Test Pit TP-4 - Photo 3

Test Pit TP-4 - Photo 4

Test Pit TP-4 - Photo 5

Test Pit TP-4 - Photo 6

Test Pit TP-5 - Photo 1

Test Pit TP-5 - Photo 2

Test Pit TP-5 - Photo 3

Test Pit TP-5 - Photo 4

Test Pit TP-5 - Photo 5

Test Pit TP-5 - Photo 6

Test Pit TP-5 - Photo 7

Test Pit TP-5 - Photo 8

Test Pit TP-6 - Photo 1

Test Pit TP-6 - Photo 2

Test Pit TP-6 - Photo 3

Test Pit TP-6 - Photo 4

Test Pit TP-6 - Photo 5

Test Pit TP-6 - Photo 6

Test Pit TP-7 - Photo 1

Test Pit TP-7 - Photo 2

Test Pit TP-7 - Photo 3

Test Pit TP-7 - Photo 4

Test Pit TP-7 - Photo 5

Test Pit TP-8 - Photo 1

Test Pit TP-8 - Photo 2

Test Pit TP-8 - Photo 3

Test Pit TP-8 - Photo 4

Test Pit TP-8 - Photo 5

APPENDIX C

Langan Test Pit Logs – East Campus Maintenance Area

LOG OF TEST PIT TP-301

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/4/2022
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 263 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	8.5 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 303.5E Excavator	Steve Blackburn	Timothy Light

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+263.0	Dark brown silty fine SAND, trace fine gravel, trace clay, some roots, trace organics (moist)[TOPSOIL]	0			
	+262.0	Brown silty fine SAND, trace coarse-fine gravel, trace cobbles, trace roots (moist)	1			
			2	S-1	GRAB	S-1 from 1.5ft to 2.0ft. Infiltration test IT-301 performed at 2.0ft.
	+260.5	Gray coarse-fine SAND, some coarse-fine gravel, some silt (moist)[TILL]	3			
			4			
			5	S-2	GRAB	S-2 from 4.0ft to 5.5ft.
			6			
	+256.0	Gray coarse-fine SAND with coarse-fine gravel, some silt, some cobbles, trace boulders (moist)[WEATHERED ROCK]	7			Difficult excavation starting at about 7.0ft.
			8	S-3	GRAB	S-3 from 7.5ft to 8.5ft.
	+254.5	Bottom of test pit	9			Maximum depth for equipment at 8.5ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-302

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/4/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 262 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	6 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Timothy Light

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+262.0	Dark brown silty fine SAND, some clay, trace fine gravel, some roots, trace organics (moist)[TOPSOIL]	0			
	+261.0	Brown silty coarse-fine SAND, some coarse-fine gravel, trace cobbles, trace clay, trace organics, trace roots (moist)	1			
			2	S-1	GRAB	S-1 from 2.0ft to 2.5ft. Infiltration test IT-302 performed at 2.5ft.
	+259.3	Gray coarse-fine SAND with coarse-fine gravel, some silt, trace cobbles (moist)[TILL]	3			
			4			S-2 from 4.0ft to 5.5ft.
			5	S-2	GRAB	
	+256.0	Bottom of test pit	6			Refusal on bedrock or boulders at 6.0ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-303

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/4/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 260.5 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	8 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Timothy Light

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+260.5	Dark brown silty fine SAND, trace fine gravel, trace clay, trace roots, trace organics (moist)[TOPSOIL]	0			
	+259.5	Grayish brown coarse-fine SAND with coarse-fine gravel, some silt, trace roots (moist)[FILL]	1			
			2	S-1	GRAB	S-1 from 2.0ft to 3.0ft.
			3			
	+257.0	Brown silty fine SAND, some fine gravel, some roots (moist)[BURIED TOPSOIL]				
	+256.5	Gray coarse-fine SAND with coarse-fine gravel, some silt (moist)[TILL]	4			
			5			
			6			
			7	S-2	GRAB	S-2 from 6.5ft to 7.5ft.
	+252.5	Bottom of test pit	8			Maximum depth for equipment at 8.0ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-304

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/4/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 257 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	8 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Timothy Light

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+257.0	Light brown to brown silty coarse-fine SAND, some coarse-fine gravel, some concrete debris, some brick debris, trace glass debris, trace wire debris, trace fabric fragments, trace roots (moist)[FILL]	0			Fill at ground surface.
	+256.5		1	S-1	GRAB	S-1 from 0.5ft to 1.5ft.
	+255.5	Dark brown fine sandy SILT, some fine gravel, some clay, trace roots, trace concrete debris (moist)[TOPSOIL]	2			
		Brown to tan fine sandy SILT, trace coarse-fine gravel, trace cobbles (moist)	3	S-2	GRAB	S-2 from 2.5ft to 3.0ft. Infiltration test IT-304 performed at 3.0ft.
	+253.3	Gray coarse-fine SAND with coarse-fine gravel, some silt, some cobbles, trace boulders (moist)[TILL]	4			
			5	S-3	GRAB	S-3 from 4.5ft to 6.5ft.
			6			
			7			
	+249.5	Gray coarse-fine SAND with coarse-fine gravel, trace silt (moist)[WEATHERED ROCK]	8	S-4	GRAB	S-4 from 7.7ft to 8.0ft.
	+249.0	Bottom of test pit	9			Maximum depth for equipment at 8.0ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-305

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/5/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 263.5 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	5.5 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+263.5	Dark brown silty medium-fine SAND, trace coarse sand, trace fine gravel, trace roots (moist)[TOPSOIL]	0			
	+262.8	Brown coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles (moist)	1			
			2	S-1	GRAB	S-1 from 1.75ft to 2.25ft. Grab sample of three 5-gallon buckets from 1.75ft to 2.25ft. Infiltration test IT-305A performed at 2.25ft.
	+261.3	Gray coarse-fine SAND, some silt, some coarse-fine gravel, trace cobbles, trace boulders, trace weathered rock fragments (moist)[TILL]		S-2	GRAB	S-2 from 2.5ft to 3.0ft. Infiltration test IT-305B performed at 3.0ft.
			3			
			4			Roots to 4.0ft.
			5			
	+258.0	Bottom of test pit	6			Refusal on bedrock or boulders at 5.5ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-306

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/5/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 272 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	2 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+272.0	Dark brown silty medium-fine SAND, trace fine gravel, some roots (moist)[TOPSOIL]	0			
	+271.2	Brown coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles, trace roots (moist)	1			Roots to 1.5ft.
	+270.0	Bottom of test pit	2			Refusal on bedrock at 2.0ft. Bedrock sloping from 0.16ft at the north side of the test pit to 2.0ft at the south south side. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			3			
			4			
			5			
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LOG OF TEST PIT TP-307

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/5/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 256 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	4 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+256.0	Dark brown silty medium-fine SAND, trace coarse sand, some roots (moist)[TOPSOIL]	0			
	+255.3	Brown to light brown medium-fine SAND, trace coarse sand, trace coarse-fine gravel, trace cobbles, trace roots (moist)	1	S-1	GRAB	S-1 from 1.5ft to 2.0ft.
	+253.8	Gray coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles (moist)[TILL]	2			Roots to 2.5ft.
	+252.0	Bottom of test pit	3			
			4			Refusal on bedrock at 4.0ft. Bedrock at 4.0ft on west side (higher adjacent ground surface) and at 3.0ft on east side (lower adjacent ground surface). Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			5			
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LOG OF TEST PIT TP-308

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/5/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 262.5 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	7 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+262.5	Dark brown silty medium-fine SAND, trace coarse sand, trace roots (moist)[TOPSOIL]	0			
	+261.7	Brown to light brown silty medium-fine SAND, some coarse sand, trace coarse-fine gravel, trace roots (moist)	1			
			2			
	+259.5	Gray coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles, trace roots (moist)[TILL]	3			
			4			Roots to 4.0ft.
			5	S-1	GRAB	S-1 from 4.5ft to 5.0ft.
	+257.0	Gray coarse-fine SAND, some silt, some coarse-fine gravel, trace cobbles, some weathered rock fragments (moist)[TILL]	6			
			7	S-2	GRAB	S-2 from 6.5ft to 7.0ft.
	+255.5	Bottom of test pit	8			Test pit terminated at 7.0ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			9			
			10			
			11			
			12			
			13			
			14			
			15			

LANGAN

LOG OF TEST PIT TP-309

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - East Campus Maintenance Area	151014301	1/5/2022

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 264 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	5 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 303.5E Excavator	Steve Blackburn	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+264.0	Dark brown silty medium-fine SAND, trace coarse sand, trace roots (moist)[TOPSOIL]	0	S-1	GRAB	S-1 from 0.0ft to 0.5ft.
	+263.0	Brown to tan fine-coarse SAND, some silt, trace coarse-fine gravel, trace cobbles, trace boulders, trace roots (moist)	1			
			2	S-2	GRAB	S-2 from 2.0ft to 2.5ft.
			3			Roots to 3.0ft.
	+260.5	Gray coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles, trace weathered rock fragments (moist)[TILL]	4			
	+259.0	Bottom of test pit	5			Refusal on bedrock or boulder at 5.0ft. Test pit backfilled to grade with excavated material tamped with the excavator bucket.
			6			
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

APPENDIX D

Langan Test Pit Photographs – East Campus Maintenance Area

Test Pit TP-301 - Photo 1

Test Pit TP-301 - Photo 2

Test Pit TP-301 - Photo 3

Test Pit TP-301 - Photo 4

Test Pit TP-301 - Photo 5

Test Pit TP-301 - Photo 6

Test Pit TP-301 - Photo 7

Test Pit TP-302 - Photo 1

Test Pit TP-302 - Photo 2

Test Pit TP-302 - Photo 3

Test Pit TP-302 - Photo 4

Test Pit TP-302 - Photo 5

Test Pit TP-302 - Photo 6

Test Pit TP-302 - Photo 7

Test Pit TP-303 - Photo 1

Test Pit TP-303 - Photo 2

Test Pit TP-303 - Photo 3

Test Pit TP-303 - Photo 4

Test Pit TP-303 - Photo 5

Test Pit TP-303 - Photo 6

Test Pit TP-304 - Photo 1

Test Pit TP-304 - Photo 2

Test Pit TP-304 - Photo 3

Test Pit TP-304 - Photo 4

Test Pit TP-304 - Photo 5

Test Pit TP-305 - Photo 1

Test Pit TP-305 - Photo 2

Test Pit TP-305 - Photo 3

Test Pit TP-305 - Photo 4

Test Pit TP-305 - Photo 5

Test Pit TP-305 - Photo 6

Test Pit TP-305 - Photo 7

Test Pit TP-305 - Photo 8

Test Pit TP-306 - Photo 1

Test Pit TP-306 - Photo 2

Test Pit TP-306 - Photo 3

Test Pit TP-306 - Photo 4

Test Pit TP-306 - Photo 5

Test Pit TP-306 - Photo 6

Test Pit TP-306 - Photo 7

Test Pit TP-306 - Photo 8

Test Pit TP-307 - Photo 1

Test Pit TP-307 - Photo 2

Test Pit TP-307 - Photo 3

Test Pit TP-307 - Photo 4

Test Pit TP-307 - Photo 5

Test Pit TP-307 - Photo 6

Test Pit TP-307 - Photo 7

Test Pit TP-307 - Photo 8

Test Pit TP-308 - Photo 1

Test Pit TP-308 - Photo 2

Test Pit TP-308 - Photo 3

Test Pit TP-308 - Photo 4

Test Pit TP-308 - Photo 5

Test Pit TP-308 - Photo 6

Test Pit TP-308 - Photo 7

Test Pit TP-308 - Photo 8

Test Pit TP-308 - Photo 9

Test Pit TP-308 - Photo 10

Test Pit TP-308 - Photo 11

Test Pit TP-309 - Photo 1

Test Pit TP-309 - Photo 2

Test Pit TP-309 - Photo 3

Test Pit TP-309 - Photo 4

Test Pit TP-309 - Photo 5

Test Pit TP-309 - Photo 6

Test Pit TP-309 - Photo 7

Test Pit TP-309 - Photo 8

Test Pit TP-309 - Photo 9

Test Pit TP-309 - Photo 10

APPENDIX E

Langan Test Pit Logs – JAC Parking Lot

LOG OF TEST PIT TP-201

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/17/2021

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 250.5 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	8.5 ft	8 ft ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 306 Excavator	Scott Perachi	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+250.5	Black ASPHALT	0			
	+250.2	(moist)[ASPHALT]				
		Grayish brown coarse to fine SAND, some coarse to fine gravel, trace silt, trace asphalt fragments, trace brick fragments (moist)[FILL]	1	S-1	GRAB	S-1 from 0.5ft to 1.0ft Dense graded base material
	+249.2	Light brown coarse to fine SAND, trace medium to fine gravel (moist)[FILL]	2	S-2	GRAB	S-2 from 1.5ft to 2.0ft
	+248.0	Brown coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders, trace brick fragments, trace asphalt fragments (moist)[FILL]	3	S-3	GRAB	S-3 from 3.0ft to 3.5ft
	+246.0	Dark brown SILT, some clay, some organics, trace medium to fine sand, trace roots, trace wood fragments (moist)[TOPSOIL]	4 5	S-4/6 S-5	GRAB GRAB	S-4 and S-6 from 4.5ft to 5.0ft S-5 from 4.75ft to 5.25ft
	+245.3	Light brownish SILT, trace clay, trace fine sand, trace roots (moist)	6	S-7	GRAB	Guelph Permeameter infiltration test at 5.25ft S-7 from 5.25ft to 6.25ft
		Brown SILT, trace clay, trace coarse to fine sand, trace fine gravel (moist)	7			
		▽	8	S-8	GRAB	S-8 from 7.5ft to 8.0ft Groundwater at 8.0ft
	+242.0	Bottom of test pit	9 10 11			Bottom of test pit at 8.5ft. Test pit backfilled to 4.0ft with lifts of excavated material that was tamped with the excavator bucket. Test pit backfilled to 1.0ft with lifts of excavated material that was compacted with a plate compactor. Test pit backfilled to grade with dense graded material that was compacted with a plate compactor

