 feet
  - FPA-4 12 – 27 feet
  - FPA-6 2 – 32 feet
- Medium-Dense
  - FPA-1 0 – 20.5 feet
  - FPA-2 0 – 4 feet, 8 – 22 feet
  - FPA-4 0 – 12 feet
  - FPA-3 0 – 32 feet
  - FPA-6 0 – 2 feet
- Dense
  - FPA-2 4 – 8 feet

The relative density of primarily granular, glacial soils may be described as medium-dense.

The static groundwater level was encountered within test borings FPA-4 and FPA-5 at an approximate depth of 22 feet, corresponding to elevations ranging from approximately +64 feet to +65 feet. Seasonal and storm related fluctuations in the groundwater level, as well as the potential presence of perched groundwater, should be anticipated. For a more detailed description of the subsurface and groundwater conditions encountered, standard penetration test results, soil classifications, please refer to the test boring logs in Appendix B.

Seismicity

We have reviewed the guidelines presented in the New Jersey Edition of the 2021 International Building Code (IBC) and ASCE 7-22 regarding seismic design. Based upon our review, we offer the following site characterization parameters:

Short Period Spectral Acceleration (S_s)..... 0.21g
Spectral Acceleration @ 1 Second (S_1) 0.046g
Site Class ..... D

DISCUSSION & RECOMMENDATIONS

Based on the results of our subsurface exploration, office investigation and subsequent geotechnical engineering evaluation, it is our opinion that the conclusions of the SOR geotechnical report are valid. We believe that locally

sourced fill material was placed between 1940 and 1970 within the area below the 1988 Building Addition, in an effort to level the general area and to dispose of excess material from the 1940s and 1960s Building Additions. FPA's and Sor's test boring data suggest the fill was placed in an uncontrolled manner with little compaction resulting in broad areas of very loose to loose soil conditions beneath the 1988 Building Addition. The loose soils have been settling/consolidating with time resulting in the current building settlement issues. The settlement of the subgrade will continue unless the soil density and bearing capacity are improved. We note that the problem is exacerbated at the Northeast corner of the property due to the close proximity to a steep slope. Soil bearing capacity can be increased using a variety of methods such as helical pile installation and the implementation of a compaction grouting program. Based on our understanding of the problem, it is our opinion that helical piles would be cost prohibitive, require more extensive reconstruction of the existing floor slabs and would not improve the underlying loose manmade fills. Compaction grouting, on the other hand, would improve the underlying loose fills and stabilize the existing foundation subgrades with a less evasive method of installation. A combination of both methods was not considered because each method of installation would pose impacts to the other, potentially reducing the reliability of each installed system. Recommendations for compaction grouting are presented later in this report.

Compaction Grouting

Compaction grouting is accomplished by installing a hollow drill rod to the lowest elevation to be remediated. A heavy cementitious low flow grout is then pumped down the rod until a specific pressure is achieved or a volume of grout injected. The rod is then raised a specific increment and grout pumping resumes. This process is repeated to the surface until a column of grout bulbs is created to add support to the structure. At the same time, the loose soils around the grout bulb are densified by the pressure of the grout.

Preliminarily, we estimate that grout injection points would need to be completed approximately every 8 feet around the 1988 building addition, inside and outside of the exterior walls and along select interior walls. We note this would require work inside the school. However, each injection point leaves a 4" diameter hole through the floor slabs, which can be readily repaired and leaving the floors otherwise undamaged. A secondary row of injection points spaced approximately 5 feet from the outside of the building line at centerlines between the first row would most likely be required to fully stabilize the underlying subsoils and improve bearing beneath the existing footings, especially around the northeast building corner where the most significant thickness of loose fills was encountered. The final design of the compaction grouting program should be performed by a professional engineer licensed in the State of New Jersey.

We note that grouting is typically performed by specialty contractors. We stress the importance of obtaining a qualified contractor to perform the work. Although many contractors have the required equipment to perform the grouting program, we recommend that the contractors experience on similar jobs be given due consideration during the evaluation of the bid. One ground improvement contractor, FPA, has previously worked with on specialty foundation and ground improvement projects, is Keller. Their compaction grouting literature and several case studies are presented in Appendix D. We recommend FPA maintain a full-time presence during the implementation of the grouting program for quality assurance purposes.

Cost of Remediation

Based on our experience with projects of this type and size, we estimate the following costs to be appropriate for project budgetary purposes:

1.	Compaction Grouting Program (Est. 75 injection points)	$450,000
2.	Restoration of Building Interior and Exterior	$50,000
3.	Unforeseen and Contingency (10% total cost)	$50,000
	ESTIMATED TOTAL	**$550,000**

CLOSING & LIMITATIONS

The recommendations contained herein are contingent upon subsurface conditions remaining consistent with those encountered during our subsurface exploration. They are also contingent upon the basis that all foundation related aspects of remediation, including compaction grouting operations, as well as foundation related aspects of construction including stripping, excavation, subgrade preparation and controlled-fill operations, be observed by a representative of FPA. This is to observe compliance with the design concepts and specifications and to allow design changes in the event that subsurface conditions differ from those anticipated prior to construction.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, chemically hazardous, or biologically toxic materials in the soil, surface water, groundwater or air, on or below or around the site.

Services performed by FPA during this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended in the services provided.

Should you have any questions or if we can be of service to you in the future, please feel free to contact us.

Sincerely,

FRENCH & PARRELLO ASSOCIATES

Michael J. Law, PE
Project Manager, Geotechnical Services



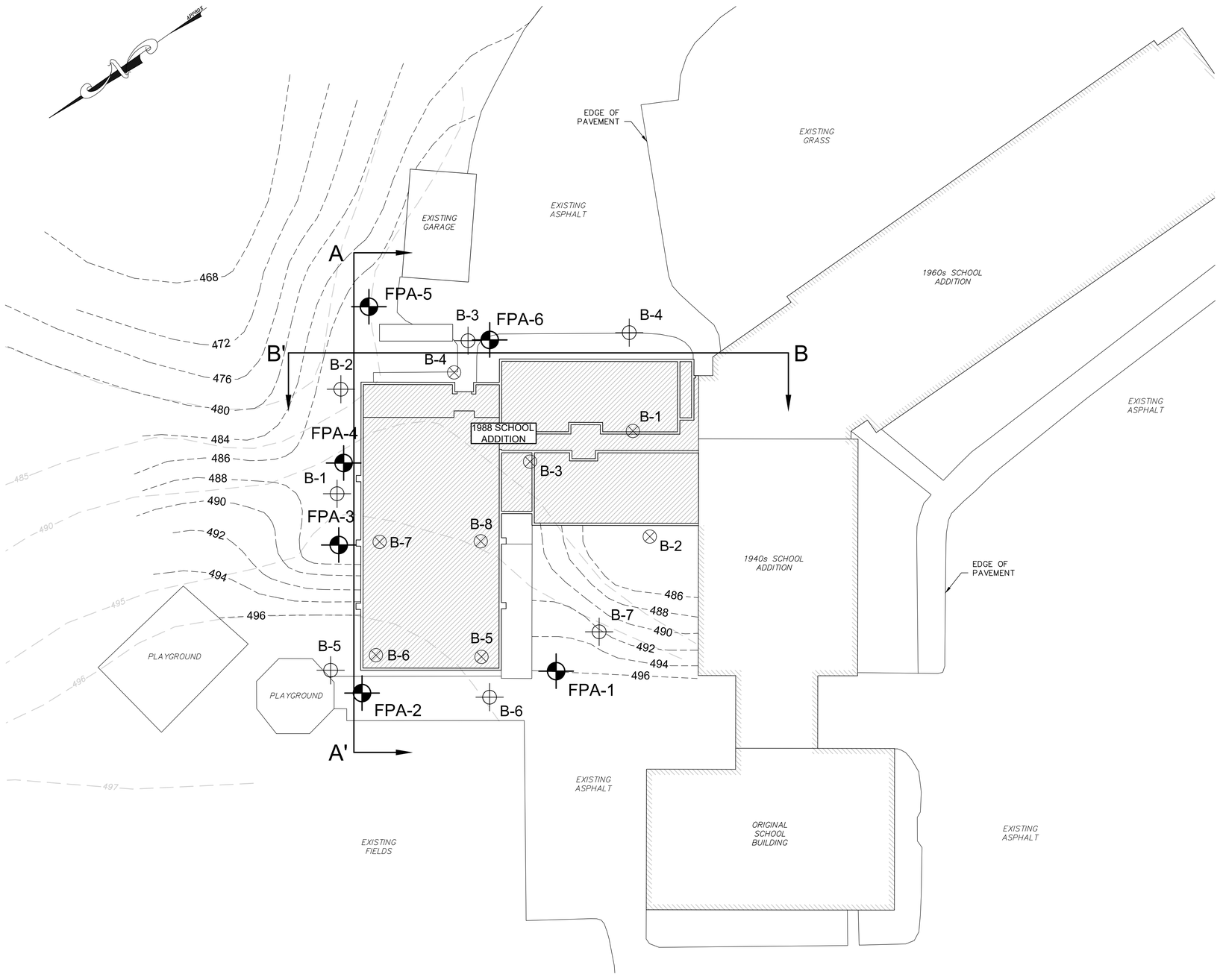
REGIONAL LOCATION PLAN

Copyright Google Maps, 2026

STILLWATER ELEMENTARY SCHOOL – 1988 BUILDING ADDITION

STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY

SCALE:	DATE:	JOB NO.:	DRAWING NO.:
NTS	May 2026	25047.001	1



LEGEND:

- B-1 — TEST BORING LOCATION
- B-6 — SOR TEST BORING LOCATION
- B-6 — MTA TEST BORING LOCATION
- A / A' — CROSS-SECTION LINE

20 0 20 40
SCALE IN FEET

FPA FRENCH & PARRELLO ASSOCIATES
New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

Hackettstown Office:
700 Grand Avenue, Unit 5A
Hackettstown, NJ 07840
908.850.0977

FPAengineers.com

TEST BORING LOCATION PLAN

FOR

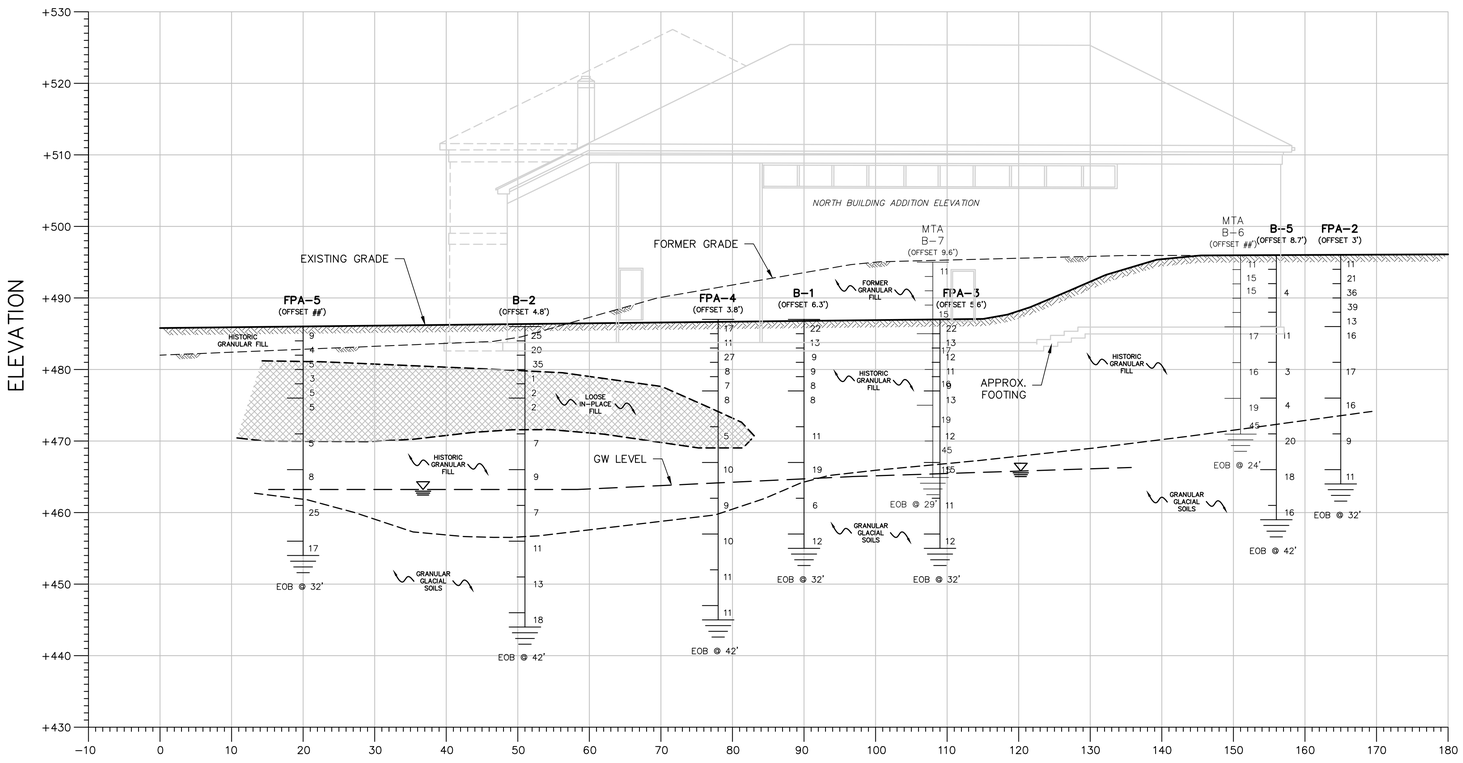
STILLWATER TOWNSHIP BOE
1988 BUILDING ADDITION

STILLWATER TOWNSHIP
SUSSEX COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
MAY 2026	–	1" = 20'	25047.001
DRAWN BY:	CHECKED BY:	FIELD BOOK	DWG. NO.:
MJL	RCS	–	2

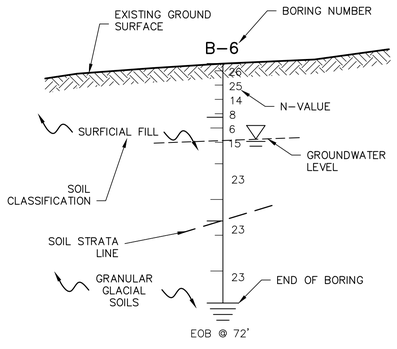
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CROSS SECTION A−A'

SCALE: 1" = 10'