LANGAN

LOG OF TEST PIT TP-202

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/16/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 249.8 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	8.5 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Scott Perachi	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+249.8	Black ASPHALT	0			
	+249.5	(moist)[ASPHALT]				
		Grayish brown coarse to fine SAND, some coarse to fine gravel, trace silt (moist)[FILL]	1			Dense graded base material
	+248.5	Brown silty coarse to fine SAND, some coarse to fine gravel, trace cobbles, trace boulders, trace asphalt fragments, trace brick fragments (moist)[FILL]	2			
	+247.3	Light brown to brown coarse to fine SAND, some coarse gravel, some silt, trace cobbles, trace boulders, trace brick fragments, trace wire fragments, trace concrete fragments, trace asphalt fragments, trace tile fragments (moist)[FILL]	3			
			4	S-1	GRAB	S-1 from 4.0ft to 4.5ft USDA textural classification performed
						Guelph Permeameter infiltration test at 4.5ft
		Light brown to dark brown coarse to fine SAND, some coarse to fine gravel, some silt, trace clay, trace cobbles, trace boulders, trace concrete fragments, trace glass fragments, trace asphalt fragments, trace brick fragments (moist)[FILL]	5			
			6			
			7	S-2	GRAB	S-2 from 7.0ft to 7.5ft
			8			
	+241.3	Bottom of test pit	9			Bottom of test pit at 8.5ft. Test pit backfilled to 4.0ft with lifts of excavated material that was tamped with the excavator bucket. Test pit backfilled to 1.0ft with lifts of excavated material that was compacted with a plate compactor. Test pit backfilled to grade with dense graded material that was compacted with a plate compactor
			10			
			11			

LANGAN

LOG OF TEST PIT TP-203

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/16/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 250.4 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
FE French	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Scott Perachi	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+250.4	Black ASPHALT	0			
	+250.1	(moist)[ASPHALT]				
		Grayish brown coarse to fine SAND, some coarse to fine gravel, trace silt (moist)[FILL]	1			Dense graded base material
	+248.4	Brown silty coarse to fine SAND, some coarse to fine gravel, trace cobbles, trace boulders, trace asphalt fragments, trace brick fragments, trace wood fragments, trace roots (moist)[FILL]	2			
			3	S-1	GRAB	S-1 from 2.5ft to 3.0ft
			4	S-2	GRAB	S-2 from 4.0ft to 4.5ft. Roots to 4.0ft
	+245.4	Tan to white medium to fine SAND, some silt, trace fine gravel, some ash, trace coal fragments (moist)[FILL]	5	S-3	GRAB	S-3 from 5.0ft to 5.25ft
	+245.1	Brown coarse to fine SAND, some silt, trace coarse to fine gravel, trace cobbles, trace brick fragments, trace ceramic fragments, trace asphalt fragments. (moist)[FILL]	6			
	+243.9	Dark brown SILT, some clay, trace medium to fine sand (moist)[TOPSOIL]				
	+243.4	Light brown SILT, trace coarse sand, trace fine gravel (moist)	7	S-4	GRAB	S-4 from 7.0ft to 7.5ft
	+242.4	Bottom of test pit	8			Bottom of test pit at 8.0ft. Test pit backfilled to 4.0ft with lifts of excavated material that was tamped with the excavator bucket. Test pit backfilled to 1.0ft with lifts of excavated material that was compacted with a plate compactor. Test pit backfilled to grade with dense graded material that was compacted with a plate compactor
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-204

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/16/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 253.5 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Scott Perachi	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+253.5	Dark brown silty medium to fine SAND, some roots (moist)[TOPSOIL]	0			
	+253.3	Light brown silty coarse to fine SAND, trace medium to fine gravel, trace asphalt fragments, trace plastic fragments, trace roots (moist)[FILL]	1			
	+251.5	Grayish brown coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders (moist)	2			
			3			
			4			
			5	S-1	GRAB	S-1 from 5.0ft to 5.5ft Guelph Permeameter infiltration test at 5.5ft
			6			Roots to 6.0ft
			7			
	+245.5	Bottom of test pit	8			Bottom of test pit at 8.0ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-205

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/16/2021

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 251.4 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	5.5 ft	N/E	N/A

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 306 Excavator	Scott Perachi	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+251.4	Dark brown medium to fine SAND, some silt, trace coarse sand, some roots (moist)[TOPSOIL]	0			
	+251.2	Brown medium to fine SAND, some silt, trace medium to fine gravel, trace metal fragments, trace plastic pipe fragments (moist)[FILL]	1			
	+249.4	Gray coarse to fine SAND, some coarse to fine gravel, some silt, trace cobbles, trace boulders (moist)	2	S-1	GRAB	S-1 from 2.0ft to 2.5ft Guelph Permeameter infiltration test at 2.5ft
			3			
			4	S-2	GRAB	S-2 from 4.0ft to 4.5ft . Roots to 4.0ft
			5			
	+245.9	Bottom of test pit	6			Refusal on large boulder at 5.5ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket.
			7			
			8			
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-206

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/17/2021

LOCATION	ELEVATION
350 Prospect Street, Belmont, MA	Approx. 251.9 ft (Town of Belmont Datum)

EXCAVATION CONTRACTOR	DEPTH	WATER LEVEL - First	WATER LEVEL - Completion
F.E. French Construction, Inc.	8 ft	N/E ▽	N/A ▼

EQUIPMENT	FOREMAN	LANGAN PERSONNEL
CAT 306 Excavator	Matt Ragone	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+251.9	Dark brown SILT, some coarse to fine sand, trace fine gravel, some roots (moist)[TOPSOIL]	0			
	+251.7	Brown silty coarse to fine SAND, some coarse to fine gravel, trace asphalt fragments, trace roots (moist)[FILL]	1			
	+250.4	Light brown coarse to fine sandy SILT, trace coarse to fine gravel, trace roots (moist)	2	S-1	GRAB	S-1 from 1.5ft to 2.0ft. USDA textural classification performed Guelph Permeameter infiltration test at 2.0ft
			3			
	+248.4	Gray coarse to fine SAND, some coarse to fine gravel, trace silt, some cobbles, trace boulders (moist)	4			Roots to 4.0ft
			5			
			6			
			7			
	+243.9	Bottom of test pit	8			Bottom of test pit at 8.0ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-207

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/17/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 256.5 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	7.5 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Matt Ragone	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+256.5	Dark brown medium to fine sandy SILT, trace clay, some roots	0			
	+256.3	(moist)[TOPSOIL]				
		Light brown to light gray SILT, some clay, trace medium to fine sand, trace roots		S-1	GRAB	S-1 from 0.5ft to 1.0ft
	+255.5	(moist)[FILL]	1			
		Brown coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders, trace ceramic fragments, trace plastic fragments, trace roots		S-2	GRAB	S-2 from 1.0ft to 1.5ft USDA textural classification performed Guelph Permeameter infiltration test at 1.5ft
		(moist)[FILL]	2			
			3			
	+252.5		4			
		Gray coarse to fine SAND, some coarse to fine gravel, trace silt, trace cobbles, trace boulders, trace wood fragments, trace ceramic fragments				
		(moist)[FILL]	5			Roots to 5.0ft
			6			
			7			
	+249.0	Bottom of test pit				Bottom of test pit at 7.5ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket
			8			
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-208

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/17/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 259.4 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Matt Ragone	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+259.4	Brown coarse to fine SAND, some coarse to fine gravel, trace silt, trace cobbles, trace asphalt fragments, trace plastic fragments (moist)[FILL]	0			
			1			
		Light brown coarse to fine SAND, some silt, trace medium to fine gravel, trace brick fragments (moist)[FILL]	2			
	+257.2	Dark brown silty coarse to fine SAND (moist)[TOPSOIL]		S-1	GRAB	S-1 from 2.25 to 2.5ft
	+256.9					
	+256.7	Black ASPHALT (moist)[ASPHALT]	3			
		Light brown coarse to fine SAND, some silt, some fine gravel (moist)		S-2	GRAB	S-2 from 3.0ft to 3.5ft
						Guelph Permeameter infiltration test at 3.5ft
	+255.4	Gray coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders, trace roots (moist)	4	S-3	GRAB	S-3 from 4.0ft to 4.5ft
			5			
			6			Roots to 6.0ft
			7			
	+251.4	Bottom of test pit	8			Bottom of test pit at 8.0ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket
			9			
			10			
			11			

LANGAN

LOG OF TEST PIT TP-209

PROJECT NAME	PROJECT NUMBER	DATE
Belmont Hill School - Jordan Athletic Center	151014301	10/17/2021
LOCATION	**ELEVATION**	
350 Prospect Street, Belmont, MA	Approx. 262 ft (Town of Belmont Datum)	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
F.E. French Construction, Inc.	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 306 Excavator	Matt Ragone	Alexander Macon

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+262.0	Brown to dark brown WOOD CHIPS, trace silt (moist)[FILL]	0			
			1			
			2	S-1	GRAB	S-1 from 1.5ft to 2.0ft
	+259.5	Reddish brown medium to fine SAND, some silt, trace medium to fine gravel, trace wood fragments, trace glass fragments, trace brick fragments (moist)[FILL]	3	S-2	GRAB	S-2 from 2.75ft to 3.25ft
	+258.5	Dark brown SILT, trace medium to fine sand, trace roots (moist)[TOPSOIL]		S-3	GRAB	S-3 from 3.5ft to 4.0ft
	+258.0	Light brown sandy SILT, trace coarse to fine gravel, trace roots (moist)	4			
			5	S-4	GRAB	S-4 from 4.5ft to 5.0ft Guelph Permeameter infiltration test at 5.0ft
	+256.5	Gray silty coarse to fine SAND, some coarse to fine gravel, trace clay, trace cobbles, trace boulders (moist)	6			
			7	S-5	GRAB	S-5 from 6.5ft to 7.0ft Roots to 7.0ft
	+254.0	Bottom of test pit	8			Bottom of test pit at 8.0ft. Test pit backfilled to grade with lifts of excavated material that was tamped with the excavator bucket
			9			
			10			
			11			

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APPENDIX F

Langan Test Pit Photographs – JAC Parking Lot

Test Pit TP-201 - Photo 1

Test Pit TP-201 - Photo 2

Test Pit TP-201 - Photo 3

Test Pit TP-201 - Photo 4

Test Pit TP-201 - Photo 5

Test Pit TP-201 - Photo 6

Test Pit TP-201 - Photo 7

Test Pit TP-202 - Photo 1

Test Pit TP-202 - Photo 2

Test Pit TP-202 - Photo 3

Test Pit TP-202 - Photo 4

Test Pit TP-202 - Photo 5

Test Pit TP-202 - Photo 6

Test Pit TP-202 - Photo 7

Test Pit TP-203 - Photo 1

Test Pit TP-203 - Photo 2

Test Pit TP-203 - Photo 3

Test Pit TP-203 - Photo 4

Test Pit TP-203 - Photo 5

Test Pit TP-203 - Photo 6

Test Pit TP-204 - Photo 1

Test Pit TP-204 - Photo 2

Test Pit TP-204 - Photo 3

Test Pit TP-204 - Photo 4

Test Pit TP-204 - Photo 5

Test Pit TP-205 - Photo 1

Test Pit TP-205 - Photo 2

Test Pit TP-205 - Photo 3

Test Pit TP-205 - Photo 4

Test Pit TP-205 - Photo 5

Test Pit TP-206 - Photo 1

Test Pit TP-206 - Photo 2

Test Pit TP-206 - Photo 3

Test Pit TP-206 - Photo 4

Test Pit TP-206 - Photo 5

Test Pit TP-206 - Photo 6

Test Pit TP-207 - Photo 1

Test Pit TP-207 - Photo 2

Test Pit TP-207 - Photo 3

Test Pit TP-207 - Photo 4

Test Pit TP-207 - Photo 5

Test Pit TP-207 - Photo 6

Test Pit TP-208 - Photo 1

Test Pit TP-208 - Photo 2

Test Pit TP-208 - Photo 3

Test Pit TP-208 - Photo 4

Test Pit TP-208 - Photo 5

Test Pit TP-208 - Photo 6

Test Pit TP-209 - Photo 1

Test Pit TP-209 - Photo 2

Test Pit TP-209 - Photo 3

Test Pit TP-209 - Photo 4

Test Pit TP-209 - Photo 5

Test Pit TP-209 - Photo 6

Test Pit TP-209 - Photo 7

APPENDIX G

Langan Boring Logs – East Campus Maintenance Area

LANGAN

Log of Boring **LB-01** Sheet 1 of 1

Project: Belmont Hill School - East Campus Maintenance Area	Project No.: 151014301
Location: 350 Prospect Street, Belmont, MA	Elevation and Datum: Approx. 255.5 ft (Town of Belmont Datum)
Drilling Company: Geologic Earth Exploration Inc.	Date Started: 01/06/2022 / Date Finished: 01/06/2022
Drilling Equipment: Acker Scout	Completion Depth: 10.5 ft / Rock Depth: 7.5 ft
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 4 / Undisturbed N/A / Core 1
Casing Diameter (in): 4 / Casing Depth (ft): 7.5	Water Level (ft.): First N/E / Completion N/A / 24 HR. N/A
Casing Hammer: Donut / Weight (lbs): 300 / Drop (in): 30	Drilling Foreman: Dave Sheldon
Sampler: 2-inch-diameter split spoon	Field Engineer: Alexander Macon
Sampler Hammer: Donut / Weight (lbs): 140 / Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	255.5			0					
	255.0	Dark brown silty medium-fine SAND, trace coarse sand, trace roots (moist)[TOPSOIL]			S-1A	SS	10	2	
		Brown medium-fine SAND, some silt, some coarse sand, trace fine gravel, trace roots (moist)	Spin	1	S-1B	SS	10	11 21 11	32
	253.5	Gray coarse-fine SAND, some silt, trace fine gravel (moist)[TILL]		2	S-2	SS	11	17 25	
			90	3				50 50/1	75
		Gray coarse-fine SAND, some silt, trace fine gravel (moist)[TILL]		4	S-3	SS	8	59 54	
			115	5				50/2	50/2
		Gray coarse-fine SAND, some silt, some fine gravel (moist)[TILL]	Spin	6	S-4	SS	4	44 39	
	248.0			7				50/1	50/1
		Brown GRANODIORITE [BOULDER]	3:00	8	C-1	NX Core	15		
	246.5		1:36	9					
		Inferred gray coarse-fine SAND, some silt, some fine gravel (moist)[TILL]	2:01	10					
	245.0	Bottom of boring		11					
				12					
				13					
				14					
				15					

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

S-1 at 0ft.

Attempted to sample and the sampler deflected laterally. Drill to 2.0ft. Moderate drilling. Some rig chatter from 1.0ft to 1.5ft. Inferred cobble from 1.0ft to 1.5ft. S-2 at 2ft. Switch to 3-inch-diameter casing. Switch to 2 3/4-inch roller bit. Spin casing to 3.0ft. Drive casing to 4.0ft. Drill to 4.0ft. Moderate drilling. Some rig chatter from 3.5ft to 4.0ft. Gray wash.

S-3 at 4ft. Drill to 6.0ft. Moderate to hard drilling. Some rig chatter from 5.5ft to 6.0ft. Gray wash. Drive casing to 6.0ft. Clean out casing.

S-4 at 6ft. Drill to 7.5ft. Moderate to hard drilling to 7.0ft. Very hard drilling from 7.0ft to 7.5ft. Gray wash. Spin casing to 7.5ft. Clean out casing.

C-1 at 7.5ft Advanced through hard material at 9.0ft.

Boring terminated at 10.5ft. Boring backfilled to grade with soil cuttings and #2 sand.

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Log of Boring **LB-02 (OW)** Sheet 1 of 2

Project: Belmont Hill School - East Campus Maintenance Area	Project No.: 151014301
Location: 350 Prospect Street, Belmont, MA	Elevation and Datum: Approx. 261 ft (Town of Belmont Datum)
Drilling Company: Geologic Earth Exploration Inc.	Date Started: 01/06/2022 / Date Finished: 01/06/2022
Drilling Equipment: Acker Scout	Completion Depth: 16 ft / Rock Depth: N/E
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 6, Undisturbed N/A, Core 1
Casing Diameter (in): 4 / Casing Depth (ft): 13	Water Level (ft.): First N/E, Completion N/A, 24 HR. N/A
Casing Hammer: Donut / Weight (lbs): 300 / Drop (in): 30	Drilling Foreman: Dave Sheldon
Sampler: 2-inch-diameter split spoon	Field Engineer: Alexander Macon
Sampler Hammer: Donut / Weight (lbs): 140 / Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	261.0			0					10 20 30 40	
	260.6	Dark brown silty medium-fine SAND, trace wood chips, trace roots (moist)[TOPSOIL]			S-1A	SS	8	4		S-1 at 0ft.
		Dark brown silty medium-fine SAND, some coarse sand, trace fine gravel, trace roots (moist)[FILL]		1	S-1B			8 10 10	18	
	258.8	Grayish brown coarse-fine SAND, some silt (moist)[FILL]	Spin	2	S-2A	SS	6	7 7		S-2 at 2ft.
		Dark brown silty medium-fine SAND, some coarse sand, trace fine gravel, trace wood chips (moist)[FILL]		3	S-2B			9 13	16	
		Gray coarse-fine SAND, some silt, trace fine gravel (moist)[FILL]		4	S-3	SS	5	28 16		Spin casing to 4.0ft. Drill to 4.0ft. Easy drilling. Hard drilling from 3.5ft to 4.0ft. Some rig chatter from 3.5ft to 4.0ft. Dark brown wash. Wash color changed to grayish brown at 3.5ft. Inferred cobble from 3.5ft to 4.0ft. S-3 at 4ft. S-4 at 6.0ft. No recovery. Switch to 3-inch sampler with 300lb hammer. Sample from 4.0ft to 8.0ft. Blows: 4-4-6-6. Recovery: 12-inches
				5				10 8	26	
	255.0	Brown medium-fine SAND, trace silt (moist)	61	6						
	254.0	Gray coarse-fine SAND, some silt, trace fine gravel (moist)[TILL]		7	S-4A	SS	12	7 5		
					S-4B			7 9	12	
		Gray coarse-fine SAND, some silt, trace fine gravel (moist)[TILL]	42	8						Drive casing to 8.0ft. Drill to 8.0ft. Moderate drilling. Light rig chatter. Gray to light brown wash. S-5 at 8ft.
				9	S-5	SS	7	30 35		
								74 50/3	109	
		Gray coarse-fine SAND, some silt, trace fine gravel (moist)[TILL]		10	S-6	SS	5	10/5		Drive casing to 9.0ft. Drill to 10.0ft. Moderate drilling. Light rig chatter. Gray wash. S-6 at 10ft. Drill to 13.0ft. Hard drilling. Some rig chatter. Very hard drilling from 11.5ft to 13.0ft. Inferred bedrock at 11.5ft Gray wash. Switch to 3-inch-diameter casing. Spin casing to 13.0ft. Switch to 2 3/4- inch roller bit. Clean out casing. C-1 at 13ft.
			Spin	11					10/5	
	249.5			12						
		Brown GRANODIORITE; medium to coarse grained; moderately weathered; close fracture spacing; fractures near horizontal; poor rock quality [BEDROCK]		13	C-1	NX Core	REC=97%	RQD=44%		
			3:14	14						
			3:19	15						

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Log of Boring **LB-02 (OW)** Sheet 2 of 2

Project	Project No.
Belmont Hill School - East Campus Maintenance Area	151014301
Location	**Elevation and Datum**
350 Prospect Street, Belmont, MA	Approx. 261 ft (Town of Belmont Datum)

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+246.0			15						
			3:54		C-1	NX Core				
	+245.0	Bottom of boring		16						Boring terminated at 16.0ft. Boring converted to observation well and finished with a flush-mounted well box.
				17						
				18						
				19						
				20						
				21						
				22						
				23						
				24						
				25						
				26						
				27						
				28						
				29						
				30						
				31						
				32						
				33						

APPENDIX H

Langan Boring Groundwater Observation Well Log – East Campus Maintenance Area

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LB-02(OW)

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	350 Prospect Street, Belmont, MA	**ELEVATION AND DATUM**	Approx. 261 Town of Belmont Datum
DRILLING AGENCY	Geologic Earth Exploration, Inc	**DATE STARTED** 01/06/2022	**DATE FINISHED** 01/06/2022
DRILLING EQUIPMENT	CME Truck-Mounted Drill Rig	**DRILLER**	Dave Sheldon
SIZE AND TYPE OF BIT	3-7/8" Tri-Cone Roller Bit	**INSPECTOR**	Alexander Macon

METHOD OF INSTALLATION

Boring LB-2(OW) was advanced to a depth of about 16ft with mud rotary drilling and rock coring techniques. The screen and riser for the well were placed into the borehole amd set to the bottom of the hole. #2 sand was poured around the pipe to 1ft. above the screen. A 1-foot-thick seal of 3/8" Bentonite Chips was placed above the sand. The rest of the borehole was backfilled with #2 sand.

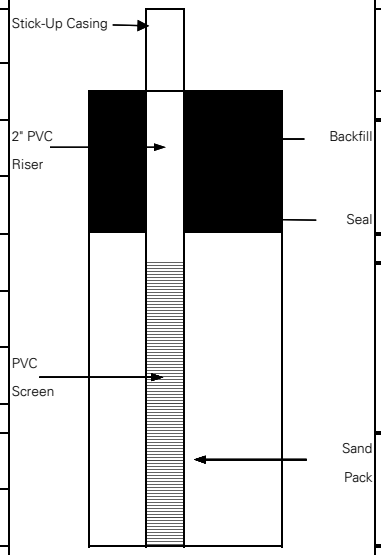
METHOD OF WELL DEVELOPMENT

N/A

TYPE OF CASING	PVC	**DIAMETER**	2in.	**TYPE OF BACKFILL MATERIAL**	#2 Sand
TYPE OF SCREEN	PVC	**DIAMETER**	2in.	**TYPE OF SEAL MATERIAL**	3/8" Bentonite Chips
BOREHOLE DIAMETER	4-1/4"			**TYPE OF FILTER MATERIAL**	#2 sand

TOP OF CASING	**ELEVATION** el. 261	**DEPTH (ft)** 0
TOP OF BACKFILL	**ELEVATION** el. 261	**DEPTH (ft)** 0
TOP OF SEAL	**ELEVATION** el. 257	**DEPTH (ft)** 4
TOP OF FILTER	**ELEVATION** el. 256	**DEPTH (ft)** 5
TOP OF SCREEN	**ELEVATION** el. 255	**DEPTH (ft)** 6
BOTTOM OF BORING	**ELEVATION** el. 245	**DEPTH (ft)** 16
SCREEN LENGTH	10ft.	
SLOT SIZE	.1in.	

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
Topsoil	0.5
Fill	6.0
Sand	7.0
Glacial Till	11.5
Bedrock	16.0

GROUNDWATER ELEVATIONS

DATE	ELEVATION	DEPTH TO WATER (ft)	NOTE(s)

NOTES:

LANGAN MA, Inc.

APPENDIX I

Laboratory Test Results

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-5	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-3	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.5-5.0 ft	Test Id:	636906		
Test Comment:	---				
Visual Description:	Moist, gray silty sand with gravel				
Sample Comment:	---				

USDA Textural Classification

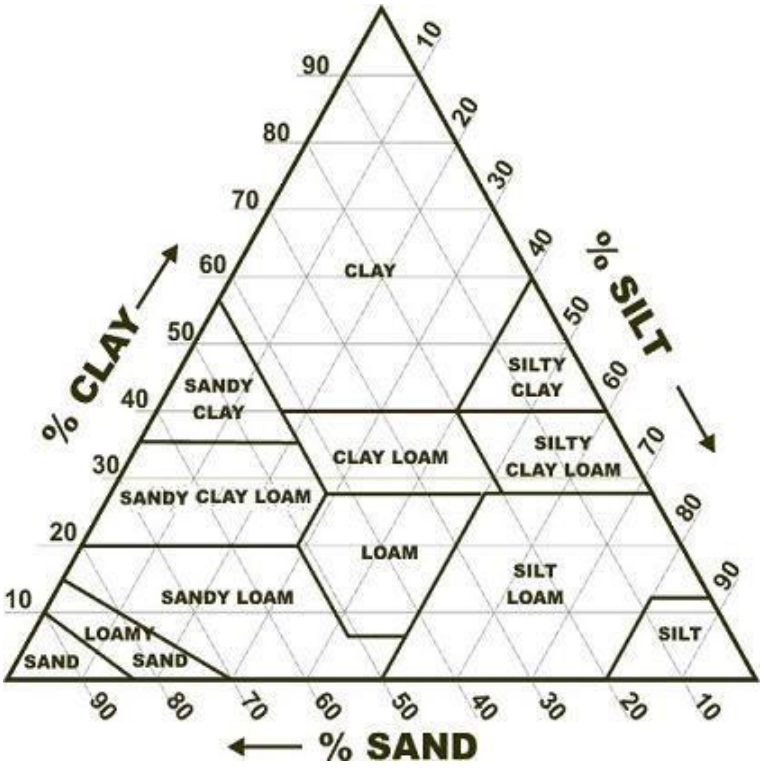
Boring ID	Sample ID	Depth	Sand, %	Silt, %	Clay, %	Classification
TP-5	S-3	4.5-5.0 ft	66	33	1	Sandy Loam