10 0 10 20

SCALE IN FEET

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GEOLOGIC CROSS-SECTIONS

FOR

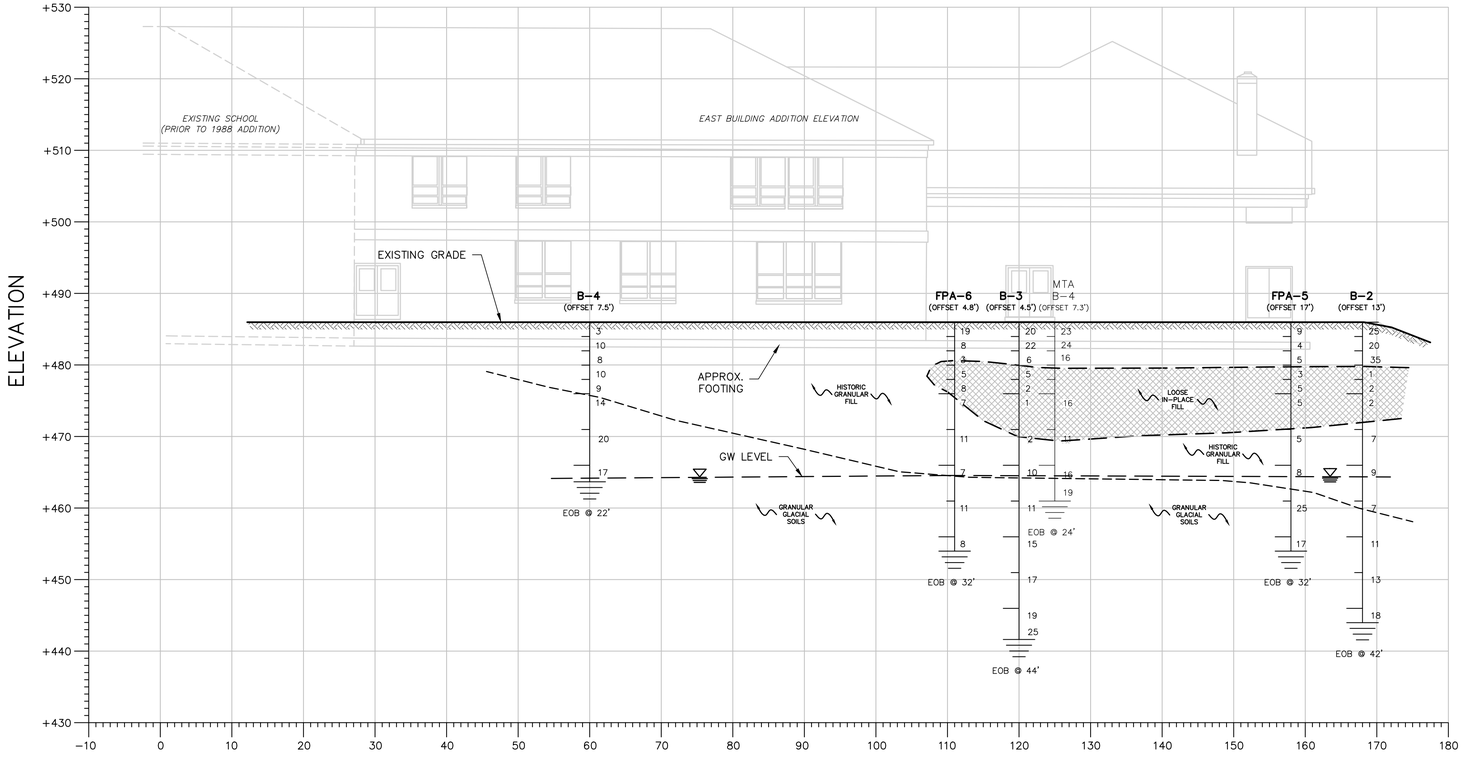
STILLWATER TOWNSHIP BOE
1988 BUILDING ADDITION

STILLWATER TOWNSHIP
SUSSEX COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
MAY 2026	–	1" = 10'	25047.001
DRAWN BY:	CHECKED BY:	FIELD BOOK	DWG. NO.:
MJL	RCS	–	3

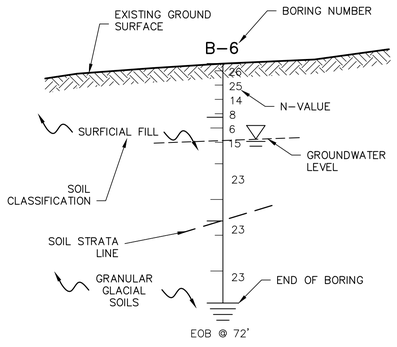
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CROSS SECTION B−B'

SCALE: 1" = 10'



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SCALE IN FEET

GEOLOGIC CROSS-SECTIONS

FOR

STILLWATER TOWNSHIP BOE
1988 BUILDING ADDITION

STILLWATER TOWNSHIP
SUSSEX COUNTY NEW JERSEY

DATE:	DESIGNED BY:	SCALE:	PROJECT NUMBER:
MAY 2026	–	1" = 10'	25047.001
DRAWN BY:	CHECKED BY:	FIELD BOOK	DWG. NO.:
MJL	RCS	–	3

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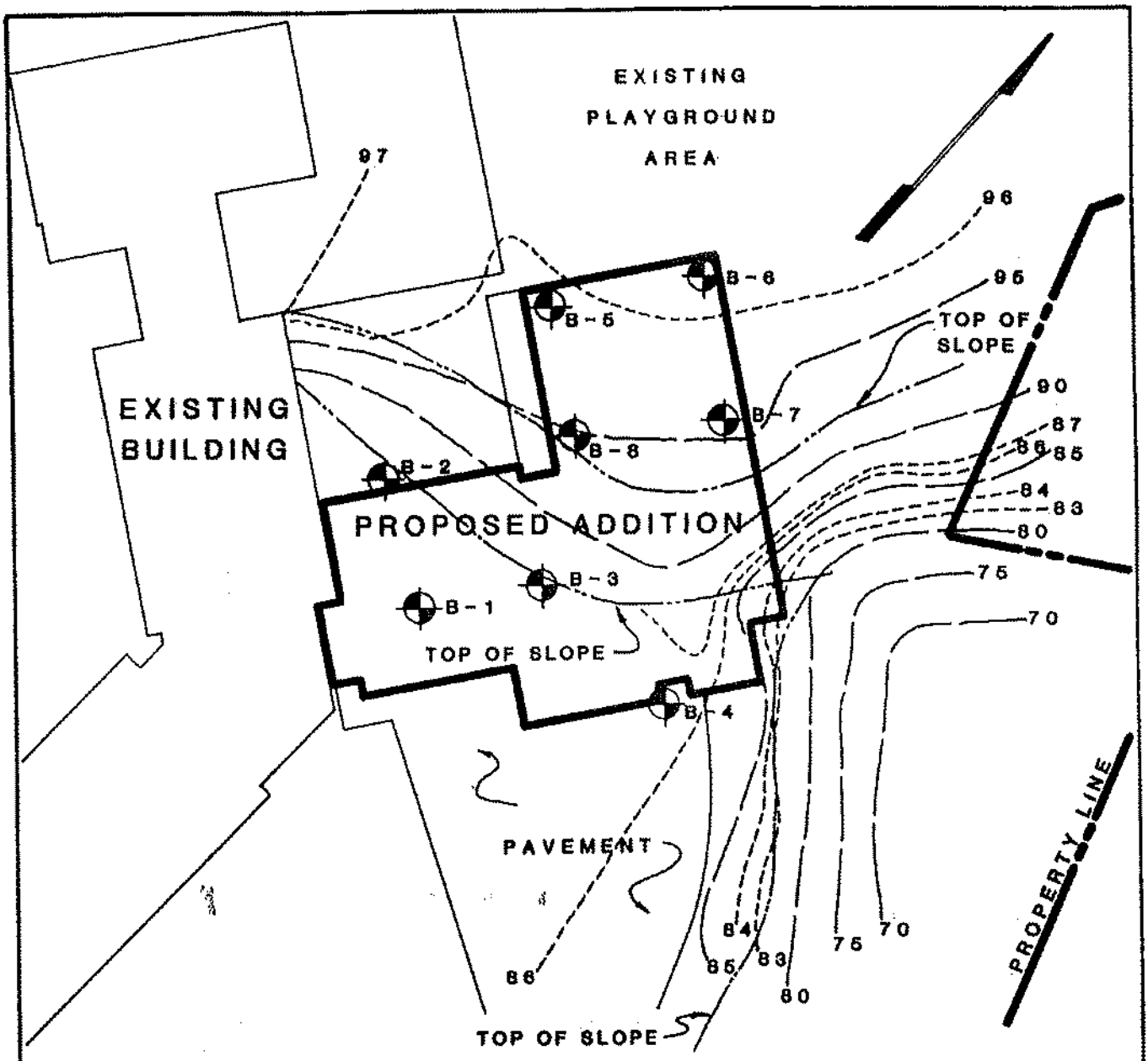
Appendix A
Previous Explorations

REVISIONS BY ____ DATE ____

FILE 3227-001 3240

BY DEM DATE 4-30-86

CHECKED BY WMS



PLOT PLAN

SCALE 1":::50'

PROPOSED ADDITION TO ELEMENTARY SCHOOL

STILLWATER TOWNSHIP, NEW JERSEY

STILLWATER TWSP. BOARD OF EDUCATION

KEY:

B-1 NUMBER AND APPROX. LOCATION OF BORINGS PERFORMED FOR THIS STUDY.

NOTES

1. This drawing is part of Melick-Tully and Associates, Inc. Report No. 3227-001 and should be read together with the report for complete evaluation.
2. General layout and topography was obtained from a drawing prepared by Charles Schaffer & Associates entitled "Site Plan", Drawing No. 1 of 7, dated 9-11-85.

PLATE 1

LOG OF BORING

BORING NO. 1
SURFACE ELEV. +86 ft.(+)
COMPLETION DATE 4/24/86

WATER LEVEL :21'-2"
DATE :4/24/86
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	26		1-1/2" Asphalt
	■	49		FILL - Gray-brown fine to coarse sand, little silt, little fine gravel (medium dense)
5	■	56		
	■	15		FILL - Light brown fine to medium sand, little silt with occasional cobbles (medium dense)
	■	15		FILL - Gray brown fine to coarse sand, little silt, little to some fine to coarse gravel (medium dense to very dense)
10	■	16		
	■	20		
15	■	55		
20			SP/SM	Light brown fine to medium sand, trace silt with frequent thin layers of fine to coarse sand, and fine gravel (medium dense) (wet)
	■	15		
	■	17		
25	■	17		BORING COMPLETED @ 25'-0"
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 2
SURFACE ELEV. +86 ft.(+)
COMPLETION DATE 4/24/86

WATER LEVEL :19'-6"
DATE :4/24/86
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0				
	■	19		1-1/2" Asphalt
	■	14		FILL - Gray-brown fine to coarse sand, little silt, little fine gravel (medium dense)
5	■	13		
				FILL - Light brown fine to medium sand, trace silt (medium dense)
10	■	13		
15	■	18		
	■	18	SP/ML	Light brown fine to medium sand, trace silt with frequent thin layers of sandy silt (medium dense to dense)
20	■	18		
	■	23		
	■	37		
25				BORING COMPLETED @ 25'-0"
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 3
SURFACE ELEV. +86 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL :20'-0"
DATE :4/24/86
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	23		FILL - Gray-brown fine to coarse sand, little silt, little to some fine to coarse gravel with occasional cobbles and boulders (medium dense)
	■	22		
5	■	17		
10	■	15		
	■	15		
15	■	24	SP/ML	Light brown fine to medium sand, trace silt with frequent thin layers of sandy silt (medium dense)
	■	17		
20	■	11		
	■	10	SP	Gray-brown fine to coarse sand, trace silt, little fine gravel (medium dense)(wet)
25				BORING COMPLETED @ 24'-0"
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 4
SURFACE ELEV. +86 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL :19'-6"
DATE :4/25/86
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	23		1-1/2" Asphalt
	■	24		FILL - Gray-brown fine to coarse sand, some silt, little fine to coarse gravel with occasional cobbles (medium dense)
5	■	16		
10	■	16		
15	■	11		8" Dark brown silt, trace roots (buried topsoil)
			ML	Light brown silt, little fine to medium sand, trace fine to coarse gravel (medium dense) (wet)
20	■	16		
	■	19	SM	Gray-brown fine to coarse sand, some silt, little fine gravel (medium dense) (wet)
25				BORING COMPLETED @ 24'-0"
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 5
SURFACE ELEV. +96 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL : *
DATE :
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	7		4" Topsoil - Dark brown sandy silt with roots
	■	36		FILL - Brown silt, some little fine sand (loose)
5	■	45		FILL - Gray-brown fine to coarse sand, little silt little fine to coarse gravel (medium dense to dense)
10	■	20	ML	Light brown silt, some fine sand (medium dense) (wet)
			SP/SM	Light brown fine to medium sand, trace silt (medium dense)
15	■	13		
20	■	14	SM	Gray-brown fine to coarse sand, little silt, little fine gravel (medium dense)
	■	14		
25				BORING COMPLETED @ 24'-0" *GROUNDWATER LEVEL NOT ENCOUNTERED
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 6
SURFACE ELEV. +96 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL : *
DATE :
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	5		4" Topsoil - Dark brown sandy silt with roots
	■	30		FILL - Brown silt, trace fine sand (loose)
5	■	24		FILL - Gray-brown fine to coarse sand, trace silt, little to some fine to coarse gravel with occasional cobbles and boulders (medium dense to dense)
10	■	14		
15	■	19		
20	■	25		
	■	25		
25				BORING COMPLETED @ 24'-0" *GROUNDWATER LEVEL NOT ENCOUNTERED
30				
35				
40				
45				
50				

LOG OF BORING

BORING NO. 7
SURFACE ELEV. +95 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL : *
DATE :
CASING DEPTH :

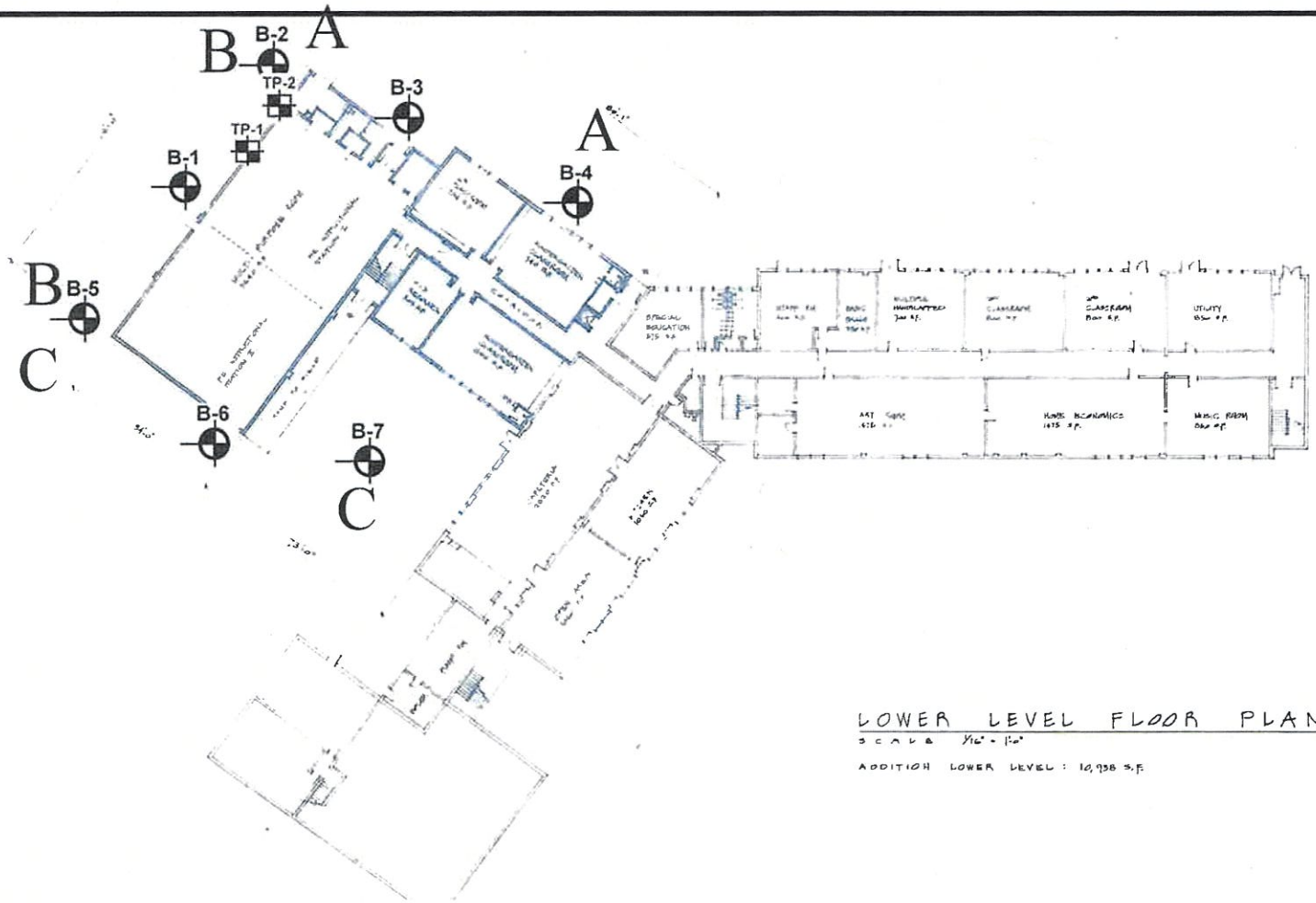
DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	11		4" Topsoil - Dark brown sandy silt with roots
				FILL - Brown fine to medium sand, and silt, little fine gravel (medium dense)
5	■	15		FILL - Gray-brown fine to medium sand, trace silt, little to some fine to coarse gravel with occasional pockets of sandy silt (medium dense)
10	■	17		
15	■	16		
20	■	19		
25	■	45	SP/SM	Gray-brown fine to coarse sand, trace silt, little fine to coarse gravel (medium dense to dense)
	■	15		
30				BORING COMPLETED @ 29'-0" *GROUNDWATER LEVEL NOT ENCOUNTERED
35				
40				
45				
50				

LOG OF BORING

BORING NO. 8
SURFACE ELEV. +95 ft.(+)
COMPLETION DATE 4/25/86

WATER LEVEL : *
DATE :
CASING DEPTH :

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	SYMBOL	DESCRIPTION
0	■	22		3" Topsoil - Dark brown sandy silt with roots
				FILL - Gray-brown fine to coarse sand, little silt, little fine to coarse gravel with occasional pockets of sandy silt (medium dense to dense)
5	■	39		
10	■	25	SP/SM	Light brown fine to medium sand, trace silt (medium dense)
15	■	13		
20	■	26	SP/SM	Brown fine to medium sand, trace silt with frequent layers of sandy silt (medium dense)
	■	23		
25				BORING COMPLETED @ 24'-0" *GROUNDWATER LEVEL NOT ENCOUNTERED
30				
35				
40				
45				
50				



LEGEND

TP-1 — Number and approximate location of geotechnical test pit performed by SCE for this study.

B-1 — Number and approximate location of geotechnical boring performed by SCE for this study.

NOTES

1. This drawing is part of Sor Consulting Engineers, Inc. Report No. 23-C-54 and should be read together with the report for complete evaluation.
2. General Layout was obtained from a plan provided by the Client.

EXPLORATION LOCATION PLAN
ENV
STILLWATER ELEMENTARY SCHOOL-SETTLEMENT
STILLWATER, NEW JERSEY

SOR CONSULTING ENGINEERS, INC.
Geotechnical Engineering – Materials Testing – Forensic Studies
98 Sand Park Road, Cedar Grove, New Jersey 07009

Prepared By : A.S..	Approved By :	DRAWING NO.
Date : 12/8/2023	Date :	23-C-50-1
Scale : NTS	Report No. : 23-C-54	Sheet No. 1 of 1

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-1

CLIENT	ENV	GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/28/23
		DATE FINISH	11/28/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 1 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
28-Nov		22'-0"		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1		S-1	0-2'	3 7 15 14	22	Topsoil 4" Grayish brown coarse to fine Sand, little Silt, and medium to fine Gravel (Probable Fill)	
2							
3		S-2	2'-4'	6 6 7 8	13	Same	
4							
5		S-3	4'-6'	6 5 4 7	9	Same	W=5.2%
6							
7		S-4	6'-8'	10 3 6 9	9	Same	
8							
9		S-5	8'-10'	9 4 4 7	8	Same	
10							
11		S-6	10'-12'	6 5 3 7	8		
12							
13							
14							
15						15'-0"	
16		S-7	15'-17'	10 6 5 7	11	Grayish brown coarse to fine SAND, little Silt, some coarse to fine Gravel	
17							
18							
19							
20							
21		S-8	20'-22'	9 10 9 8	19	Same	
22							
23							
24							
25							
26		S-9	25'-27'	5 2 4 4	6	Same (wet)	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-1

CLIENT	ENV	GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/28/23

GROUND WATER					CAS.	SAMP.	CORE	TUBE		
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS				
28-Nov		22'		DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 2 of 2*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29							
30							
31		S-10	30'-32'	5 6 6 6	12	Grayish brown coarse to fine Sand, little Silt some medium to fine Gravel (wet)	
32							
33						Test Boring Completed at 32'-0"	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-2

CLIENT	ENV	GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/28/23

GROUND WATER					CAS.	SAMP.	CORE	TUBE		
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS			DATE FINISH	11/28/23
28-Nov		23'		DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 1 of 2*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1		S-1	0-2'	5 12 13 6	25	Topsoil 5" Grayish brown coarse to fine SAND, little Silt, and coarse to fine Gravel (Fill)	
2							
3		S-2	2'-4'	7 9 11 14	20	Same	
4							
5		S-3	4'-6'	10 22 13 7	35	Same wit boulders	
6							
7		S-4	6'-8'	7 1 0 0	1	Same	
8							
9		S-5	8'-10'	2 1 1 0	2	Same	
10							
11		S-6	10'-12'	2 1 1 1	2	Same	
12							
13							
14							
15							
16		S-7	15'-17'	3 4 3 3	7	Same with wood	
17							
18							
19							
20							
21		S-8	20'-22'	5 5 4 5	9	Same	
22							
23							
24							
25							
26		S-9	25'-27'	3 3 4 3	7	Same (wet)	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-2

CLIENT	ENV							GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement							DATUM	Ground Surface
LOCATION	Stillwater, New Jersey							DATE START	11/28/23
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATE FINISH	11/28/23
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS				
28-Nov		23'		DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 2 of 2*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29						29'-0"	
30							
31		S-10	30'-32'	5 5 6 8	11	Gray coarse to fine SAND, and coarse to fine Gravel (wet)	
32							
33							
34							
35							
36		S-11	35'-37'	6 6 7 9	13	Same	
37							
38							
39							
40							
41		S-12	40'-42'	7 9 9 11	18	Same	
42							
43						Test Boring Completed at 42'-0"	
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR: ETD, Inc.
DRILLING EQUIPMENT: Geoprobe 7822 DT
SCE REPRESENTATIVE: A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-3

CLIENT	ENV								GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement								DATUM	Ground Surface
LOCATION	Stillwater, New Jersey								DATE START	11/28/23
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATE FINISH	11/28/23
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS				
28-Nov		22'		DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 1 of 2*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1		S-1	0-2'	1 8 12 18	20	Topsoil 6" Grayish brown coarse to fine SAND, little Silt, and coarse to fine Gravel Probable Fill)	
2							
3		S-2	2'-4'	16 10 12 9	22	Same	
4							
5		S-3	4'-6'	5 3 3 3	6	Same	
6							
7		S-4	6'-8'	3 3 2 2	5	Same	
8							
9		S-5	8'-10'	2 1 1 1	2	Same	
10							
11		S-6	10'-12'	0 0 1 1	1		
12							
13							
14							
15							
16		S-7	15'-17'	2 1 1 1	2	Same	
17							
18							
19							
20							
21		S-8	20'-22'	4 5 5 8	10	Same 21'-0"	
22						Grayish brown coarse to fine SAND, little Silt, some fine Gravel	
23							
24							
25							
26		S-9	25'-27'	5 6 5 5	11	Same (wet)	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR: ETD, Inc.
DRILLING EQUIPMENT: Geoprobe 7822 DT
SCE REPRESENTATIVE: A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-3

CLIENT	ENV	GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/28/23
		DATE FINISH	11/28/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 2 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
28-Nov		22'		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29							
30							
31		S-10	30'-32'	9 9 6 6	15	Grayish brown coarse to fine SAND, little Silt, and medium to fine Gravel	
32							
33							
34							
35							
36		S-11	35'-37'	5 6 8 9	14	Same	W=14.3%
37							
38							
39							
40							
41		S-12	40'-42'	8 8 11 13	19	Same	
42							
43		S-13	42'-44'	10 12 13 12	25	Same	
44							
45						Test Boring Completed at 44'-0"	
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR: ETD, Inc
DRILLING EQUIPMENT: Geoprobe 7822 DT
STL REPRESENTATIVE: A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-4

CLIENT	ENV	GSE	+ 86' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23

GROUND WATER					CAS.	SAMP.	CORE	TUBE		
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS			DATE FINISH	11/29/23
29-Nov		22'		DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 1 of 1*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1		S-1	0-2'	1 2 1 2	3	Topsoil 6" Grayish brown coarse to fine SAND, little Silt, some coarse to fine Gravel (Fill)	
2							
3		S-2	2'-4'	3 4 6 4	10	Same	
4							
5		S-3	4'-6'	4 4 4 6	8	Same	
6							
7		S-4	6'-8'	6 5 5 7	10	Same	
8						8'-0"	
9		S-5	8'-10'	5 4 5 8	9	Grayish brown coarse to fine SAND, trace Silt little medium to fine Gravel	W=7.9%
10							
11		S-6	10'-12'	8 7 7 8	14	Same	
12							
13							
14							
15							
16		S-7	15'-17'	10 10 10 10	20	Same	
17							
18							
19							
20							
21		S-8	20'-22'	5 9 8 10	17	Same (wet at tip)	
22							
23						Test Boring Completed at 22'-0"	
24							
25							
26							
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-5

CLIENT	ENV	GSE	+ 96' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23
		DATE FINISH	11/29/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 1 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
29-Nov				DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1						Topsoil 6"	
2						Grayish brown coarse to fine SAND, little Silt, and medium to fine Gravel (Fill)	
3							
4							
5							
6		S-1	5'-7'	1 3 1 2		Same	
7							
8							
9							
10							
11		S-2	10'-12'	2 8 3 3	11	Same	
12							
13							
14							
15							
16		S-3	15'-17'	1 2 1 2	3	Same	W=9.6%
17							
18							
19							
20							
21		S-4	20'-22'	1 2 2 2	4	Same	
22							
23						23'-0"	
24							
25							
26		S-5	25'-27'	10 11 9 14	20	Grayish brown coarse to fine SAND, little Silt, some medium to fine Gravel	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING	B-5

CLIENT	ENV	GSE	+ 96' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23
		DATE FINISH	11/29/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 2 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
29-Nov		32'		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29							
30							
31		S-6	30'-32'	6 9 9	18	Grayish brown coarse to fine SAND, little Silt, and coarse to fine Gravel	
32				8			
33							
34							
35							
36		S-7	35'-37'	7 8	16	Same (wet)	
37				8 7			
38						Test Boring Completed at 37'-0"	
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-6

CLIENT	ENV	GSE	+ 96' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23
		DATE FINISH	11/29/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 1 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
29-Nov		32'-0"		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1						Topsoil 6"	
2						Grayish brown coarse to fine SAND, little Silt, some coarse to fine Gravel (Fill)	
3							
4							
5							
6		S-1	5'-7'	5 7 8 9	15	Same	
7							
8							
9							
10							
11		S-2	10'-12'	8 8 10 13	18	Same	
12							
13							
14							
15							
16		S-3	15'-17'	8 6 3 12	9	Same	
17							
18							
19							
20							
21		S-4	20'-22'	4 3 2 6	5	Gray medium to fine SAND, trace Silt	
22							
23							
24						24'-0"	
25							
26		S-4	25'-27'	8 9 11 13	20	Gray coarse to fine SAND, little Silt, and coarse to fine Gravel	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-6

CLIENT	ENV								GSE	+ 96' (±)
PROJECT	Stillwater Elementary School - Settlement								DATUM	Ground Surface
LOCATION	Stillwater, New Jersey								DATE START	11/29/23
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATE FINISH	11/29/23
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS				
29-Nov				DIA.	4 1/4"	2" OD			JOB NO.	23-C-50
				WT.		140 lb.			REPORT NO.	23-C-54
				FALL		30"			*Sheet 2 of 2*	

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29							
30							
31		S-6	30'-32'	10 9 11 14	20	Gray medium to fine Sand, little Silt, and medium to fine Gravel	
32							
33						Test Boring Completed at 32'-0"	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR: ETD, Inc.
DRILLING EQUIPMENT: Geoprobe 7822 DT
SCE REPRESENTATIVE: A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-7

CLIENT	ENV	GSE	+ 95' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23
		DATE FINISH	11/29/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 1 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
29-Nov		NE		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
1						Topsoil 5"	
2						Grayish brown coarse to fine SAND, little Silt, and coarse to fine Gravel (Fill)	
3							
4							
5							
6		S-1	5'-7'	10 10 11 11	21	Same	
7							
8							
9							
10							
11		S-2	10'-12'	4 6 7 9	13	Same	
12							
13							
14							
15							
16		S-3	15'-17'	3 4 4 5	8	Grayish brown fine SAND, some Silt	W=5.6%
17							
18							
19							
20							
21		S-4	20'-22'	1 2 3 4	5	Same	
22							
23						23'-6"	
24							
25							
26		S-5	25'-27'	5 8 12 15	20	Gray coarse to fine SAND, little Silt, and coarse to fine Gravel	
27							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST BORING LOG	BORING B-7