Classifications based only on material passing the #10 sieve

Sand: material passing 2.0 mm and retained on 0.05 mm diameter

Silt: material passing 0.05 mm and retained on 0.002 mm diameter

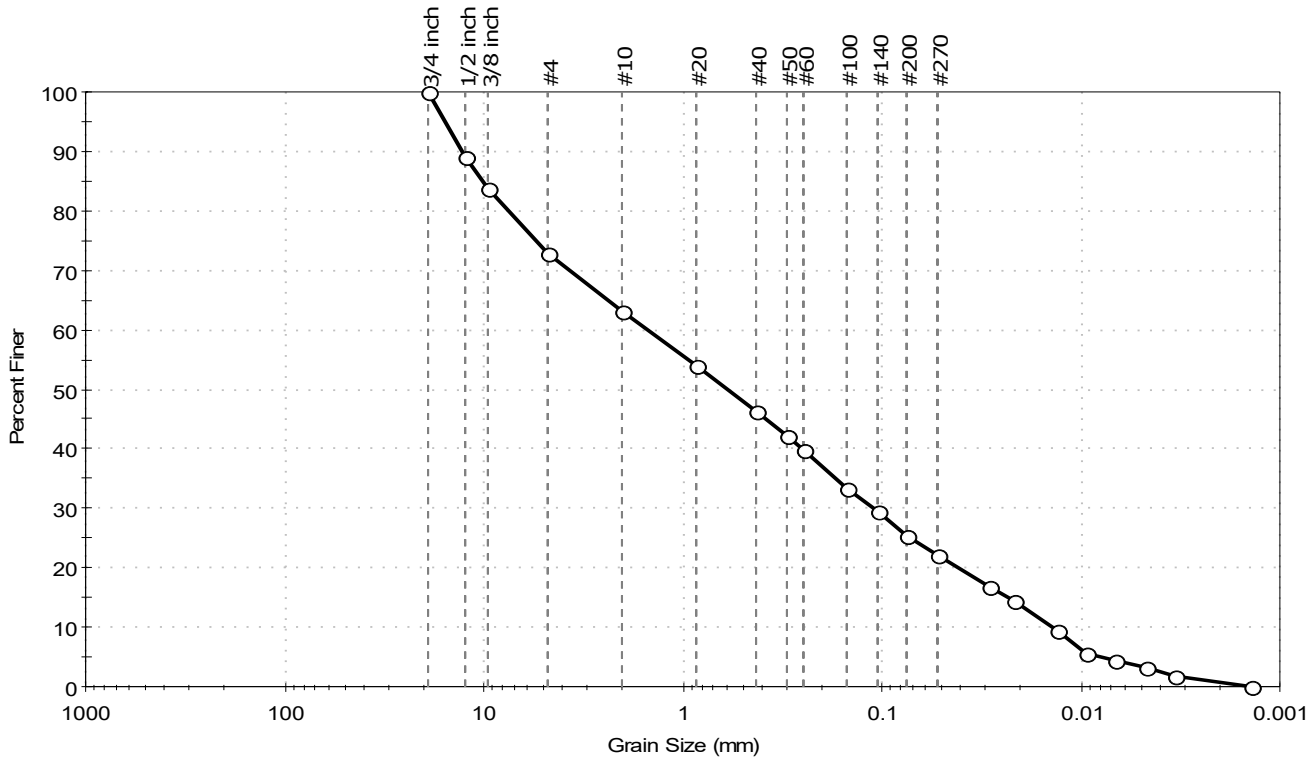
Clay: material passing 0.002 mm diameter



GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-5	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-3	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.5-5.0 ft	Test Id:	636902		
Test Comment:	---				
Visual Description:	Moist, gray silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	27.2	47.4	25.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	89		
3/8 inch	9.50	84		
#4	4.75	73		
#10	2.00	63		
#20	0.85	54		
#40	0.42	46		
#50	0.30	42		
#60	0.25	40		
#100	0.15	33		
#140	0.11	30		
#200	0.075	25		
#270	0.053	22		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0290	17		
---	0.0216	14		
---	0.0131	9		
---	0.0093	6		
---	0.0067	4		
---	0.0048	3		
---	0.0034	2		
---	0.0014	0		

Coefficients

D_{85} = 10.1511 mm D_{30} = 0.1104 mm
D_{60} = 1.4787 mm D_{15} = 0.0232 mm
D_{50} = 0.5900 mm D_{10} = 0.0140 mm
C_u = 105.621 C_c = 0.589

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

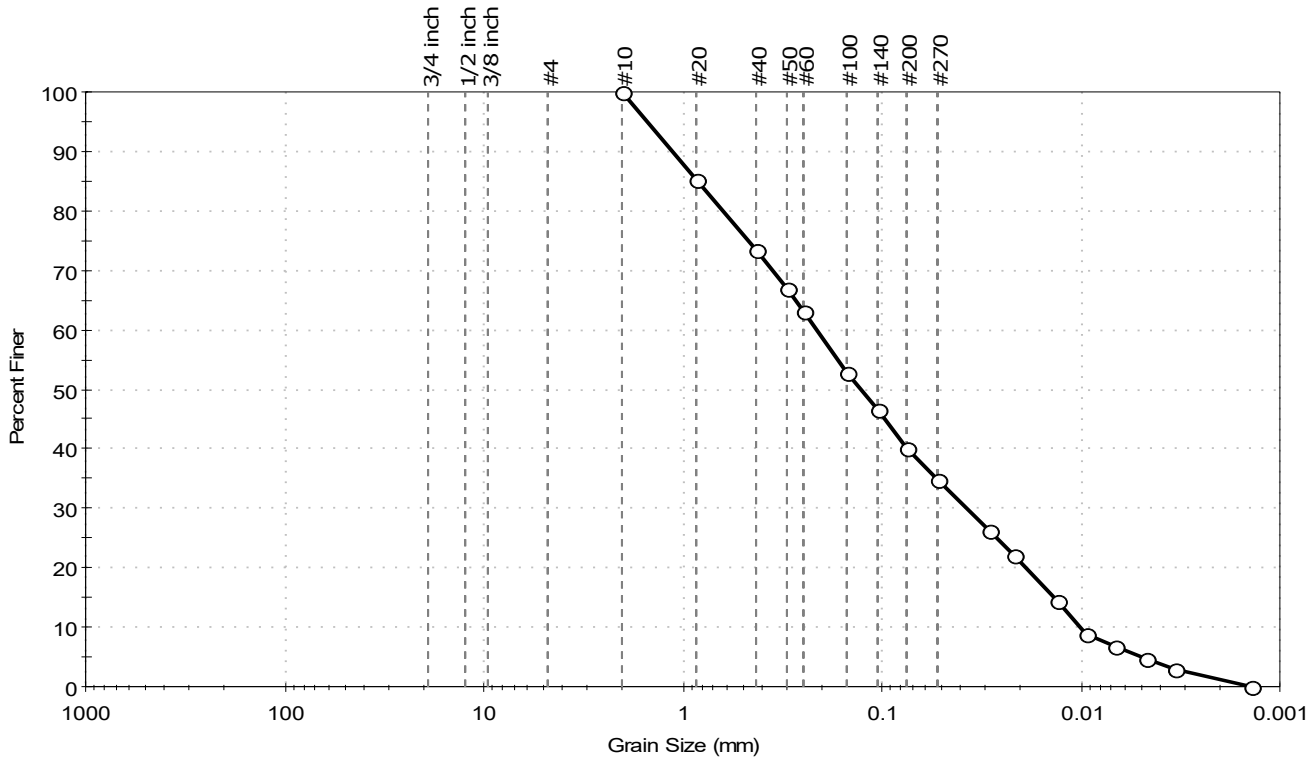
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-5	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-3	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.5-5.0 ft	Test Id:	636902		
Test Comment:	Only minus No. 10 sieve for USDA classification				
Visual Description:	Moist, gray silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	59.9	40.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#10	2.00	100		
#20	0.85	85		
#40	0.42	73		
#50	0.30	67		
#60	0.25	63		
#100	0.15	53		
#140	0.11	47		
#200	0.075	40		
#270	0.053	35		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0290	26		
---	0.0216	22		
---	0.0131	15		
---	0.0093	9		
---	0.0067	7		
---	0.0048	5		
---	0.0034	3		
---	0.0014	0		

Coefficients

D_{85} = 0.8322 mm D_{30} = 0.0378 mm
D_{60} = 0.2141 mm D_{15} = 0.0136 mm
D_{50} = 0.1277 mm D_{10} = 0.0101 mm
C_u = 21.198 C_c = 0.661

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-202	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.0-4.5 ft	Test Id:	636907		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	Removed one unrepresentative 2 inch rock				

USDA Textural Classification

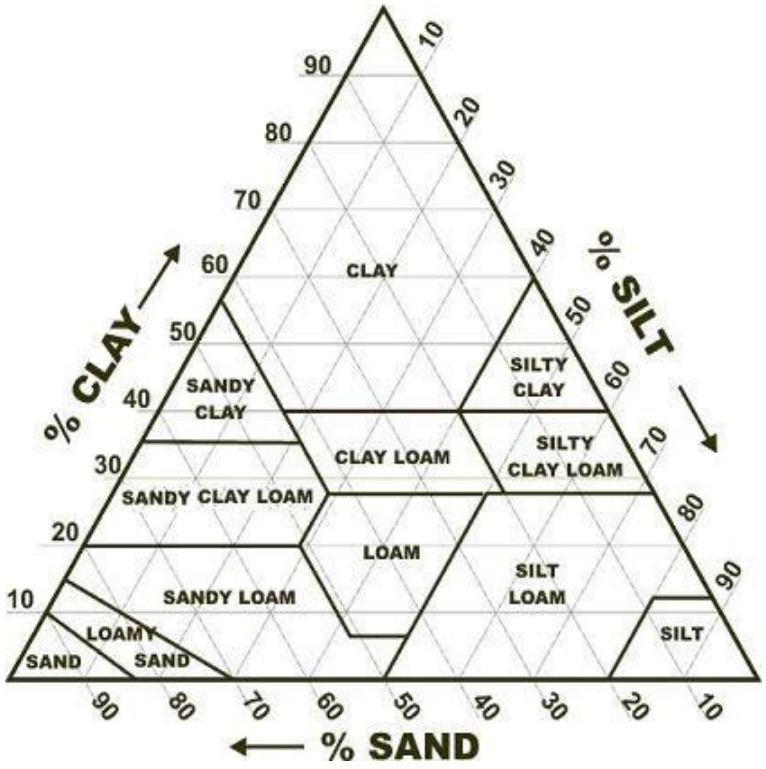
Boring ID	Sample ID	Depth	Sand, %	Silt, %	Clay, %	Classification
TP-202	S-1	4.0-4.5 ft	75	25	0	Loamy Sand

Classifications based only on material passing the #10 sieve

Sand: material passing 2.0 mm and retained on 0.05 mm diameter

Silt: material passing 0.05 mm and retained on 0.002 mm diameter

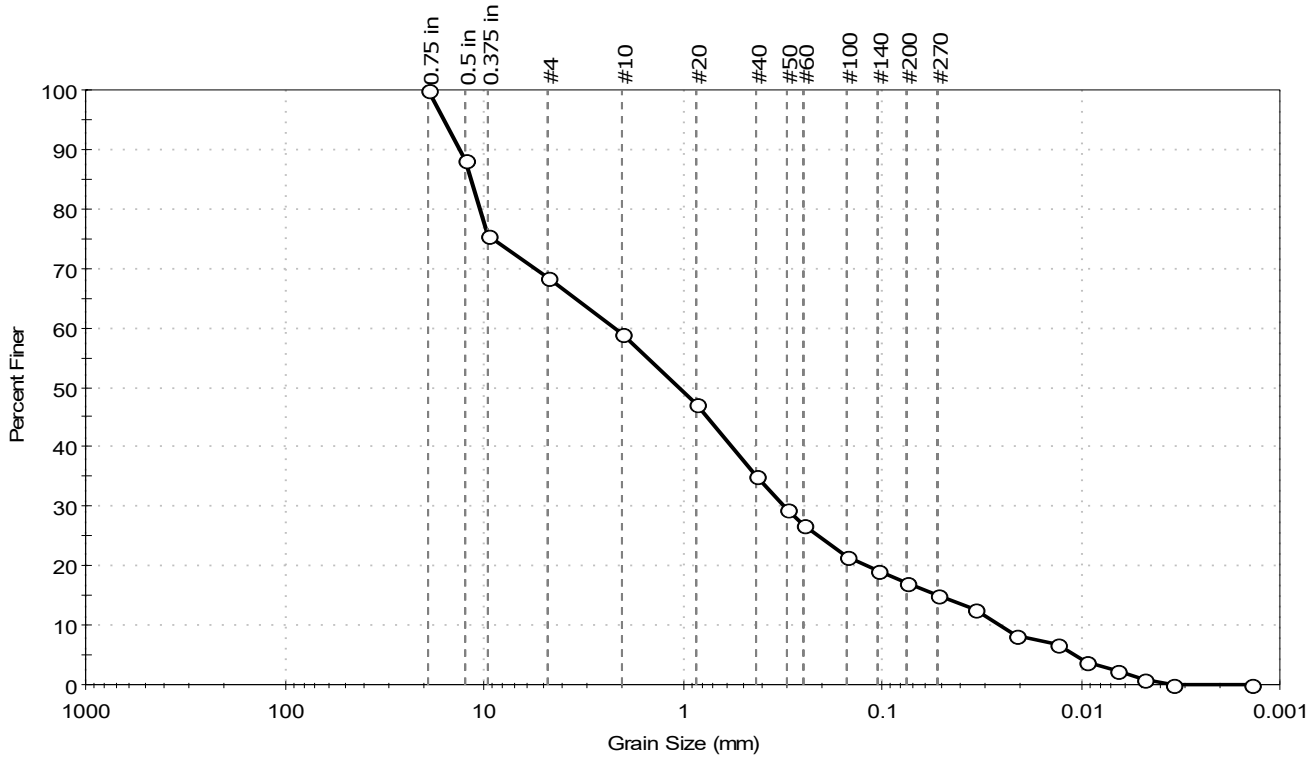
Clay: material passing 0.002 mm diameter



GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-202	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.0-4.5 ft	Test Id:	636903		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	Removed one unrepresentative 2 inch rock				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	31.5	51.4	17.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	88		
0.375 in	9.50	76		
#4	4.75	68		
#10	2.00	59		
#20	0.85	47		
#40	0.42	35		
#50	0.30	30		
#60	0.25	27		
#100	0.15	22		
#140	0.11	19		
#200	0.075	17		
#270	0.053	15		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	13		
---	0.0211	8		
---	0.0131	7		
---	0.0094	4		
---	0.0066	2		
---	0.0048	1		
---	0.0034	0		
---	0.0014	0		

Coefficients

D_{85} = 11.6728 mm
D_{30} = 0.3078 mm
D_{60} = 2.1889 mm
D_{15} = 0.0515 mm
D_{50} = 1.0430 mm
D_{10} = 0.0257 mm
C_u = 85.171
C_c = 1.684

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

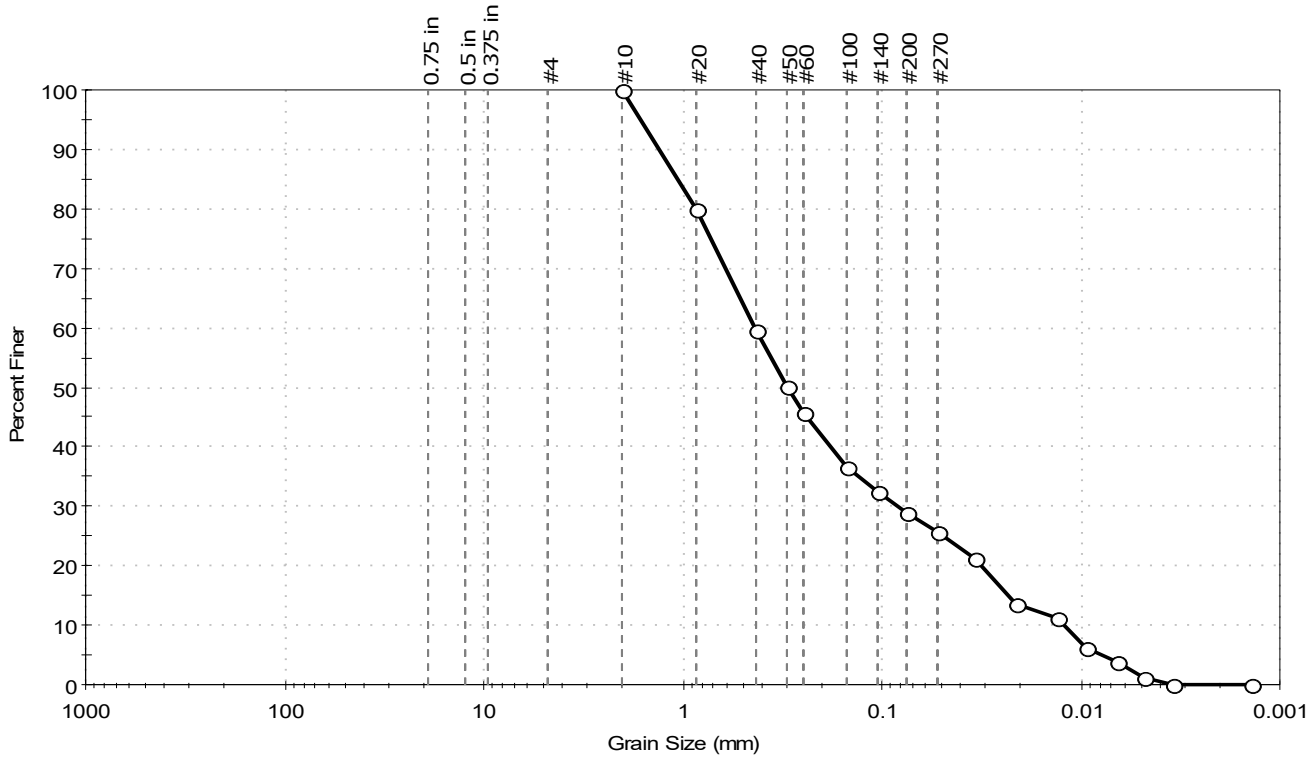
Est. Specific Gravity : 2.65

Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-202	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	4.0-4.5 ft	Test Id:	636903		
Test Comment:	Only minus No. 10 sieve for USDA classification				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	Removed one unrepresentative 2 inch rock				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	71.1	28.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#10	2.00	100		
#20	0.85	80		
#40	0.42	60		
#50	0.30	50		
#60	0.25	46		
#100	0.15	37		
#140	0.11	32		
#200	0.075	29		
#270	0.053	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	21		
---	0.0211	14		
---	0.0131	11		
---	0.0094	6		
---	0.0066	4		
---	0.0048	1		
---	0.0034	0		
---	0.0014	0		

Coefficients

D_{85} = 1.0551 mm	D_{30} = 0.0834 mm
D_{60} = 0.4303 mm	D_{15} = 0.0231 mm
D_{50} = 0.2983 mm	D_{10} = 0.0121 mm
C_u = 35.562	C_c = 1.336

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-206	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.5-2.0 ft	Test Id:	636908		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown sandy silt				
Sample Comment:	---				

USDA Textural Classification

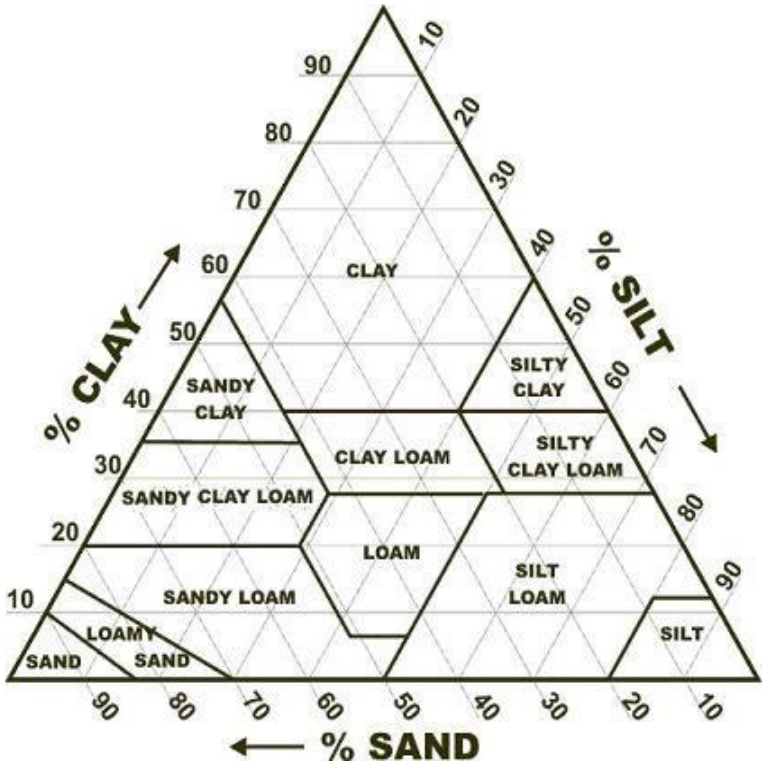
Boring ID	Sample ID	Depth	Sand, %	Silt, %	Clay, %	Classification
TP-206	S-1	1.5-2.0 ft	36	64	0	Silt Loam

Classifications based only on material passing the #10 sieve

Sand: material passing 2.0 mm and retained on 0.05 mm diameter

Silt: material passing 0.05 mm and retained on 0.002 mm diameter

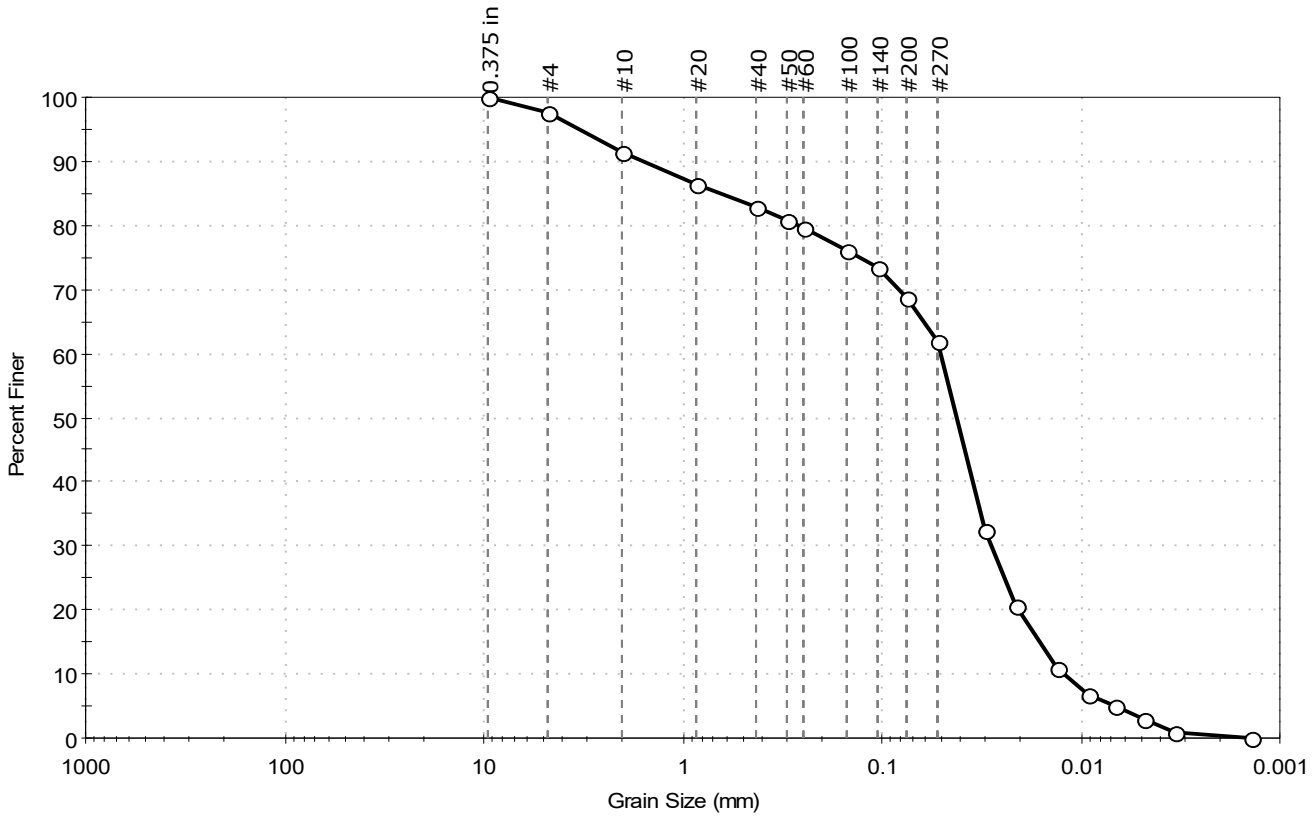
Clay: material passing 0.002 mm diameter



GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-206	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.5-2.0 ft	Test Id:	636904		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	2.5	28.8	68.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	91		
#20	0.85	87		
#40	0.42	83		
#50	0.30	81		
#60	0.25	80		
#100	0.15	76		
#140	0.11	73		
#200	0.075	69		
#270	0.053	62		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0306	32		
---	0.0214	21		
---	0.0132	11		
---	0.0092	7		
---	0.0067	5		
---	0.0048	3		
---	0.0034	1		
---	0.0014	0		

Coefficients

D_{85} = 0.6288 mm
D_{30} = 0.0285 mm
D_{60} = 0.0511 mm
D_{15} = 0.0163 mm
D_{50} = 0.0425 mm
D_{10} = 0.0123 mm
C_u = 4.154
C_c = 1.292