CLIENT	ENV	GSE	+ 95' (±)
PROJECT	Stillwater Elementary School - Settlement	DATUM	Ground Surface
LOCATION	Stillwater, New Jersey	DATE START	11/29/23
		DATE FINISH	11/29/23
		JOB NO.	23-C-50
		REPORT NO.	23-C-54
			Sheet 2 of 2

GROUND WATER					CAS.	SAMP.	CORE	TUBE
DATE	TIME	DEPTH	CASING	TYPE	HAS	SS		
29-Nov		NE		DIA.	4 1/4"	2" OD		
				WT.		140 lb.		
				FALL		30"		

DEPTH (ft.)	CASING BLOWS	SAMPLE TYPE/NO.	DEPTH	SAMPLER BLOWS PER 6"	N VALUE	DESCRIPTION	REMARKS
28							
29							
30							
31		S-6	30'-32'	7 10 10 14	20	Grayish brown medium to fine Sand, little Silt, some medium to fine Gravel	
32							
33						Test Boring Completed at 32'-0"	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

S - SPLIT SPOON SAMPLER
U - UNDISTURBED SAMPLE
C - CORE DRILLED

DRILLING CONTRACTOR	ETD, Inc.
DRILLING EQUIPMENT	Geoprobe 7822 DT
SCE REPRESENTATIVE	A. Sencar

Appendix B
Test Boring Logs

BURMISTER SOIL CLASSIFICATION SYSTEM

A. Cohesionless Soils: Particle Size Definitions

Soil	Fraction	U.S. Standard Sieve	Actual Sizes
Gravel	coarse	3 in. to 1 in.	76 mm to 25 mm
	medium	1 in. to 3/8 in.	25 mm to 9.5 mm
	fine	3/8 in. to No. 10	9.5 mm to 2.0 mm
Sand	coarse	No. 10 to No. 30	2.0 mm to 0.6 mm
	medium	No. 30 to No. 60	0.6 mm to 0.25 mm
	fine	No. 60 to No. 200	0.25 mm to 0.75 mm
Silt		< No. 200	< 0.075 mm

B. Terms Describing Gradation of Cohesionless Soils

Written Description	Symbol/Designation	Defining Proportions
coarse, medium to fine	cmf	all fractions > 10%
coarse to medium	cm	< 10% fine
medium to fine	mf	< 10% coarse
coarse	c	< 10% medium and fine
medium	m	< 10% coarse and fine
fine	f	< 10% coarse and medium

Note: Use (+) for upper limit and (-) for lower limit.

C. Cohesive Soils: Terms Describing Plasticity

Soil	Plasticity Index	Workability	Plasticity Description
SILT	0	--	Non-Plastic
Clayey SILT	1 to 5	1/4 in. thread	Slightly Plastic
SILT & CLAY	5 to 10	1/8 in. thread	Low Plasticity
CLAY & SILT	10 to 20	1/16 in. thread	Medium Plasticity
Silty CLAY	20 to 40	1/32 in. thread	High Plasticity
CLAY	>40	1/64 in. thread	Very High Plasticity

D. Terms Describing Overall Composition of Soil

Written Proportion	Proportion Symbol	Proportion Percent by Weight
and	a	35 to 50
some	s	20 to 35
little	l	10 to 20
trace	t	1 to 10

Note: Use (+) for upper limit and (-) for lower limit.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-1
SHEET 1 OF 1

DATE STARTED: 4/20/2026
DATE FINISHED: 4/20/2026
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +96'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	3 – 4 – 9 – 16		S-1 Gray-Brown mf^{+} **SAND**, some Silt, trace f Gravel. (Fill)
	S-2 2-4'	14 – 11 – 16 – 15		S-2 Gray Orange-Brown c^{-}mf **SAND**, some Clayey Silt, little f Gravel. (Fill)
--- 5'---	S-3 4-6'	13 – 13 – 20 – 15		S-3 Gray Brown cm^{+}f **SAND**, some cmf^{+} Gravel, trace Clayey Silt. (Fill)
	S-4 6-8'	15 – 16 – 18 – 17		S-4 Gray-Brown cmf^{+} **GRAVEL**, some cm+f Sand, little Clayey Silt. (Fill)
---10'---	S-5 8-10'	6 – 9 – 8 – 6	Granular Fill	S-5 Same as **S-4**.
	S-6 10-12'	8 – 10 – 13 – 9		S-6 TOP 6": Light-Brown f **SAND**, trace Silt. BOT 18": Gray-Brown cmf^{+} **SAND**, little f Gravel, trace Silt. (Fill)
---15'---	S-7 15-17'	9 – 10 – 11 – 10		S-7 No recovery. (Gravel in tip)
---20'---	S-8 20-22'	13 – 11 – 17 – 17	@ 20.5'	S-8 TOP 6": Light-Brown mf^{+} **SAND**, trace Silt. (Fill) BOT 18": Light-Brown f **SAND**, little Silt. (w/ alt. layers of fine Sand & Silt, stratified)
---25'---	S-9 25-27'	13 – 10 – 11 – 13	Native Glacial Alluvium	S-9 Gray-Brown cm^{+}f **SAND**, some f Gravel, little Clayey Silt.
---30'---	S-10 30-32'	5 – 5 – 5 – 8		S-10 Same as **S-9**.
				END OF BORING @ 32'
---35'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-2
SHEET 1 OF 1

DATE STARTED: 4/20/2026
DATE FINISHED: 4/20/2026
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +96'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	3 – 4 – 7 – 6		S-1 Orange-Brown mf⁺ **SAND**, some Silt, trace f Gravel. (Fill)
	S-2 2-4'	5 – 8 – 13 – 16		S-2 Gray Orange-Brown cmf⁺ **SAND**, some Clayey Silt, trace f Gravel. (Fill – w/ pieces of shale frag. & rounded gravel)
--- 5'---	S-3 4-6'	14 – 16 – 20 – 18	Granular Fill	S-3 Same as **S-2**.
	S-4 6-8'	17 – 19 – 20 – 23		S-4 Same as **S-2**. (Limited recovery – Gravel in tip, Fill)
	S-5	6 – 8 – 5 – 4		S-5 TOP 12": Gray Brown cmf⁺ **SAND**, some Silt, little f Gravel. (Fill – w/ weathered Shale fragments)
---10'---	8-10'			BOT 12": Orange-Brown f **SAND**, some Clayey Silt. (Fill)
	S-6 10-12'	6 – 7 – 9 – 8		S-6 Light-Brown mf⁺ **SAND**, trace Silt. (Fill)
---15'---	S-7 15-17'	6 – 7 – 10 – 10		S-7 Gray-Brown cm⁺f **SAND**, little Silt, trace f Gravel. (Fill)
---20'---	S-8 20-22'	8 – 8 – 8 – 9	@ 22'	S-8 Gray-Brown m⁺f **SAND**, trace Silt. (Fill)
---25'---	S-9 25-27'	11 – 12 – 11 – 12	Native Glacial Alluvium	S-9 TOP 6": Same as **S-8**. BOT 18": Gray-Brown c⁻mf **SAND**, some f Gravel, little Silt. (Glacial Till – w/ mixed gravel)
---30'---	S-10 30-32'	3 – 4 – 5 – 5		S-10 Same as **S-9 BOT 18"**.
				END OF BORING @ 32'
---35'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-3
SHEET 1 OF 1

DATE STARTED: 4/21/2026
DATE FINISHED: 4/21/2026
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +87'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	2 – 4 – 18 – 14		S-1 TOP 6": Gray-Brown **Clayey SILT**, some mf+ Sand, trace Gravel. (Fill)
	S-2 2-4'	5 – 6 – 7 – 7		BOT 18": Gray-Brown cmf+ **SAND**, some mf+ Gravel, little Silt. (Fill)
--- 5'---	S-3 4-6'	4 – 5 – 7 – 5		S-2 Gray-Brown cmf+ **GRAVEL**, some cmf+ Sand, trace Silt. (Fill)
	S-4 6-8'	6 – 6 – 5 – 6		S-3 Gray-Brown cm+f **SAND**, some mf+ Gravel, trace Clayey Silt. (Fill)
	S-5	5 – 4 – 5 – 9		S-4 Same as **S-3**.
---10'---	8-10'			S-5 Gray-Brown cm+f **SAND**, some mf+ Gravel, little Clayey Silt. (Fill)
	S-6 10-12'	8 – 5 – 8 – 8		S-6 Same as **S-5**.
---15'---	S-7 15-17'	7 – 6 – 6 – 6	Granular Fill	S-7 Gray-Brown cmf **SAND**, little Silt, trace f Gravel. (Fill)
---20'---	S-8 20-22'	5 – 6 – 9 – 5		S-8 Gray-Brown cmf+ **SAND**, little Clayey Silt, trace f Sand. (Fill)
---25'---	S-9 25-27'	5 – 5 – 6 – 6		S-9 No recovery. (Fill)
---30'---	S-10 30-32'	5 – 6 – 6 – 8		S-10 Gray-Brown mf+ **SAND**, little Silt, trace f Gravel. (Fill)
				END OF BORING @ 32'
---35'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-4
SHEET 1 OF 2

DATE STARTED: 4/21/2026
DATE FINISHED: 4/21/2026
DEPTH OF WATER: 22'±
LOCATION: See Plan
GROUND ELEVATION: +87'±
GROUND WATER ELEV.: +65'±

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	3 – 8 – 9 – 7		S-1 TOP 6": Gray-Brown **Clayey SILT**, some cmf⁺ Sand, little mf⁺ Gravel. (Fill)
	S-2 2-4'	4 – 6 – 5 – 6	Granular Fill	BOT 18": Gray-Brown cmf⁺ **SAND**, some mf⁺ Gravel, little Silt. (Fill)
--- 5'---	S-3 4-6'	15 – 17 – 10 – 7		S-2 Same as **S-1 BOT 18"**.
	S-4 6-8'	6 – 4 – 4 – 5		S-3 Gray-Brown cmf⁺ **SAND**, some mf⁺ Gravel, little⁺ Clayey Silt. (Fill – w/ Shale fragments)
	S-5 8-10'	5 – 2 – 5 – 3		S-4 Gray-Brown mf⁺ **SAND**, some Silt, little mf⁺ Gravel. (Low recovery, Gravel in tip, Fill)
---10'---	S-6 10-12'	5 – 4 – 4 – 5		S-5 Gray-Brown cmf⁺ **SAND**, some Clayey Silt, little mf⁺ Gravel. (Fill)
				S-6 Gray-Brown cmf⁺ **GRAVEL**, some cmf⁺ Sand, little Clayey Silt. (Fill)
---15'---	S-7 15-17'	4 – 3 – 2 – 3		S-7 Gray-Brown **Clayey SILT**, some c⁻mf Sand, little f Gravel. (Fill)
---20'---	S-8 20-22'	7 – 6 – 4 – 5		S-8 No recovery.
---25'---	S-9 25-27'	5 – 4 – 5 – 4	@ 27'	S-9 Gray-Brown c⁻mf **SAND**, little Clayey Silt, trace f Gravel. (Fill)
---30'---	S-10 30-32'	12 – 6 – 4 – 4	Native Glacial Alluvium	S-10 Same as **S-9**.
---35'---	S-11 35-37'	20 – 6 – 5 – 5		S-11 Gray-Brown cm⁺f **SAND**, some mf Gravel, trace Silt.

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-4
SHEET 2 OF 2

DATE STARTED: 4/21/2026
DATE FINISHED: 4/21/2026
DEPTH OF WATER: 22'±
LOCATION: See Plan
GROUND ELEVATION: +87'±
GROUND WATER ELEV.: +65'±

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
--- 40'---	S-12 40-42'	13 – 7 – 4 – 5	Native Glacial Alluvium	S-12 Gray-Brown cm⁺f **SAND**, little mf⁺ Gravel, trace Silt.
				END OF BORING @ 42'
---45'---				
---50'---				
---55'---				
---65'---				
---70'---				
---75'---				
---80'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-5
SHEET 1 OF 1

DATE STARTED: 4/20/2026 **DEPTH OF WATER:** 22'±
DATE FINISHED: 4/20/2026 **LOCATION:** See Plan

GROUND ELEVATION: +86'±
GROUND WATER ELEV.: +64'±

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	2 – 6 – 3 – 3		S-1 TOP 6": Gray-Brown f **SAND**, little Clayey Silt. (Fill) BOT 18": Gray cmf+ **SAND**, little mf+ Gravel, trace Clayey Silt. (Fill)
	S-2 2-4'	2 – 2 – 2 – 2	Granular Fill	S-2 Gray cm+f **SAND**, some cmf+ Gravel, trace Silt. (Fill)
--- 5'---	S-3 4-6'	2 – 3 – 2 – 2		S-3 Same as **S-2**.
	S-4 6-8'	2 – 1 – 2 – 1		S-4 Same as **S-2**.
---10'---	S-5 8-10'	2 – 3 – 2 – 7		S-5 Same as **S-2**.
	S-6 10-12'	3 – 2 – 3 – 4		S-6 No recovery.
---15'---	S-7 15-17'	5 – 3 – 2 – 1		S-7 Gray-Brown **Clayey SILT**, some cmf+ Sand, little mf+ Gravel. (Fill)
---20'---	S-8 20-22'	4 – 3 – 5 – 6	@ 20.5'	S-8 TOP 6": Gray-Brown mf+ **SAND**, some Clayey Silt, little f Gravel. (Fill) MID 6": Dark-Gray **Clayey SILT**, some f Sand. BOT 12": Gray-Brown **Clayey SILT**, little mf+ Sand.
---25'---	S-9 25-27'	8 – 11 – 14 – 14	Native Glacial Alluvium	S-9 Gray-Brown cmf+ **SAND**, some Clayey Silt, little cm+f Gravel.
---30'---	S-10 30-32'	11 – 7 – 10 – 9		S-10 Grey & Brown c **GRAVEL**. (Low recovery)
				END OF BORING @ 32'
---35'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST BORING LOG

STILLWATER TOWNSHIP BOE - 1988 ADDITION
STILLWATER TOWNSHIP, SUSSEX COUNTY, NEW JERSEY
FPA NO. 25047.001

BORING NO.: FPA-6
SHEET 1 OF 1

DATE STARTED: 4/21/2026
DATE FINISHED: 4/21/2026
DEPTH OF WATER: Dry
LOCATION: See Plan
GROUND ELEVATION: +86'±
GROUND WATER ELEV.: N/A

DRILLING TECHNIQUE: Mud Rotary
HAMMER TYPE: 140 lb. Automatic Trip Hammer, 30 Inch Drop

DEPTH FEET	SAMPLE DEPTH	SPT BLOW COUNTS (PER 6")	STRATA	DESCRIPTION OF SOIL
	S-1 0-2'	13 – 13 – 6 – 7		S-1 TOP 12": Gray-Brown cm⁺f **SAND**, some mf⁺ Gravel, trace Silt. (Fill)
	S-2 2-4'	7 – 5 – 3 – 3		BOT 12": Gray-Brown mf⁺ **SAND**, some Clayey Silt, little f Gravel. (Fill)
--- 5'---	S-3 4-6'	2 – 1 – 2 – 2		S-2 Gray-Brown mf⁺ **SAND**, some Clayey Silt. (Fill)
	S-4 6-8'	2 – 2 – 3 – 4		S-3 Gray Orange-Brown mf⁺ **SAND**, some Clayey Silt, trace f Gravel. (Fill)
	S-5	5 – 4 – 4 – 3		S-4 Same as **S-3**.
---10'---	8-10'			S-5 Gray Orange-Brown cm⁺f **SAND**, some Clayey Silt, little f Gravel. (Fill)
	S-6 10-12'	3 – 3 – 4 – 4		S-6 Gray Orange-Brown cmf⁺ **SAND**, some Clayey Silt, little mf⁺ Gravel. (Fill)
---15'---	S-7 15-17'	6 – 7 – 4 – 4	Granular Fill	S-7 Gray-Brown cmf⁺ **SAND**, some f Gravel, little Clayey Silt. (Fill)
---20'---	S-8 20-22'	3 – 3 – 4 – 3		S-8 Gray-Brown mf⁺ **SAND**, little Silt. (Fill)
---25'---	S-9 25-27'	6 – 4 – 7 – 5		S-9 Gray-Brown cm⁺f **SAND**, some f Gravel, little Clayey Silt. (Fill)
---30'---	S-10 30-32'	5 – 4 – 4 – 5		S-10 Gray-Brown cm⁺f **SAND**, little f Gravel, trace Clayey Silt. (Fill)
				END OF BORING @ 32'
---35'---				

SOILS ENGINEER: M. LAW, PE
DRILLING INSPECTOR: S. HERASYMCHUCK

CONTRACTOR: CRAIG TEST BORING
DRILLER: P. MULLINS

The information shown hereon indicates the subsurface conditions encountered at the specific boring location on the date(s) of drilling. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

Appendix C

GPR Scan Report

May 18, 2026

Michael J. Law, PE
Project Manager|Geotechnical
French & Parrello Associates, Inc.
700 Grand Avenue, Unit 5A
Hackettstown, New Jersey 07840

Re: Geophysical Scan Report
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey
GeoSeek Project No. 2649

Dear Mr. Law,

GeoSeek LLC (GeoSeek) is pleased to present the following report of the Geophysical Scan Summary conducted on May 1, 2026 at the Stillwater Elementary School Gym, 904 Stillwater Road, Stillwater Township New Jersey (the Site). The purpose of the scan was to determine the presence/absence of voids beneath the gym floor.

EXECUTIVE SUMMARY

- GeoSeek scanned the gym floor, and an adjacent hallway and classroom with the GPR.
- The floor was found to be constructed of an approximately 4-inch concrete slab reinforced with an approximate 6-inch x 6-inch steel mesh.
- Data indicative of voids were not observed immediately below the slab, meaning that the slab appears to be in full contact with the subgrade soils and there are no "floating portions".
- One anomaly at approximately 2.5' – 3.0' feet below grade was observed near the northeastern wall.

METHODOLOGY AND LIMITATIONS

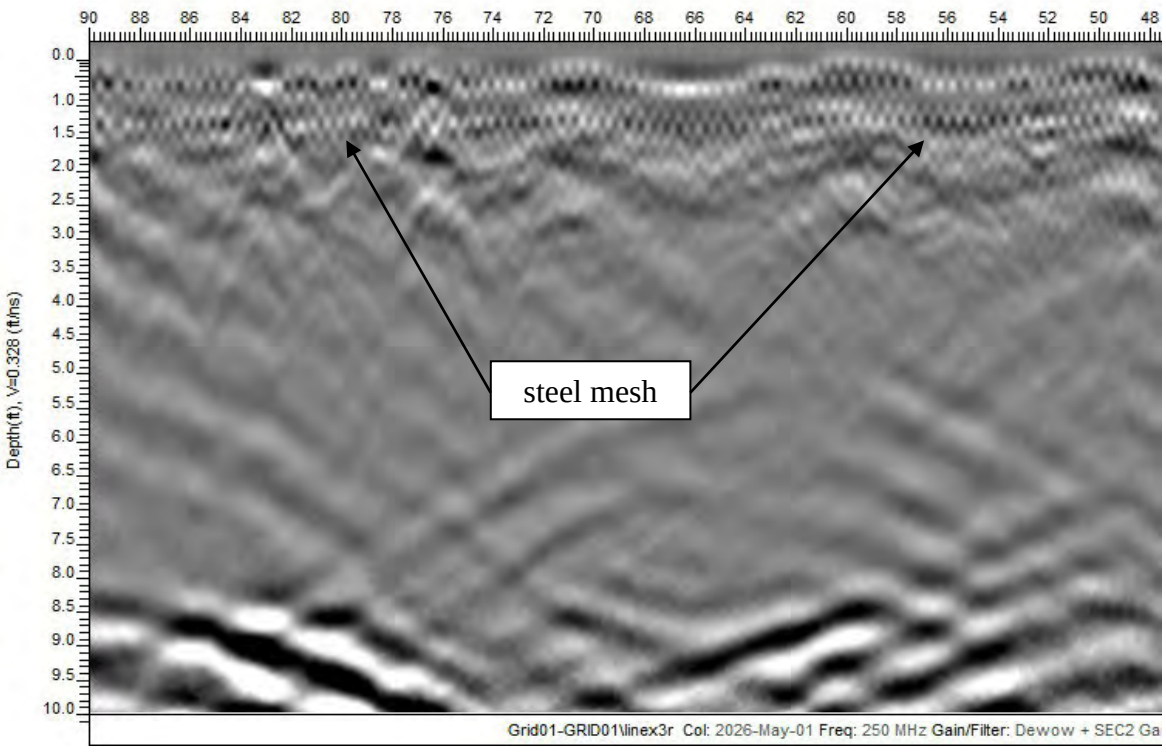
A. *Ground-Penetrating Radar (GPR) Scan*: GPR data were collected with Sensors and Software Inc. Noggin*plus* SmartCart GPR Systems (SmartCart) utilizing a 250 MHz antenna. The antenna, containing both a transmitter and a receiver, is rolled along the ground surface during the GPR survey. The transmitter radiates short pulses of high-frequency EM energy into the ground. When the wave encounters the interface between two materials having different dielectric constants (dielectric permittivity), a portion of the energy is reflected back. The signal is transmitted to a control unit, displayed on a monitor, and digitally recorded.

The Noggin*plus* system records an image of the subsurface by plotting two-way travel time of the reflected EM pulse on the vertical axis with the distance traveled along

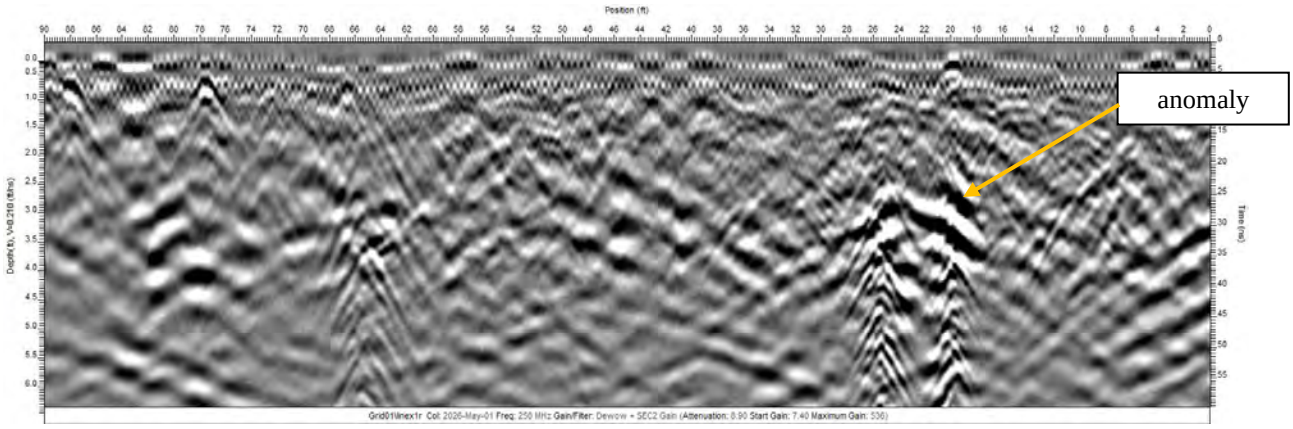
the ground surface plotted on the horizontal axis. The depth of the reflecting object or stratum is then determined by using standard soil velocity functions and calculating the two-way travel time. The maximum depth of investigation was approximately 5 feet at this Site. GeoSeek collected the GPR data in a 50' by 90' grid, with line spacing of 2' between lines. The data was processed with the Ekko Project software into a series of data slices corresponding to the depth below grade. The data images are shown on the attached Figures 1 – 10 which represent progressive 6-inch depth slices.

B. ***Limitations:*** Limitations encountered during the investigation included the presence of the on-site structure, steel reinforcement, and other obstructions. Please note that GPR, Utility Location and EM Metal Detection, are remote sensing methods and in some instances, due to interference or other geophysical limitations, do not reveal data which may be indicative of subsurface anomalies. The findings of this investigation should only be used as a tool in evaluating the location and identification of utilities at the Site and not considered a guarantee regarding the presence/absence or location of utilities and/or other objects at the Site.

Findings: On May 1, 20126 GeoSeek scanned the gym floor at Stillwater Elementary School in a 2'x2' grid pattern with the GPR. The data was processed with the Ekko Project software into a series of 6-inch data slices corresponding to the depth below grade. The six-inch data slice maps are attached as Figures 1 - 10. The data indicates that the floor is underlain by a cement slab approximately 4" thick reinforced with a 6" x 6" steel mesh. A representative GPR data profile collected over the gym floor is shown below.



The data slice maps primarily show the influence of the steel reinforcement through approximately 2.5 feet below grade (refer to Figures 1 – 5). In the 2.5 to 3.0 data slice (Figure 6) an anomalous area near the northeastern wall is observed. A GPR data profile (x1r) showing this anomaly is presented below.



After approximately 4 feet below grade (Figures 8 – 10) no significant anomalies are seen in the data.

Radar profiles were also collected from the adjacent hallway and classroom, as well as the bathrooms connected to the gym. The findings were similar and no conclusive evidence of voids was observed in the GPR data.

These findings are based upon interpretation of geophysical data and visual observations; therefore, conclusive determination of the subsurface condition would require intrusive investigation. If there are any questions regarding this report, please contact the undersigned at 732-505-0990.

This report has been prepared and is respectfully submitted by

GEOSEEK LLC

Dru E. Wilbur, P.G.
President

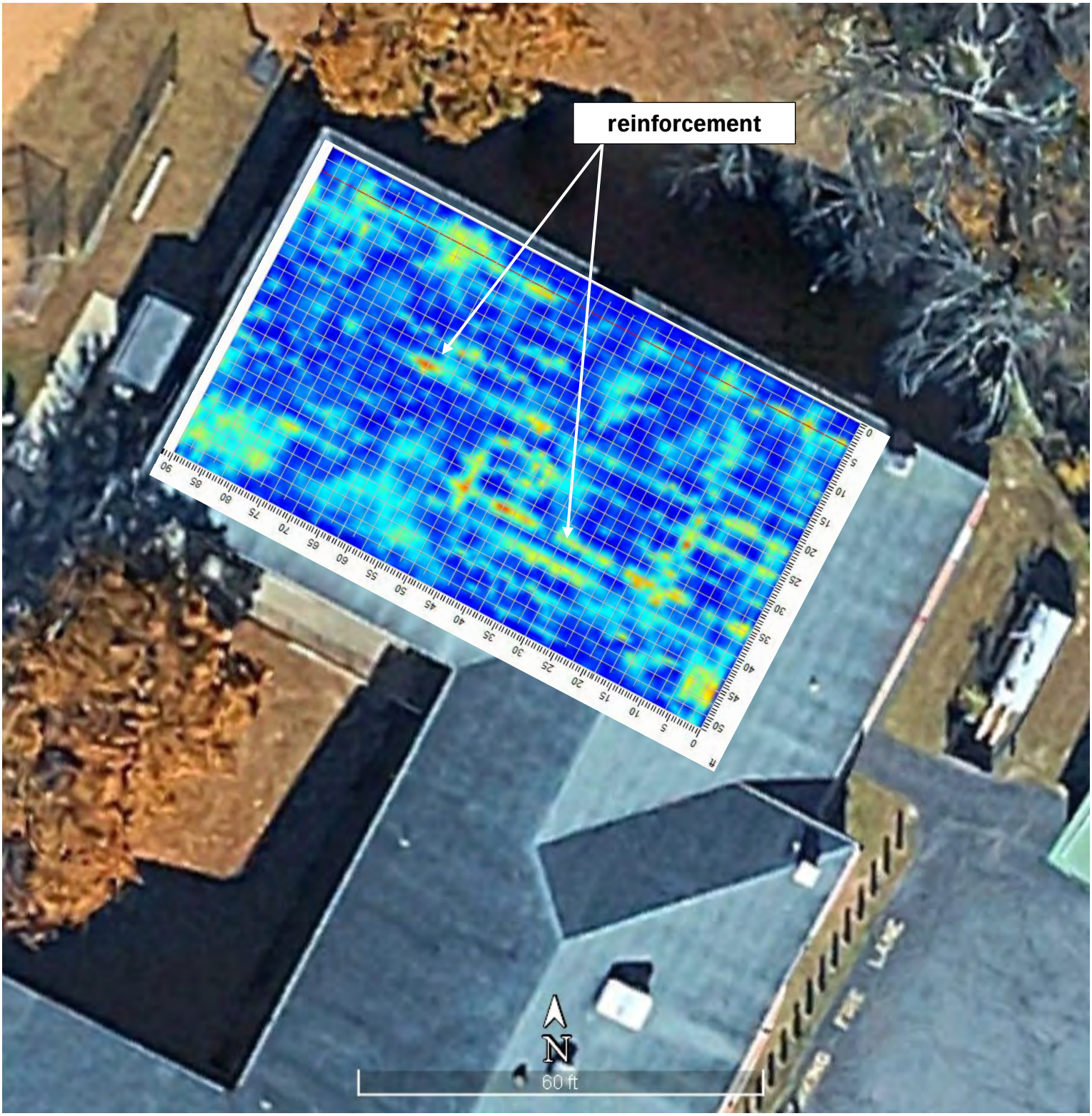
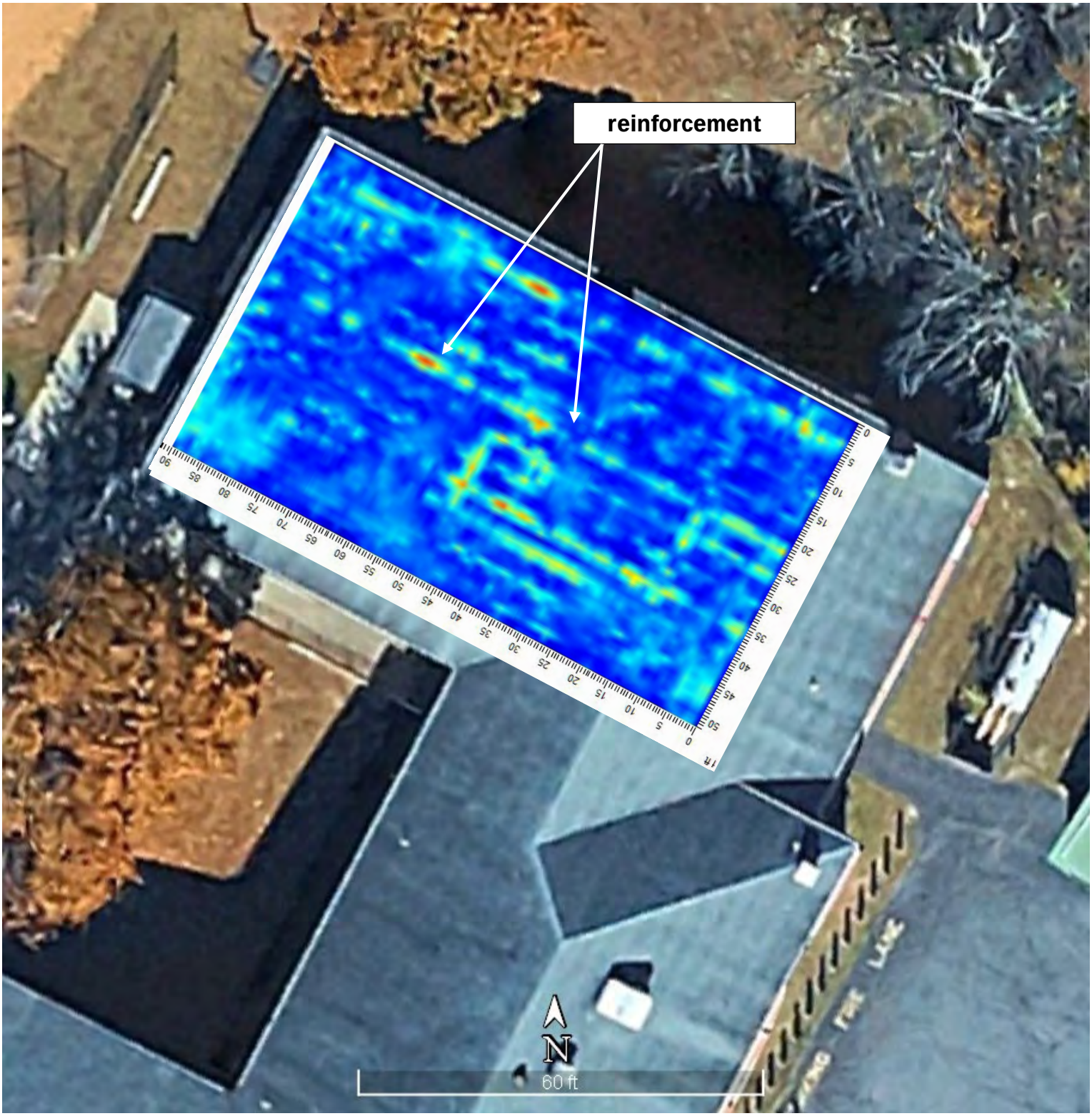