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

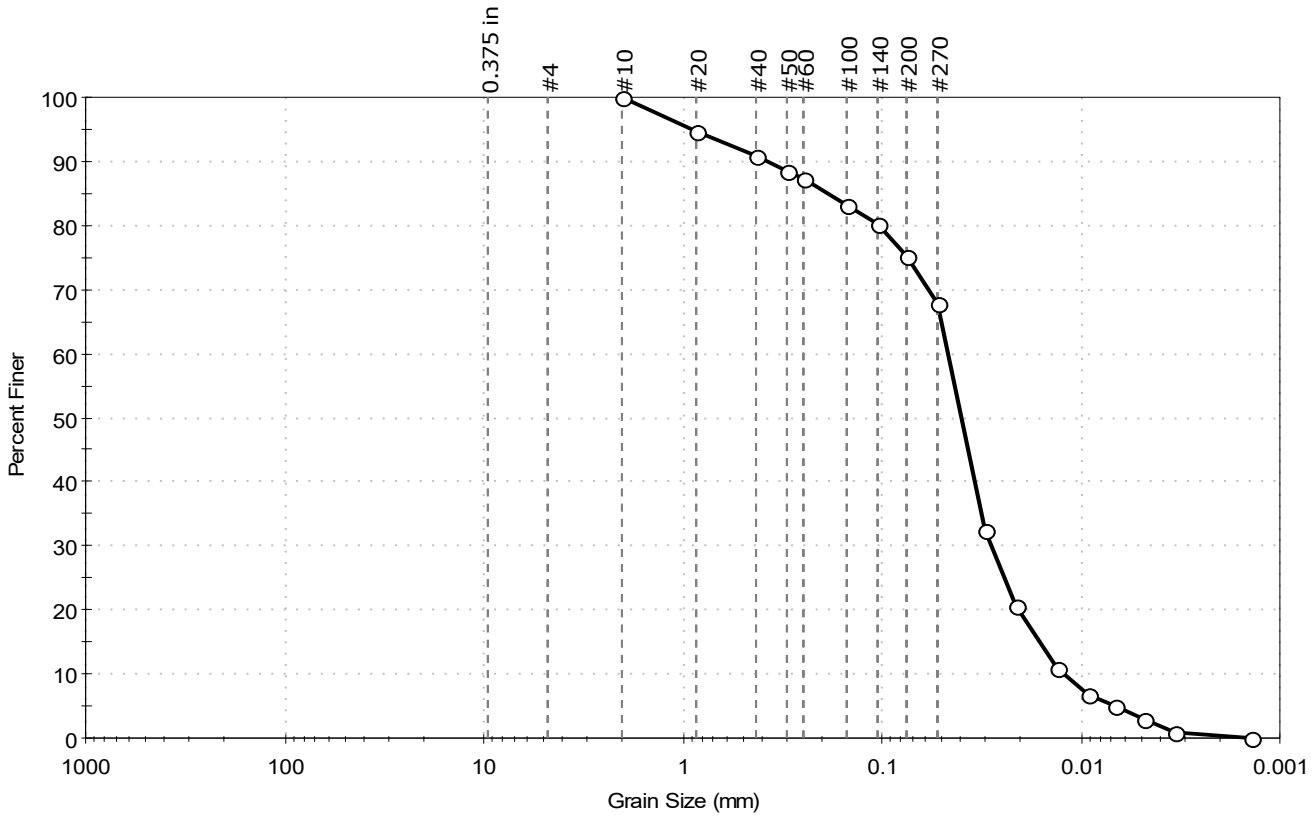
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-206	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-1	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.5-2.0 ft	Test Id:	636904		
Test Comment:	Only minus No. 10 sieve for USDA classification				
Visual Description:	Moist, dark yellowish brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	0.0	24.8	75.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#10	2.00	100		
#20	0.85	95		
#40	0.42	91		
#50	0.30	89		
#60	0.25	87		
#100	0.15	83		
#140	0.11	80		
#200	0.075	75		
#270	0.053	68		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0306	32		
---	0.0214	21		
---	0.0132	11		
---	0.0092	7		
---	0.0067	5		
---	0.0048	3		
---	0.0034	1		
---	0.0014	0		

Coefficients

D_{85} = 0.1881 mm	D_{30} = 0.0285 mm
D_{60} = 0.0470 mm	D_{15} = 0.0163 mm
D_{50} = 0.0402 mm	D_{10} = 0.0123 mm
C_u = 3.821	C_c = 1.405

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #270 Sieve

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-207	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-2	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.0-1.5 ft	Test Id:	636909		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

USDA Textural Classification

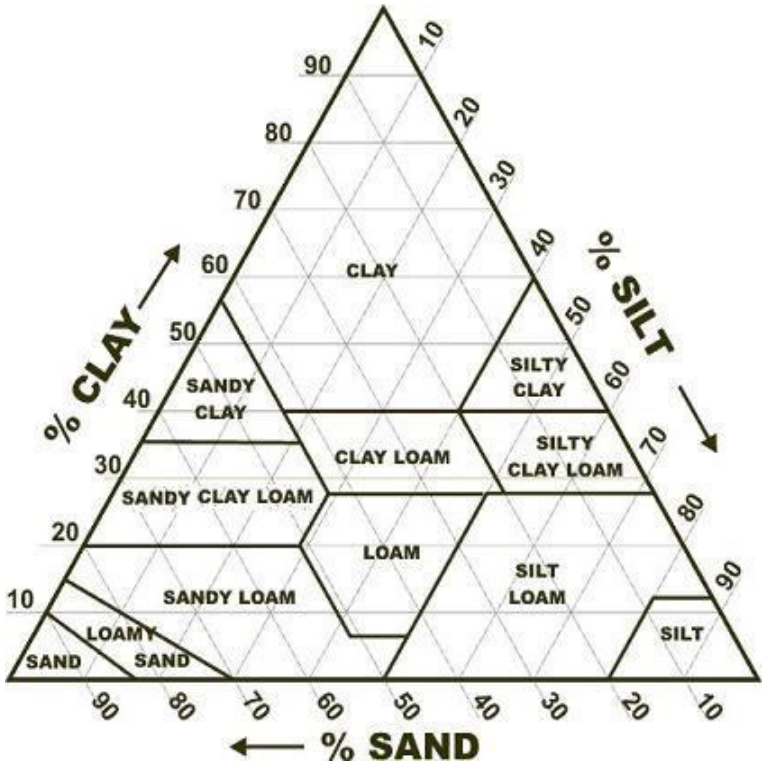
Boring ID	Sample ID	Depth	Sand, %	Silt, %	Clay, %	Classification
TP-207	S-2	1.0-1.5 ft	75	24	1	Silt Loam

Classifications based only on material passing the #10 sieve

Sand: material passing 2.0 mm and retained on 0.05 mm diameter

Silt: material passing 0.05 mm and retained on 0.002 mm diameter

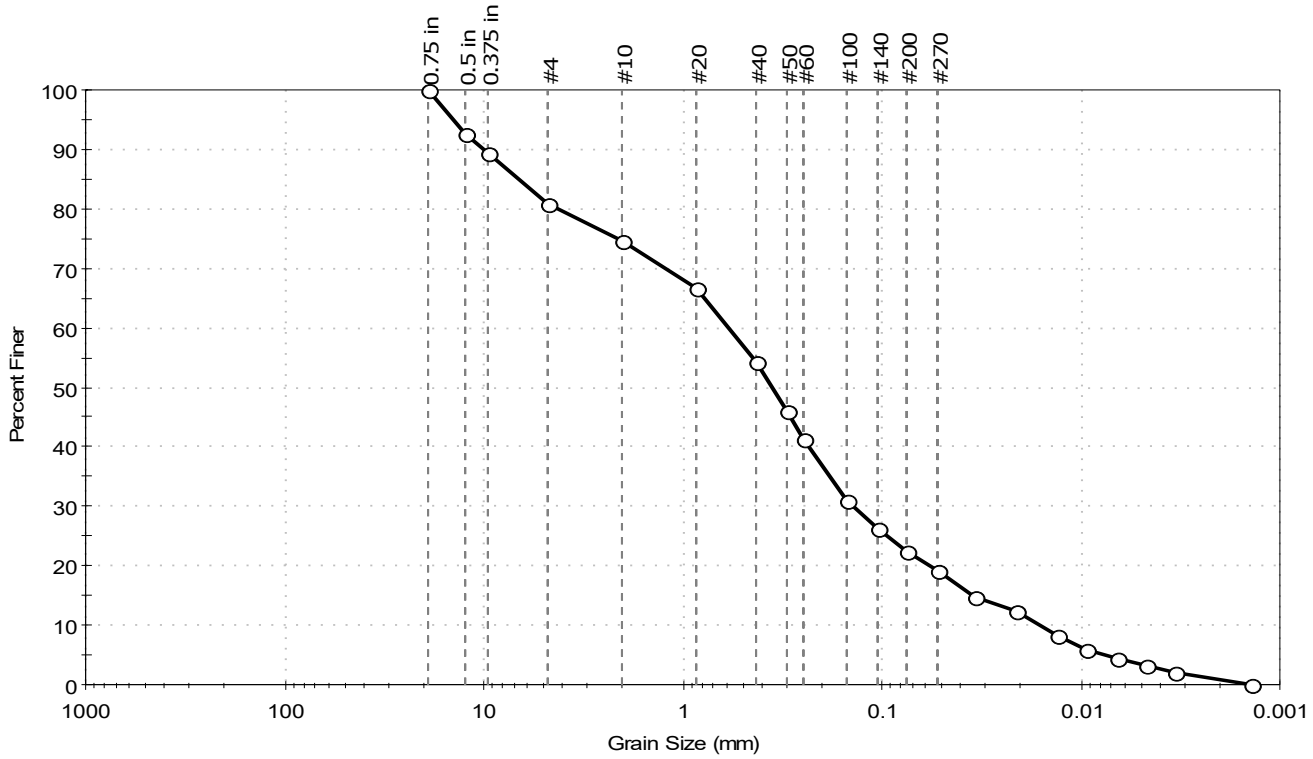
Clay: material passing 0.002 mm diameter



GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-207	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-2	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.0-1.5 ft	Test Id:	636905		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	19.1	58.6	22.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	93		
0.375 in	9.50	89		
#4	4.75	81		
#10	2.00	75		
#20	0.85	67		
#40	0.42	54		
#50	0.30	46		
#60	0.25	41		
#100	0.15	31		
#140	0.11	26		
#200	0.075	22		
#270	0.053	19		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	15		
---	0.0210	12		
---	0.0132	8		
---	0.0095	6		
---	0.0066	5		
---	0.0047	3		
---	0.0034	2		
---	0.0014	0		

Coefficients

D_{85} = 6.6167 mm
D_{30} = 0.1396 mm
D_{60} = 0.5893 mm
D_{15} = 0.0349 mm
D_{50} = 0.3565 mm
D_{10} = 0.0160 mm
C_u = 36.831
C_c = 2.067

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

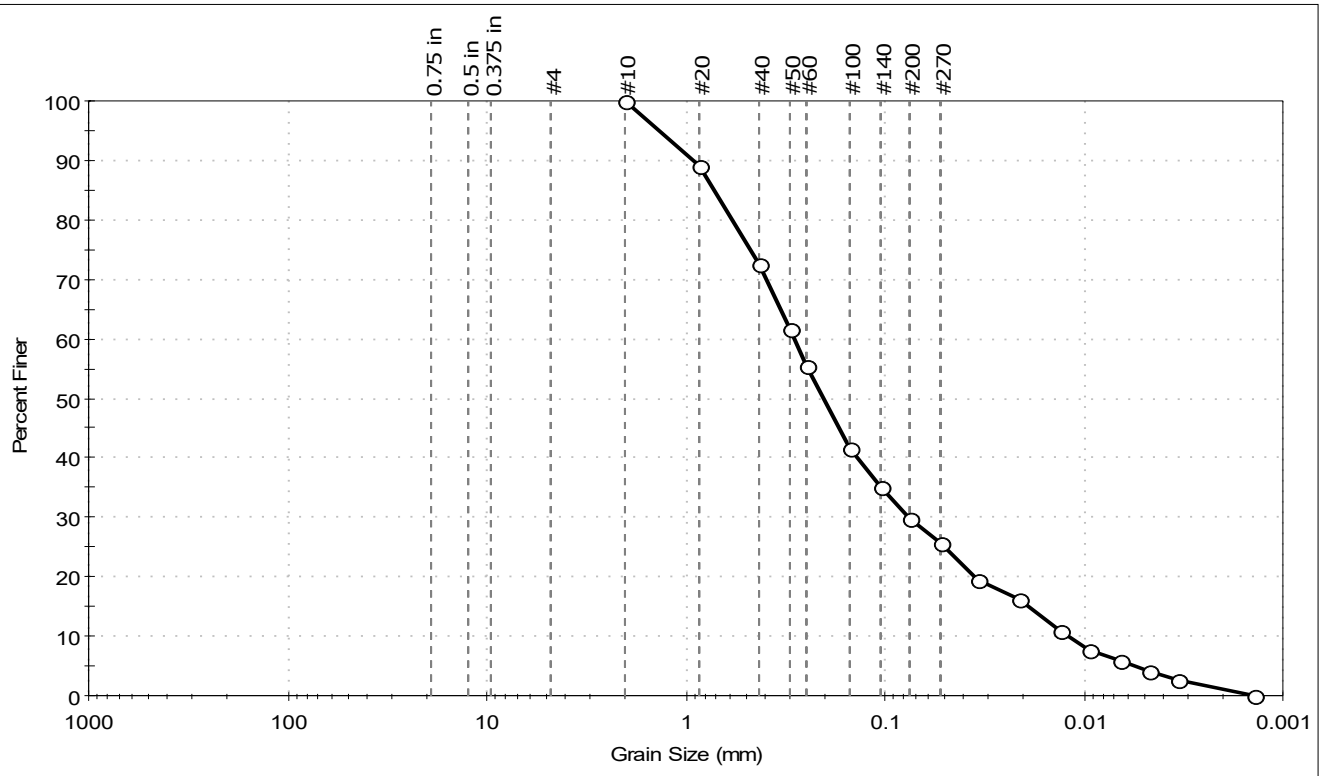
Est. Specific Gravity : 2.65

Separation of Sample: #270 Sieve

GeoTesting EXPRESS

Client:	Langan Engineering				
Project:	Belmont High School				
Location:	Belmont, MA			Project No:	GTX-314519
Boring ID:	TP-207	Sample Type:	bag	Tested By:	ckg
Sample ID:	S-2	Test Date:	10/28/21	Checked By:	bfs
Depth :	1.0-1.5 ft	Test Id:	636905		
Test Comment:	Only minus No. 10 sieve for USDA classification				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	70.1	29.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#10	2.00	100		
#20	0.85	89		
#40	0.42	73		
#50	0.30	62		
#60	0.25	55		
#100	0.15	42		
#140	0.11	35		
#200	0.075	30		
#270	0.053	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	20		
---	0.0210	16		
---	0.0132	11		
---	0.0095	8		
---	0.0066	6		
---	0.0047	4		
---	0.0034	3		
---	0.0014	0		

Coefficients

D_{85} = 0.7134 mm D_{30} = 0.0755 mm
D_{60} = 0.2864 mm D_{15} = 0.0189 mm
D_{50} = 0.2046 mm D_{10} = 0.0119 mm
C_u = 24.067 C_c = 1.673

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #270 Sieve

APPENDIX J

Infiltration Testing Results – East Campus

LANGAN

INFILTRATION TESTS

IT-2 performed in TP-2

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 8th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	3	**Surface Elevation**	Approx.	261.5	Town of Belmont Datum
2	7	**Top of Hole Elevation**	Approx.	258.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	258.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-2 was excavated to a depth of about 36 inches below existing grades. An 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 3 cm and H2 = 7 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) was measured using the inner reservoir cylinder only. Test 2 (B) was measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	43.5	-	-	-	Gray coarse to fine SAND, some silt, trace coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	51.6	8.1	3.2	191.5	
	2	55.3	3.7	1.5	87.5	
	3	59.6	4.3	1.7	101.7	
	4	62.5	2.9	1.1	68.6	
	5	65.3	2.8	1.1	66.2	
	6	69.6	4.3	1.7	101.7	
	7	72.1	2.5	1.0	59.1	
	8	74.8	2.7	1.1	63.8	
				Steady State Rate:	**64.4**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	5.5	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: N/A
	1	5.9	0.4	0.2	9.5	
	2	6.5	0.6	0.2	14.2	
	3	7.1	0.6	0.2	14.2	
	4	7.8	0.7	0.3	16.5	
	5	8.4	0.6	0.2	14.2	
	6	9.0	0.6	0.2	14.2	
	7	9.5	0.5	0.2	11.8	
	8	10.1	0.6	0.2	14.2	
	9	10.7	0.6	0.2	14.2	
	10	11.3	0.6	0.2	14.2	
				Steady State Rate:	**14.2**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-3 performed in TP-3

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 8th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)
1	5
2	10

ELEVATION AND DATUM			
Surface Elevation	Approx.	261.0	Town of Belmont Datum
Top of Hole Elevation	Approx.	257.0	Town of Belmont Datum
Bottom of Hole Elevation	Approx.	256.4	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-3 was excavated to a depth of about 48 inches below existing grades. An 7-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	3.5	-	-	-	Gray coarse to fine SAND, some silt, trace coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	5.1	1.6	0.6	37.8	
	2	6.4	1.3	0.5	30.7	
	3	7.6	1.2	0.5	28.4	
	4	8.8	1.2	0.5	28.4	
	5	9.9	1.1	0.4	26.0	
	6	11.0	1.1	0.4	26.0	
	7	12.1	1.1	0.4	26.0	
	8	13.2	1.1	0.4	26.0	
				Steady State Rate:	**26.0**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 2 (B)	0	4.0	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.80 in/hr
	1	10.6	6.6	2.6	156.0	
	2	12.4	1.8	0.7	42.6	
	3	14.0	1.6	0.6	37.8	
	4	15.5	1.5	0.6	35.5	
	5	17.0	1.5	0.6	35.5	
	6	18.6	1.6	0.6	37.8	
	7	20.2	1.6	0.6	37.8	
	8	21.8	1.6	0.6	37.8	
	9	22.4	0.6	0.2	14.2	
				Steady State Rate:	**37.8**	**inches/hour**

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INFILTRATION TESTS

IT-4 performed in TP-4

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 9th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	265.5	Town of Belmont Datum
2	15	**Top of Hole Elevation**	Approx.	264.0	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	263.3	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-4 was excavated to a depth of about 18 inches below existing grades. An 9-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 15 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	2.3	-	-	-	Brown fine sandy SILT, some medium sand, trace coarse to fine gravel, trace cobbles, trace boulders, trace roots (dry)
	1	2.9	0.6	0.2	14.2	
	2	3.6	0.7	0.3	16.5	
	3	4.5	0.9	0.4	21.3	
	4	5.2	0.7	0.3	16.5	
	5	6.0	0.8	0.3	18.9	
	6	6.7	0.7	0.3	16.5	
	7	7.4	0.7	0.3	16.5	
	8	8.1	0.7	0.3	16.5	
	9	8.8	0.7	0.3	16.5	
				Steady State Rate:	**16.5**	**inches/hour**
TEST 2 (B)	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	Field Saturated Hydraulic Conductivity, Ksat: 0.61 in/hr
	0	9.8	-	-	-	
	1	12.0	2.2	0.9	52.0	
	2	13.0	1	0.4	23.6	
	3	14.7	1.7	0.7	40.2	
	4	16.5	1.8	0.7	42.6	
	5	18.3	1.8	0.7	42.6	
	6	19.9	1.6	0.6	37.8	
	7	21.4	1.5	0.6	35.5	
	8	22.9	1.5	0.6	35.5	
	9	24.4	1.5	0.6	35.5	
	10	25.9	1.5	0.6	35.5	
				Steady State Rate:	**35.5**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-5 performed in TP-5

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 9th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)
1	5
2	10

ELEVATION AND DATUM			
Surface Elevation	Approx.	265.0	Town of Belmont Datum
Top of Hole Elevation	Approx.	259.5	Town of Belmont Datum
Bottom of Hole Elevation	Approx.	259.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-5 was excavated to a depth of about 66 inches below existing grades. An 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	2.5	-	-	-	Gray coarse to fine SAND, some silt, trace coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	3.1	0.6	0.2	14.2	
	2	3.7	0.6	0.2	14.2	
	3	4.2	0.5	0.2	11.8	
	4	4.6	0.4	0.2	9.5	
	5	5.0	0.4	0.2	9.5	
	6	5.5	0.5	0.2	11.8	
	7	5.9	0.4	0.2	9.5	
	8	6.2	0.3	0.1	7.1	
	9	6.6	0.4	0.2	9.5	
	10	7.0	0.4	0.2	9.5	
	11	7.3	0.3	0.1	7.1	
	12	7.6	0.3	0.1	7.1	
	13	8.1	0.5	0.2	11.8	
	14	8.4	0.3	0.1	7.1	
	15	8.7	0.3	0.1	7.1	
	16	9.1	0.4	0.2	9.5	
	17	9.5	0.4	0.2	9.5	
	18	9.8	0.3	0.1	7.1	
	19	10.2	0.4	0.2	9.5	
	20	10.4	0.2	0.1	4.7	
	21	10.8	0.4	0.2	9.5	
	22	11.1	0.3	0.1	7.1	
	23	11.5	0.4	0.2	9.5	
	24	11.8	0.3	0.1	7.1	
	25	12.1	0.3	0.1	7.1	
	26	12.4	0.3	0.1	7.1	
				Steady State Rate:	**7.1**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	5.8	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.63 in/hr
	1	6.4	0.6	0.2	14.2	
	2	6.6	0.2	0.1	4.7	
	3	7.1	0.5	0.2	11.8	
	4	8.0	0.9	0.4	21.3	
	5	9.1	1.1	0.4	26.0	
	6	9.9	0.8	0.3	18.9	
	7	10.6	0.7	0.3	16.5	
	8	11.5	0.9	0.4	21.3	
	9	12.3	0.8	0.3	18.9	
	10	13.2	0.9	0.4	21.3	
	11	14.1	0.9	0.4	21.3	
	12	15.0	0.9	0.4	21.3	
	13	15.9	0.9	0.4	21.3	
				Steady State Rate:	**21.3**	**inches/hour**

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INFILTRATION TESTS

IT-6 performed in TP-6

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 9th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	272.0	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	269.0	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	268.5	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-6 was excavated to a depth of about 36 inches below existing grades. An 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	4.9	-	-	-	Gray coarse to fine SAND, some silt, trace coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	7.2	2.3	0.9	54.4	
	2	7.6	0.4	0.2	9.5	
	3	8.9	1.3	0.5	30.7	
	4	9.9	1	0.4	23.6	
	5	10.9	1	0.4	23.6	
	6	11.9	1	0.4	23.6	
	7	12.8	0.9	0.4	21.3	
	8	13.7	0.9	0.4	21.3	
	9	14.5	0.8	0.3	18.9	
	10	15.4	0.9	0.4	21.3	
	11	16.3	0.9	0.4	21.3	
	12	17.2	0.9	0.4	21.3	
	13	18.0	0.8	0.3	18.9	
	14	18.9	0.9	0.4	21.3	
	15	19.7	0.8	0.3	18.9	
	16	20.5	0.8	0.3	18.9	
	17	21.3	0.8	0.3	18.9	
	18	22.1	0.8	0.3	18.9	
				Steady State Rate:	**18.9**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	9.4	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 1.37 in/hr
	1	11.1	1.7	0.7	40.2	
	2	13.1	2	0.8	47.3	
	3	14.9	1.8	0.7	42.6	
	4	16.6	1.7	0.7	40.2	
	5	18.5	1.9	0.7	44.9	
	6	20.2	1.7	0.7	40.2	
	7	22.0	1.8	0.7	42.6	
	8	23.8	1.8	0.7	42.6	
	9	25.6	1.8	0.7	42.6	
	10	27.2	1.6	0.6	37.8	
	11	29.0	1.8	0.7	42.6	
	12	30.8	1.8	0.7	42.6	
	13	32.4	1.6	0.6	37.8	
	14	34.1	1.7	0.7	40.2	
	15	35.8	1.7	0.7	40.2	
	16	37.5	1.7	0.7	40.2	
	17	39.2	1.7	0.7	40.2	
				Steady State Rate:	**40.2**	**inches/hour**

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INFILTRATION TESTS

IT-7 performed in TP-7

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 9th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	3	**Surface Elevation**	Approx.	272.5	Town of Belmont Datum
2	6	**Top of Hole Elevation**	Approx.	268.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	268.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-7 was excavated to a depth of about 48 inches below existing grades. An 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 3 cm and H2 = 6 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	1.0	-	-	-	Gray coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	1.2	0.2	0.1	4.7	
	2	1.5	0.3	0.1	7.1	
	3	1.9	0.4	0.2	9.5	
	4	2.1	0.2	0.1	4.7	
	5	2.5	0.4	0.2	9.5	
	6	2.7	0.2	0.1	4.7	
	7	2.9	0.2	0.1	4.7	
	8	3.1	0.2	0.1	4.7	
	9	3.4	0.3	0.1	7.1	
	10	3.6	0.2	0.1	4.7	
	11	3.9	0.3	0.1	7.1	
	12	4.2	0.3	0.1	7.1	
	13	4.4	0.2	0.1	4.7	
	14	4.6	0.2	0.1	4.7	
	15	4.9	0.3	0.1	7.1	
				Steady State Rate:	**5.9**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	1.4	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.59 in/hr
	1	1.6	0.2	0.1	4.7	
	2	2.3	0.7	0.3	16.5	
	3	3.0	0.7	0.3	16.5	
	4	3.5	0.5	0.2	11.8	
	5	3.8	0.3	0.1	7.1	
	6	3.9	0.1	0.0	2.4	
	7	4.4	0.5	0.2	11.8	
	8	4.9	0.5	0.2	11.8	
	9	5.4	0.5	0.2	11.8	
	10	5.9	0.5	0.2	11.8	
				Steady State Rate:	**11.8**	**inches/hour**

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INFILTRATION TESTS

IT-8 performed in TP-8

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	June 9th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 75-85 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	4	**Surface Elevation**	Approx.	277.5	Town of Belmont Datum
2	8	**Top of Hole Elevation**	Approx.	273.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	273.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-8 was excavated to a depth of about 48 inches below existing grades. An 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 4 cm and H2 = 8 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	1.4	-	-	-	Gray coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders (moist)
	1	2.5	1.1	0.4	26.0	
	2	3.1	0.6	0.2	14.2	
	3	3.6	0.5	0.2	11.8	
	4	4.2	0.6	0.2	14.2	
	5	4.7	0.5	0.2	11.8	
	6	5.2	0.5	0.2	11.8	
	7	5.7	0.5	0.2	11.8	
	8	6.2	0.5	0.2	11.8	
				Steady State Rate:	**11.8**	**inches/hour**
	TIME (MIN)	**HEIGHT OF WATER (CM)**	**DROP (CM)**	**RATE (IN/MIN)**	**RATE (IN/HOUR)**	**SOIL CONDITIONS**
TEST 2 (B)	0	2.5	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.39 in/hr
	1	2.6	0.1	0.0	2.4	
	2	2.8	0.2	0.1	4.7	
	3	3.5	0.7	0.3	16.5	
	4	4.4	0.9	0.4	21.3	
	5	5.1	0.7	0.3	16.5	
	6	5.8	0.7	0.3	16.5	
	7	6.4	0.6	0.2	14.2	
	8	7.1	0.7	0.3	16.5	
	9	7.8	0.7	0.3	16.5	
	10	8.5	0.7	0.3	16.5	
	11	9.2	0.7	0.3	16.5	
				Steady State Rate:	**16.5**	**inches/hour**