Figure 1 – 0.00' – 0.50' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

Prepared by

GeoSeek LLC
217 Henley Avenue
Pine Beach, NJ 08741

GeoSeek Project	Prepared for:		
2649		French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



Grid01-GRID01.gfp
Slice: 0.500-1.000 ft
Lines: Mixed X and Y
Vel: 0.210 ft/ns
Freq: 250 MHz

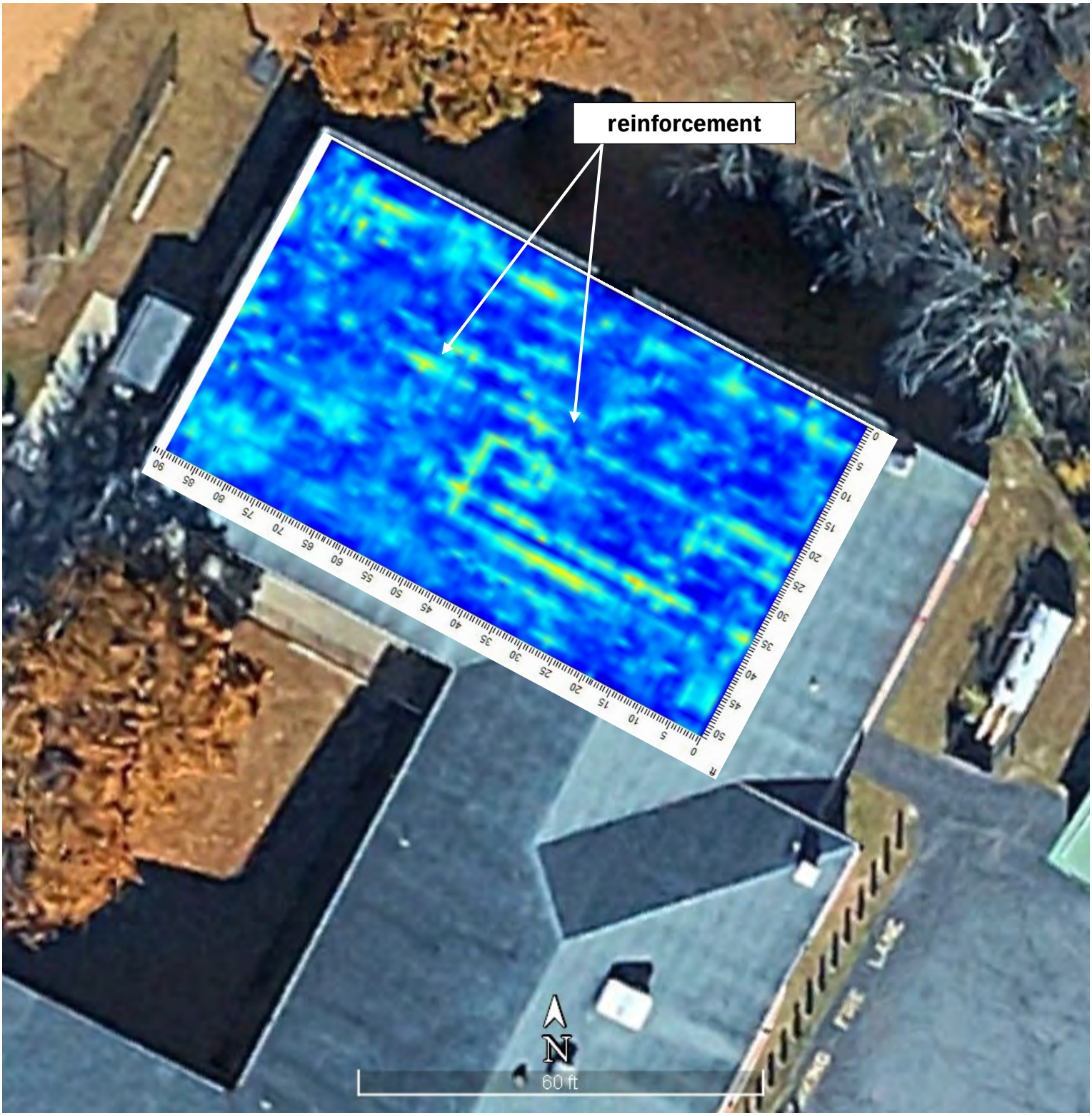
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 2 – 0.5' -1.0' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project 2649	Prepared for:	French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



Grid01-GRID01.gfp
Slice: 1.000-1.500 ft
Lines: Mixed X and Y
Vel: 0.210 ft/ns
Freq: 250 MHz

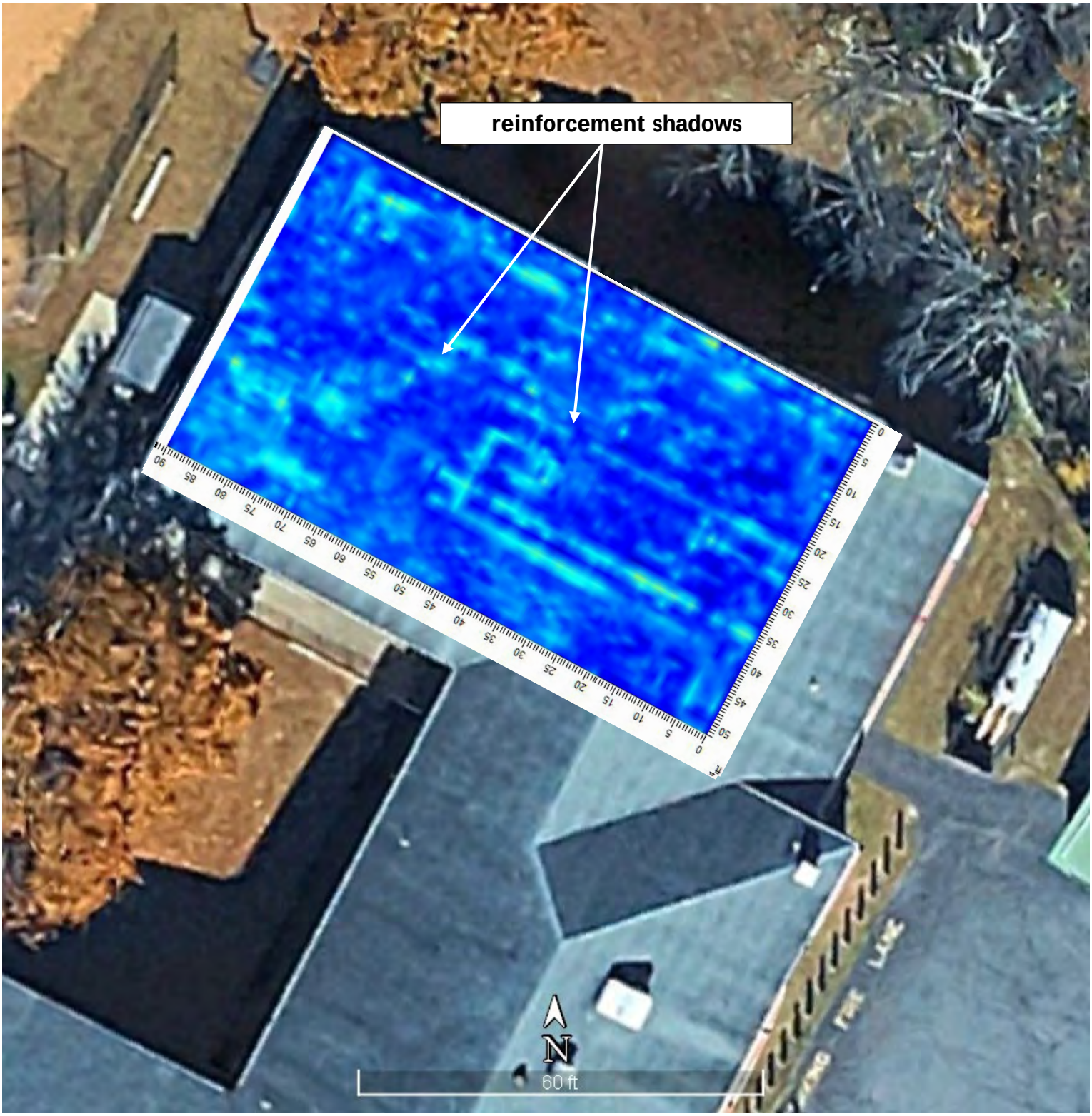
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 3 – 1.0' – 1.5' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project 2649	Prepared for:	French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



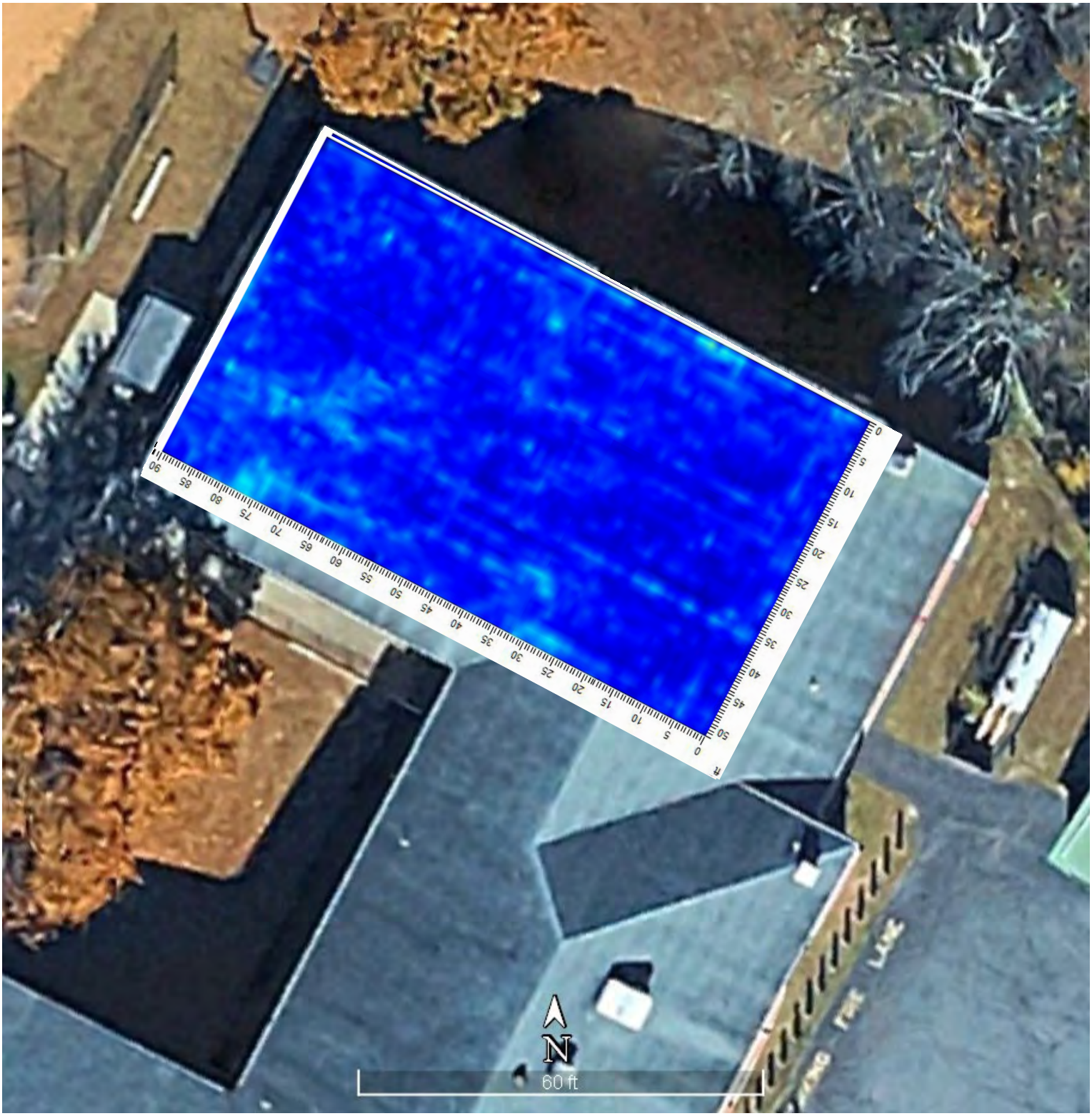
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 4 – 1.5' – 2.0' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project	Prepared for:		
2649		French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



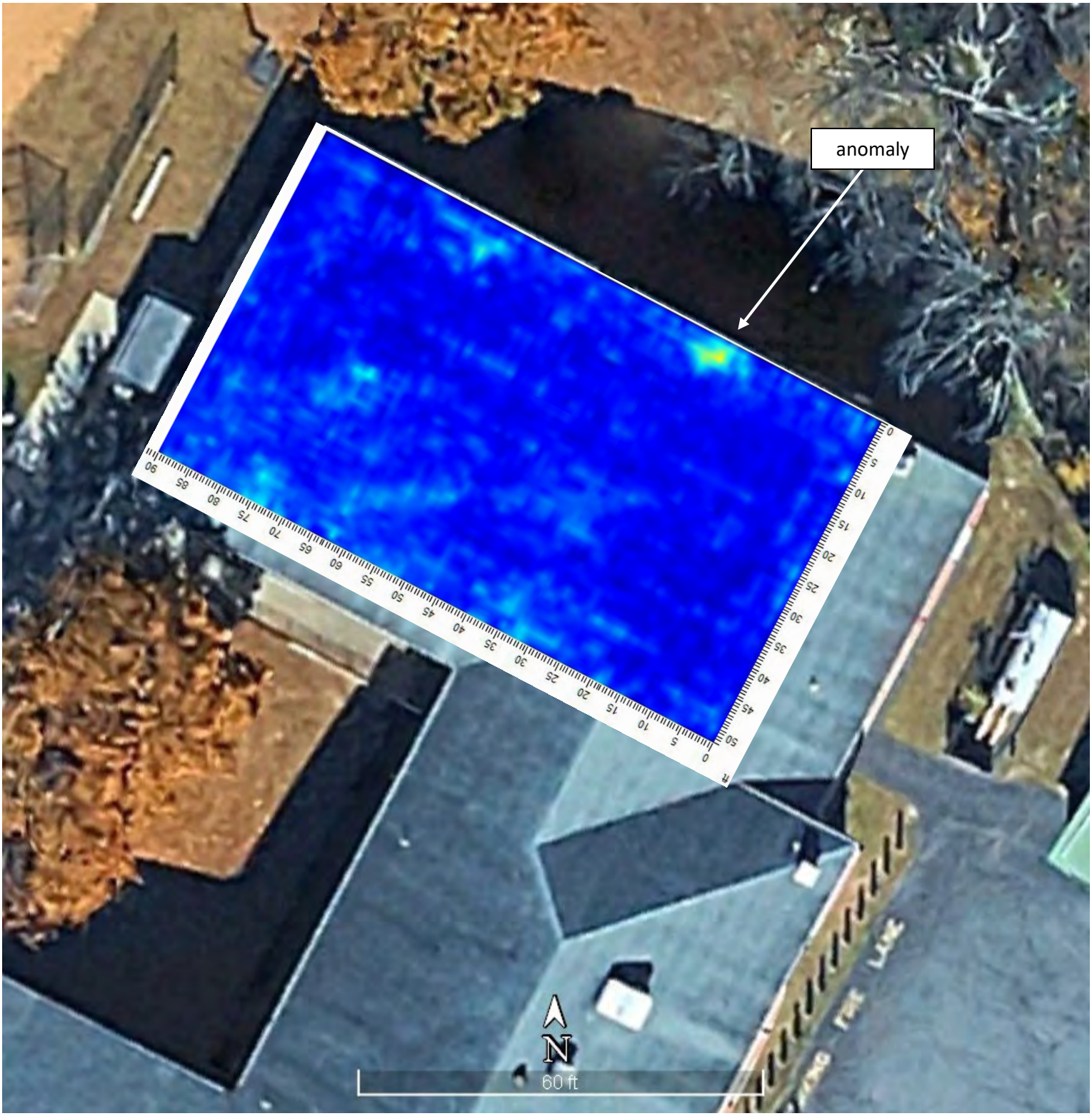
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 5 – 2.0' – 2.5' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project 2649	Prepared for:	French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



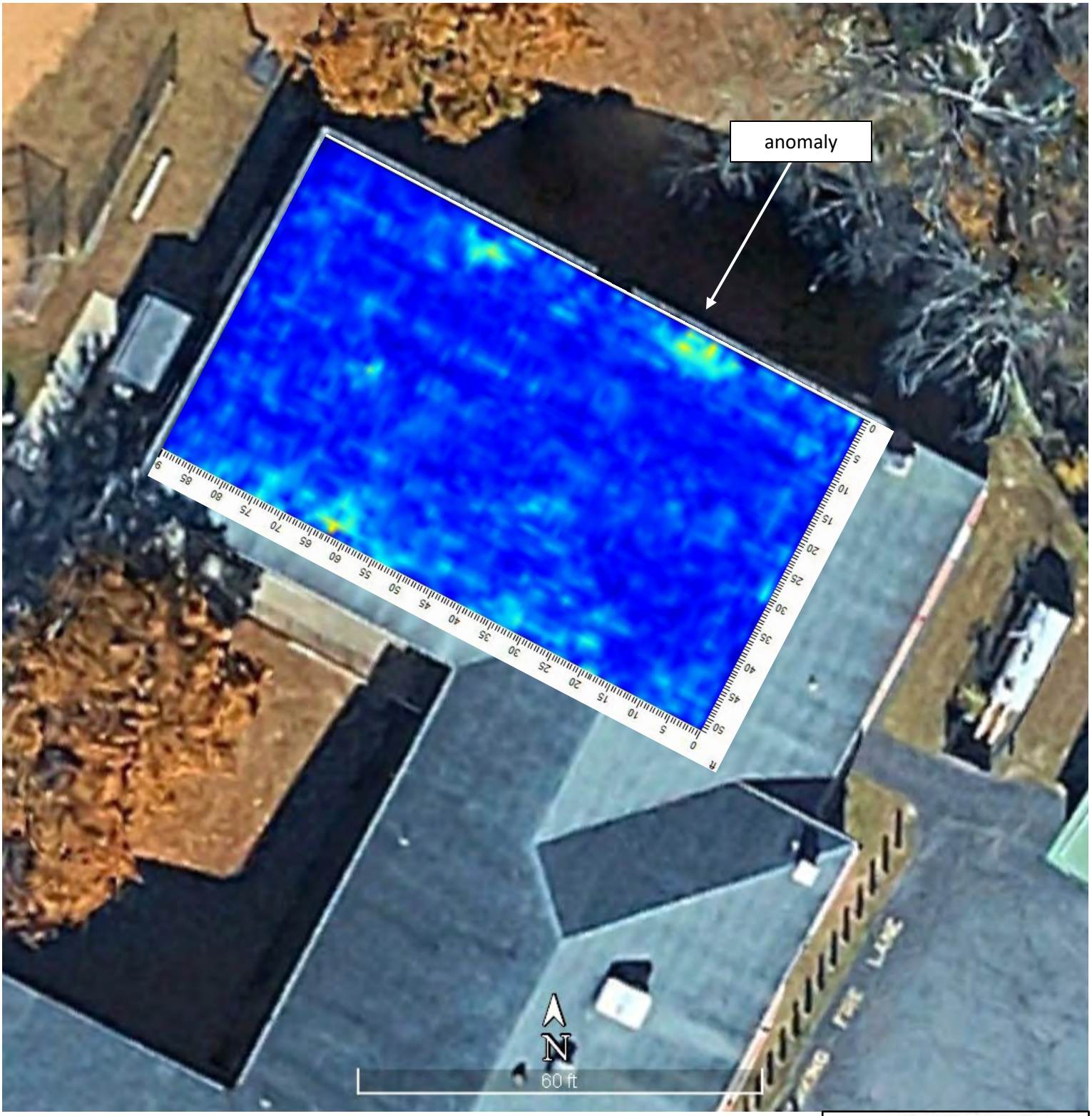
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 6 – 2.5' – 3.0' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

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2649		French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



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GeoSeek LLC

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Pine Beach, NJ 08741

Figure 7 – 3.0' – 3.5' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

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Pine Beach, NJ 08741

Figure 8 – 3.5' – 4.0' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project 2649	Prepared for:	French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



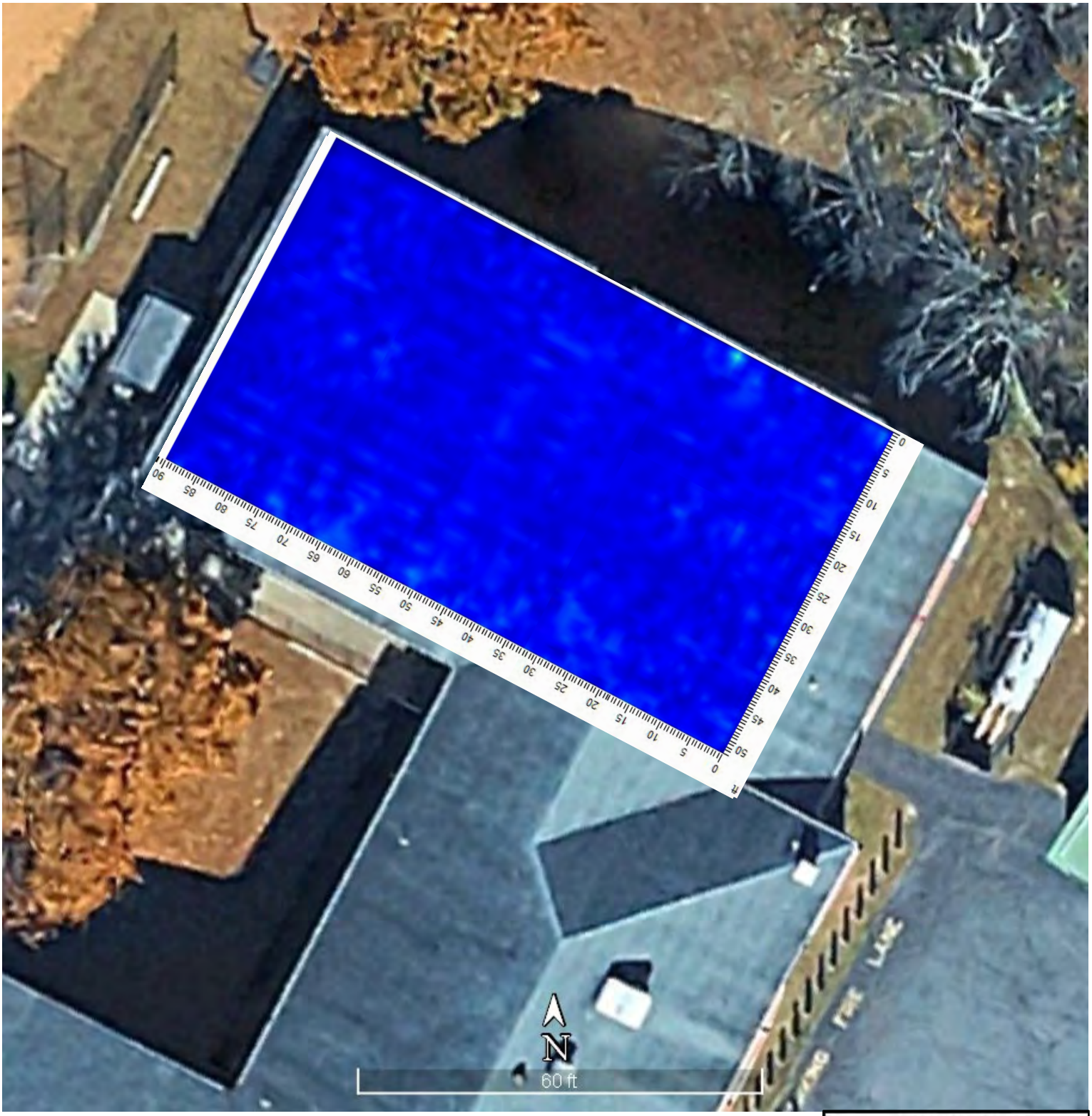
Prepared by

GeoSeek LLC

217 Henley Avenue
Pine Beach, NJ 08741

Figure 9 – 4.0' – 4.5' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project 2649	Prepared for:	French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026



Prepared by

GeoSeek LLC

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Pine Beach, NJ 08741

Figure 10 – 4.5' – 5.0' Below Grade Depth Slice
Stillwater Elementary School Gym
904 Stillwater Road
Stillwater Township, New Jersey

GeoSeek Project	Prepared for:		
2649		French & Parrello Associates, Inc. 700 Grand Avenue, Unit 5A Hackettstown, New Jersey 07840	May 18, 2026

Appendix D

Compaction Grouting Literature

KELLER

COMPACTION GROUTING

Compaction grouting improves a wide range of ground conditions by displacement, for a variety of site improvement and remedial applications.

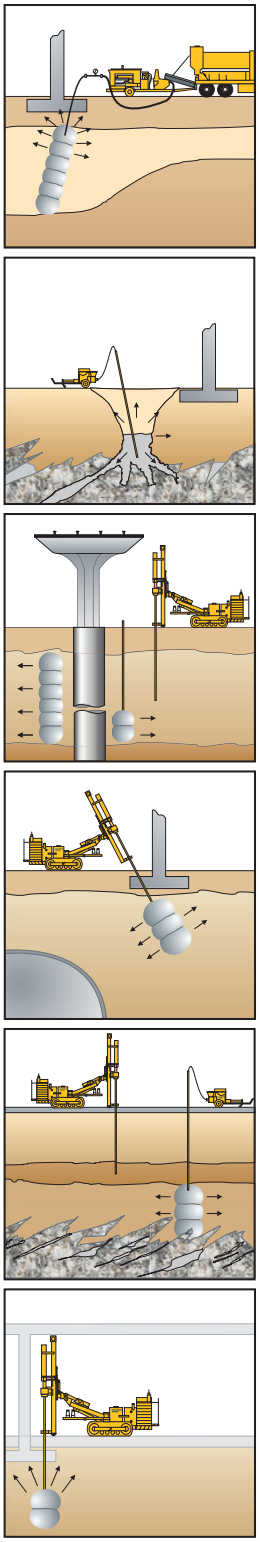


Compaction grouting was used to seal this 160-foot diameter sinkhole that extended down to the Floridan aquifer.



When a properly designed compaction grout is injected into loose soils, homogeneous grout bulbs are formed that displace, densify and thus strengthen the surrounding soil. The technique was originally developed in the 1950's as a remedial measure for the correction of building settlement, and used almost exclusively for that purpose for many years. Over the past twenty years, however, compaction grouting technology has evolved to treat a wide range of subsurface conditions for new and remedial construction. These include rubble fills, poorly placed fills, loosened or collapsible soils, sinkhole sites, and liquefiable soils.

Keller's compaction grouting techniques offer an economic advantage over conventional approaches such as removal and replacement or piling. Compaction grouting can be accomplished where access is difficult and space is limited. Since compaction grouting's effectiveness is independent of structural connections, the technique is readily adaptable to existing foundations.

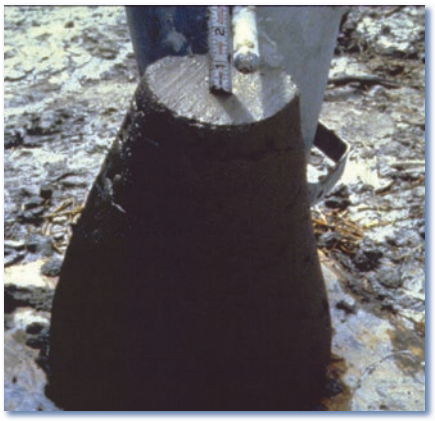


KELLER

THINK SAFE

Compaction Grouting Technology…

Compaction grouting improves ground conditions by displacement. A very viscous (low-mobility), aggregate grout is pumped in stages to displace and densify the surrounding soils. By sequencing the grouting work from primary to secondary to tertiary locations, this densification process can be performed to achieve significant improvement. Keller's compaction grouting capability, spanning more than 25 years, is enhanced by the control features provided by the Denver System: batching-on-demand, and specialized, high pressure injection.



The grout mix must have specific characteristics: a very low mobility (low slump) mixture that is 'pumpable' but, upon installation, exhibits an internal friction enabling it to remain intact and displace the surrounding soil without fracturing it.

Site Investigation

For successful compaction grouting, comprehensive knowledge of subsurface conditions is important. In order to prepare a suitable program, a geotechnical engineering consultant will develop a site investigation report, which will generally contain site geology and history, soil gradation, and the in situ horizontal permeability of each treatment stratum. Type and condition of nearby structures and utilities, together with plan and elevation locations, will further assist program development.

Geotechnical Considerations

Conditions necessary for optimum compaction grouting results:

1. The in situ vertical stress in the treatment stratum must be sufficient to enable the grout to displace the soil horizontally (if uncontrolled heave of the ground surface occurs, densification will be minimized).

2. When compaction grout is injected into saturated soils, a pore pressure increase occurs as a result of ground displacement. This increased pressure must dissipate for effective densification to take place. Therefore, the grout injection rate should be slow enough to allow pore pressure dissipation. Sequencing of grout injection is also important.

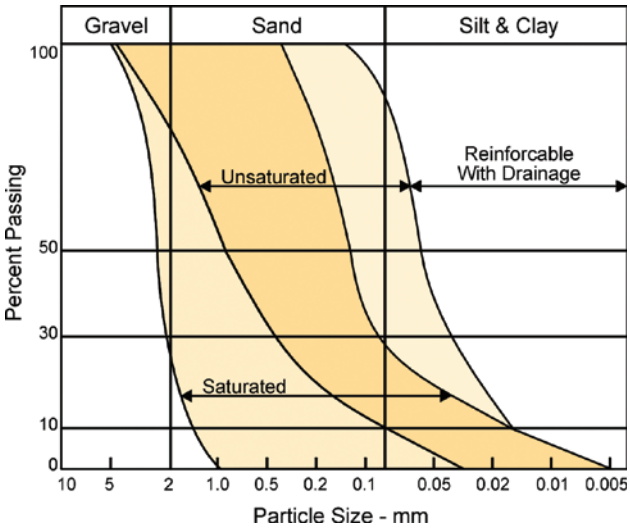
3. Compaction grouting can usually be effective in most silts and sands, provided that the soil is not near saturation.

4. Soils that lose strength during remolding (saturated, fine-grained soils; sensitive clays) should be avoided.

5. Greater displacement will occur in weaker soil strata. Excavated grout bulbs confirm that compaction grouting focuses improvement where it is most needed.

6. Collapsible soils can usually be treated effectively by adding water during drilling prior to compaction grout injection.

7. Stratified soils, particularly thinly stratified soils, can be cause for difficult or reduced improvement capability.

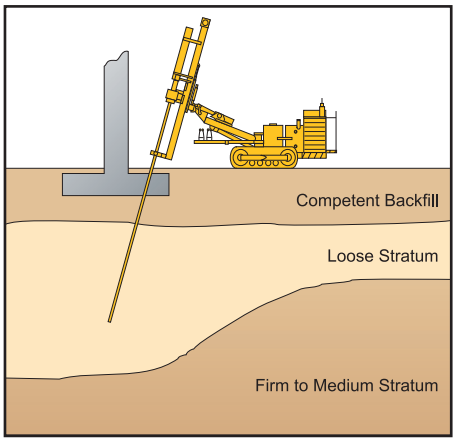


Range of soils that will show improvement by post-testing. Compaction grouting can also be used to reinforce soils beyond this guideline, provided that drainage is enhanced.

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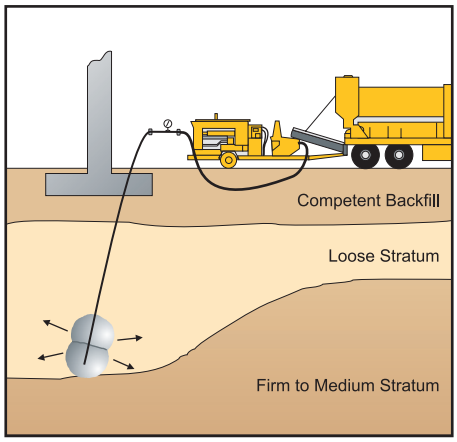
"The design and application of compaction grouting is always site-specific, considering the entire above- and below-ground conditions."

Compaction Grouting Delivery Methods



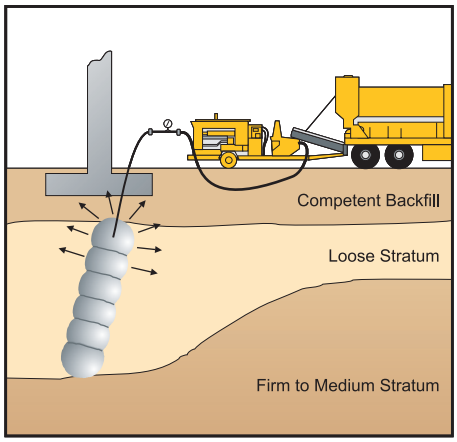
Installation of grout pipe:

- *Drill or drive casing*
- *Location very important*
- *Record ground information from casing installation*



Initiation of grouting:

- *Typically bottom up, but can be top down*
- *Grout quality important*
- *Pressure and/or volume of grout is usually limited*
- *Slow, uniform stage injection*



Continuation of grouting:

- *On-site batching can aid control*
- *Grout quality important*
- *Pressure, grout quantity and indication of heave are controlling factors*
- *Sequencing of plan injection points very important*

Improvement Conditions

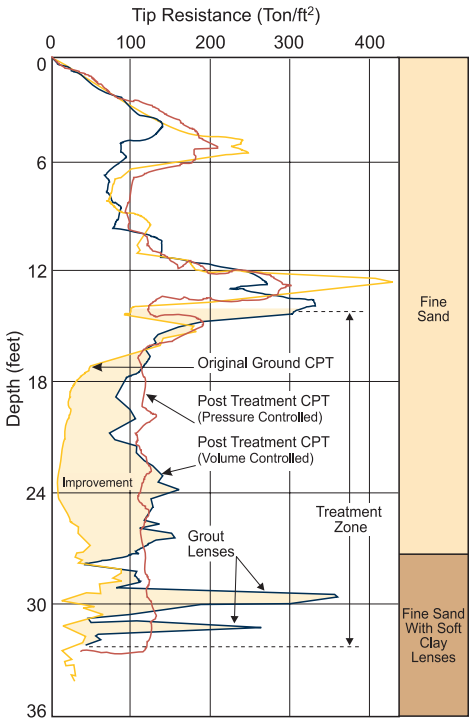
Typically greater than 1,500 psf overburden stress is required to maximize densification. Limited densification can be achieved with less overburden. This stress can come from overburden soils, surcharge loads and/or foundation loads. When densification is the primary intent, a replacement ratio and pressure criterion is applied to each stage of compaction grouting. This ratio is determined based on the existing density, the soil density range, and the amount of displacement necessary to affect the improvement.

$$\text{Replacement Ratio (RR)} = \frac{\text{CG Volume}}{\text{Treatment Volume}} \sim 5 \text{ to } 15\% \text{ (typical)}$$

Experience has proven that treatment spacing should not exceed 6 to 10 ft. From this, a compaction grouting volume can be calculated. The maximum pressure criterion prevents fracture and ground heave and compensates for stiff zones in the treatment area. Vertical stages are usually set at 2- to 3-ft intervals; tighter grid spacing will generally lead to better results.

Quality Control/Quality Assurance

Quality control includes procedural inspection and documentation of the work activity, testing to ensure proper mix design and injection rates, and verification of ground improvement where applicable. Ground improvement can be assessed by Standard Penetration Testing, Cone Penetrometer Testing, or other similar methods. Data recording of important grouting parameters has been utilized on sensitive projects.



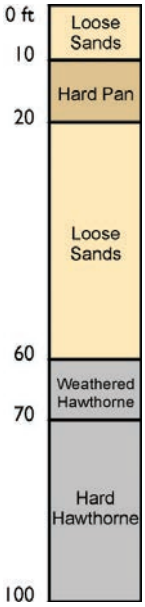
Cone Penetrometer Test results, such as the ones illustrated above for volume cut-off and pressure cut off, show the degree of improvement achieved by compaction grouting.

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Case Histories . . .

Karstic Regions

Pre-treatment for prevention of potential sinkholes is common. This usually involves drilling down to and into the limestone surface to locate and fill any cavities, followed by improvement of the loose soil above the rock surface. A denser, less erodible soil results, better able to arch over any sinkhole that might develop in the future.



Summit Office Building
Maitland, Florida

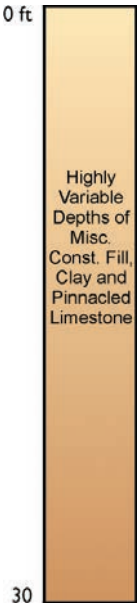
Maitland is an active sinkhole area and also a desirable commercial real estate market. Development proceeds with a significant risk of sinkhole-related structural damage. To reduce the high risk of sinkhole development at the Summit Office Building site, compaction grouting was used to improve the soils at each stone column location. A total of 14,350 cu yds of compaction grout was injected at 340 grout point locations at depths of 80 to 120 ft. Grade beams were incorporated into the foundation design to span between columns. After completion of the grouting program, an irrigation well triggered three sinkholes on the site, but not within the treated areas.



Compaction grouting to pre-treat the Summit site reduced the risk of future sinkhole activity.

Active Sinkholes

Where this condition develops, injection casing is installed around the perimeter of the depression, and aimed at the throat of the limestone opening. The compaction grouting program includes first filling the void at depth, followed by staged treatment to densify the loosened soil in and above the cavity. Due to the inverted cone shape of loosened soil, structures that exist near the cone can often be lifted back to near original elevation.



Dalesford Lake Development
Berwyn, Pennsylvania

A luxury, four-unit townhouse structure founded on timber piles had exhibited structural distress related to sinkhole activity. Subsurface investigation revealed 5 to 30 ft of miscellaneous construction fill, including wood chips and building materials, overlying clay soil. Beneath this, pinnacled karstic limestone was encountered at depths ranging between 10 and 30 ft. Compaction grouting was performed to stabilize the driven pile foundation, re-establish ground contact with the structure, and halt the soil piping that resulted from sinkhole activity. Grout pipes were installed at 68 interior, low headroom locations, and 90 exterior locations, to average depths of 16 to 21 ft. The work was successfully completed while the building remained occupied.



Compaction grouting was performed at interior and exterior locations, with minimal disturbance to townhouse residents.

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"Compaction grouting treats a wide range of subsurface conditions to solve an equally wide variety of structural problems."

Rubble Fill

Construction debris and other similar fills are often placed in an uncontrolled manner. This results in a very porous, voided matrix that can deform and settle over time due to the migration of soil into the voids. To close the void spaces and minimize potential settlement impact, compaction grouting is applied in a regular pattern.



One Woodway Plaza
Houston, Texas

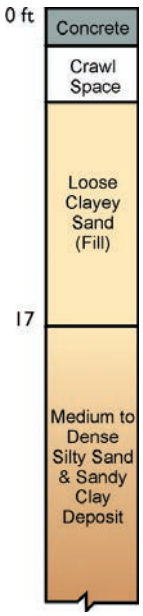
Over several years, a four-story office building's foundation element had undergone major settlement. Built in the early 1970s on spread footings, deep grade beams and drilled caissons, the structure sits on 30 ft of construction rubble fill, beneath which are competent soils. A significant part of the rehabilitation program involved compaction grouting 33 ft deep to stabilize the fill and lift spread footings back to the original elevation. Work was accomplished at night, with more than 3,600 cu yds of grout pumped through 467 low-headroom, interior locations. The settled footings were raised up to 8 inches. In addition, drilled caissons were underpinned with micropiles, and an anchored retaining wall was constructed to stabilize a failed MSE wall.



Compaction grouting stabilized the rubble fill underlying a four-story building and successfully restored the building to near original elevation.

Poorly Placed Fill

Provided sufficient overburden stress exists, a proper program of compaction grouting can treat the poorly placed fill material. This is often utilized when structure deformation alerts the owner to the problem, and an unobtrusive approach to foundation restoration is needed.



WMATA Station Platforms
Rockville and Landover, Maryland

Areas of poorly compacted granular fill beneath two Washington Metro Area Transportation Authority subway platforms had resulted in up to three inches of settlement. Consolidation of the fill was achieved through compaction grouting by the Denver System. Over 150 grout points were established for the 2 platforms. Following coring through the concrete platforms, 2-inch ID casing was pneumatically driven in 3-ft, battered sections to between 9 and 17 ft. Low mobility grout was delivered via the specially designed, on-site mobile batching and pumping unit that typifies the Denver System. Limited station access required this unit to operate across the tracks from the platforms. Although casing installation was accomplished during station operating hours, grouting was limited to line shut-down hours of 1 to 4 a.m.



The Denver System of compaction grouting was used to consolidate fill beneath two, settling subway platforms.

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