APPENDIX K

Infiltration Testing Results – East Campus Maintenance Area

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INFILTRATION TESTS

IT-301 performed in TP-301

PROJECT	Belmont Hill School	**PROJECT NO.**	151021201
LOCATION	Belmont, MA	**DATE**	January 4th, 2022
INSPECTOR	Tim Light	**WEATHER**	Sunny, 25-30 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	263.0	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	261.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	261.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-302 was excavated to a depth of about 18 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 15 to 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Brown silty fine SAND, trace coarse-fine gravel, trace cobbles, trace roots (moist)
	1	4.9	-	-	-	
	2	5.9	1.0	0.4	23.6	
	3	6.9	1.0	0.4	23.6	
	4	7.9	1.0	0.4	23.6	
	5	8.9	1.0	0.4	23.6	
	6	9.6	0.7	0.3	16.5	
	7	10.3	0.7	0.3	16.5	
	8	11.0	0.7	0.3	16.5	
	9	12.0	1.0	0.4	23.6	
	10	12.8	0.8	0.3	18.9	
	11	13.6	0.8	0.3	18.9	
	12	14.4	0.8	0.3	18.9	
	13	15.2	0.8	0.3	18.9	
				Steady State Rate:	**18.9**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 3.53 in/hr
	0.25	6.0	-	-	-	
	0.5	9.1	3.1	4.9	293.1	
	0.75	12.1	3	4.7	283.7	
	1	15.1	3	4.7	283.7	
	1.25	18.1	3	4.7	283.7	
	1.5	21.1	3	4.7	283.7	
	1.75	24.1	3	4.7	283.7	
	2	27.1	3	4.7	283.7	
	2.25	30.1	3	4.7	283.7	
	3	36.1	6	3.2	189.1	
	4	43.2	7.1	2.8	167.8	
	5	50.5	7.3	2.9	172.6	
	6	57.0	6.5	2.6	153.7	
	7	63.5	6.5	2.6	153.7	
	8	70.0	6.5	2.6	153.7	
	9	76.5	6.5	2.6	153.7	
				Steady State Rate:	**153.7**	**inches/hour**

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INFILTRATION TESTS

IT-302 performed in TP-302

PROJECT	Belmont Hill School	**PROJECT NO.**	151021201
LOCATION	Belmont, MA	**DATE**	January 4th, 2022
INSPECTOR	Tim Light	**WEATHER**	Sunny, 25-30 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	262.0	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	260.0	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	259.5	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-301 was excavated to a depth of about 24 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 30 to 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Brown silty coarse-fine SAND, some coarse-fine gravel, trace cobbles, trace clay, trace organics, trace roots (moist)
	1	1.2	-	-	-	
	2	2.0	0.8	0.3	18.9	
	3	2.8	0.8	0.3	18.9	
	4	3.5	0.7	0.3	16.5	
	5	4.1	0.6	0.2	14.2	
	6	4.8	0.7	0.3	16.5	
	7	5.5	0.7	0.3	16.5	
	8	6.2	0.7	0.3	16.5	
	9	6.9	0.7	0.3	16.5	
	10	7.6	0.7	0.3	16.5	
				Steady State Rate:	**16.5**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.80 in/hr
	0.5	5.1	-	-	-	
	1	5.5	0.4	0.3	18.9	
	1.5	5.8	0.3	0.2	14.2	
	2	6.0	0.2	0.2	9.5	
	3	6.6	0.6	0.2	14.2	
	4	8.3	1.7	0.7	40.2	
	5	9.6	1.3	0.5	30.7	
	6	10.9	1.3	0.5	30.7	
	7	12.1	1.2	0.5	28.4	
	8	13.2	1.1	0.4	26.0	
	9	14.3	1.1	0.4	26.0	
	10	15.4	1.1	0.4	26.0	
	11	16.5	1.1	0.4	26.0	
	12	17.6	1.1	0.4	26.0	
	13	18.7	1.1	0.4	26.0	
				Steady State Rate:	**26.0**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-304 performed in TP-304

PROJECT	Belmont Hill School	**PROJECT NO.**	151021201
LOCATION	Belmont, MA	**DATE**	January 4th, 2022
INSPECTOR	Tim Light	**WEATHER**	Sunny, 25-30 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	4.9	**Surface Elevation**	Approx.	257.0	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	254.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	254.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-304 was excavated to a depth of about 30 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 4.9 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Brown to tan fine sandy SILT, trace coarse-fine gravel, trace cobbles (moist)
	1	2.8	-	-	-	
	2	3.3	0.5	0.2	11.8	
	3	3.8	0.5	0.2	11.8	
	4	4.3	0.5	0.2	11.8	
	5	4.8	0.5	0.2	11.8	
	6	5.3	0.5	0.2	11.8	
	7	5.8	0.5	0.2	11.8	
	8	6.3	0.5	0.2	11.8	
				Steady State Rate:	**11.8**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 1.28 in/hr
	1	3.7	-	-	-	
	2	4.8	1.1	0.4	26.0	
	3	6.0	1.2	0.5	28.4	
	4	7.0	1	0.4	23.6	
	5	8.0	1	0.4	23.6	
	6	9.0	1	0.4	23.6	
	7	10.0	1	0.4	23.6	
	8	11.0	1	0.4	23.6	
	9	12.0	1	0.4	23.6	
				Steady State Rate:	**23.6**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-305a performed in TP-305

PROJECT	Belmont Hill School	**PROJECT NO.**	151021201
LOCATION	Belmont, MA	**DATE**	January 5th, 2022
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 25-30 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	263.5	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	261.8	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	261.3	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-305 was excavated to a depth of about 21 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 30 to 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	0.0	-	-	-	Brown coarse-fine SAND, some silt, trace coarse-fine gravel, trace cobbles (moist)
	1	0.4	0.4	0.2	9.5	
	2	0.6	0.2	0.1	4.7	
	3	1.0	0.4	0.2	9.5	
	4	1.3	0.3	0.1	7.1	
	5	1.6	0.3	0.1	7.1	
	6	1.9	0.3	0.1	7.1	
	7	2.2	0.3	0.1	7.1	
				Steady State Rate:	**7.1**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	3.5	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.74 in/hr
	0.5	7.7	4.2	3.3	198.6	
	1	9.0	1.3	1.0	61.5	
	1.5	9.8	0.8	0.6	37.8	
	2	10.5	0.7	0.6	33.1	
	2.5	11.1	0.6	0.5	28.4	
	3	11.7	0.6	0.5	28.4	
	3.5	12.3	0.6	0.5	28.4	
	4	12.9	0.6	0.5	28.4	
	4.5	13.5	0.6	0.5	28.4	
				Steady State Rate:	**28.4**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-305b performed in TP-305

PROJECT	Belmont Hill School	**PROJECT NO.**	151021201
LOCATION	Belmont, MA	**DATE**	January 5th, 2022
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 25-30 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	263.5	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	261.0	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	260.5	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-305 was excavated to a depth of about 30 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 30 to 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	2.5	-	-	-	Gray coarse-fine SAND, some silt, some coarse-fine gravel, trace cobbles, trace boulders, trace weathered rock fragments (moist)
	0.5	2.7	0.2	0.2	9.5	
	1	3.2	0.5	0.4	23.6	
	1.5	3.5	0.3	0.2	14.2	
	2	3.9	0.4	0.3	18.9	
	2.5	4.2	0.3	0.2	14.2	
	3	4.6	0.4	0.3	18.9	
	3.5	5.0	0.4	0.3	18.9	
	4	5.3	0.3	0.2	14.2	
	4.5	5.7	0.4	0.3	18.9	
	5	6.1	0.4	0.3	18.9	
	5.5	6.3	0.2	0.2	9.5	
	6	6.5	0.2	0.2	9.5	
	6.5	6.9	0.4	0.3	18.9	
	7	7.2	0.3	0.2	14.2	
	7.5	7.5	0.3	0.2	14.2	
	8	7.8	0.3	0.2	14.2	
	8.5	8.1	0.3	0.2	14.2	
				Steady State Rate:	**14.2**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	6.9	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 2.15 in/hr
	0.5	9.2	2.3	1.8	108.7	
	1.5	10.6	1.4	0.6	33.1	
	2	14.0	3.4	2.7	160.8	
	2.5	15.4	1.4	1.1	66.2	
	3	16.8	1.4	1.1	66.2	
	3.5	17.8	1	0.8	47.3	
	4	18.9	1.1	0.9	52.0	
	4.5	20.1	1.2	0.9	56.7	
	5	21.2	1.1	0.9	52.0	
	5.5	22.3	1.1	0.9	52.0	
	6	23.4	1.1	0.9	52.0	
	6.5	24.5	1.1	0.9	52.0	
	7	25.6	1.1	0.9	52.0	
				Steady State Rate:	**52.0**	**inches/hour**

APPENDIX L

Infiltration Testing Results – JAC Parking Lot

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INFILTRATION TESTS

IT-201 performed in TP-201

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon / Tim Light	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	250.5	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	245.8	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	245.3	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-201 was excavated to a depth of about 57 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 3 minutes, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner reservoir cylinder only. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Light brownish tan SILT, trace clay, trace fine sand, trace roots (moist)
	1	0.4	-	-	-	
	3	0.5	0.1	0.0	1.2	
	6	2.0	1.5	0.2	11.8	
	9	6.6	4.6	0.6	36.2	
	12	10.4	3.8	0.5	29.9	
	15	14.6	4.2	0.6	33.1	
	18	17.8	3.2	0.4	25.2	
	21	21.6	3.8	0.5	29.9	
	24	25.4	3.8	0.5	29.9	
	27	29.2	3.8	0.5	29.9	
				Steady State Rate:	**29.9**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.07 in/hr
	3	2.5	-	-	-	
	6	16.4	13.9	1.8	109.5	
	9	24.9	8.5	1.1	67.0	
	12	33.1	8.2	1.1	64.6	
	15	41.3	8.2	1.1	64.6	
	18	49.5	8.2	1.1	64.6	
				Steady State Rate:	**64.6**	**inches/hour**

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INFILTRATION TESTS

IT-202 performed in TP-202

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon / Tim Light	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	8	**Surface Elevation**	Approx.	249.8	Town of Belmont Datum
2	14	**Top of Hole Elevation**	Approx.	245.8	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	245.3	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-202 was excavated to a depth of about 48 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 8 cm and H2 = 14 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using the inner reservoir cylinder only. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Light brown to brown coarse to fine SAND, some coarse gravel, some silt, trace cobbles, trace boulders, trace brick fragments, trace wire fragments, trace concrete fragments, trace asphalt fragments, trace tile fragments (moist) [FILL]
	0.5	27.0	-	-	-	
	1.5	28.5	1.5	0.6	35.5	
	2	29.5	1	0.8	47.3	
	3	30.8	1.3	0.5	30.7	
	4	31.9	1.1	0.4	26.0	
	5	33.2	1.3	0.5	30.7	
	6	34.5	1.3	0.5	30.7	
	7	36.2	1.7	0.7	40.2	
	8	38.2	2	0.8	47.3	
	9	39.8	1.6	0.6	37.8	
	10	41.4	1.6	0.6	37.8	
	11	43.0	1.6	0.6	37.8	
	12	44.6	1.6	0.6	37.8	
				Steady State Rate:	**37.8**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.17 in/hr
	1	4.2	-	-	-	
	2	6.6	2.4	0.9	56.7	
	3	9.8	3.2	1.3	75.6	
	4	12.8	3	1.2	70.9	
	5	15.8	3	1.2	70.9	
	6	18.8	3	1.2	70.9	
	7	21.8	3	1.2	70.9	
				Steady State Rate:	**70.9**	**inches/hour**

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INFILTRATION TESTS

IT-204 performed in TP-204

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon / Tim Light	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)
1	5
2	10

ELEVATION AND DATUM			
Surface Elevation	Approx.	253.5	Town of Belmont Datum
Top of Hole Elevation	Approx.	248.5	Town of Belmont Datum
Bottom of Hole Elevation	Approx.	248.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-204 was excavated to a depth of about 60 inches below existing grades. A 6-inch-deep and 11-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 15 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Grayish brown coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders (moist)
	0.5	14.8	-	-	-	
	1	20.0	5.2	4.1	245.9	
	1.5	24.9	4.9	3.9	231.7	
	2	30.6	5.7	4.5	269.5	
	2.5	36.0	5.4	4.3	255.3	
	3	41.3	5.3	4.2	250.6	
	3.5	46.9	5.6	4.4	264.8	
	4	52.9	6	4.7	283.7	
	4.25	55.5	2.6	4.1	245.9	
	4.5	58.1	2.6	4.1	245.9	
	4.75	60.8	2.7	4.3	255.3	
	5	63.8	3	4.7	283.7	
	5.25	66.8	3	4.7	283.7	
	5.5	69.8	3	4.7	283.7	
	5.75	72.8	3	4.7	283.7	
	6	75.8	3	4.7	283.7	
				Steady State Rate:	**283.7**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 14.46 in/hr
	0.25	13.5	-	-	-	
	0.5	17.7	4.2	6.6	397.2	
	0.75	21.6	3.9	6.1	368.8	
	1	24.6	3	4.7	283.7	
	1.25	28.1	3.5	5.5	331.0	
	1.5	31.5	3.4	5.4	321.5	
	1.75	35.0	3.5	5.5	331.0	
	2	38.5	3.5	5.5	331.0	
	2.25	42.0	3.5	5.5	331.0	
	2.5	45.5	3.5	5.5	331.0	
	2.75	49.0	3.5	5.5	331.0	
	3	52.5	3.5	5.5	331.0	
	3.25	56.0	3.5	5.5	331.0	
	3.5	59.5	3.5	5.5	331.0	
	3.75	63.0	3.5	5.5	331.0	
	4	66.5	3.5	5.5	331.0	
	4.25	70.0	3.5	5.5	331.0	
	4.5	73.5	3.5	5.5	331.0	
				Steady State Rate:	**331.0**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-205 performed in TP-205

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	251.4	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	249.4	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	248.9	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-205 was excavated to a depth of about 24 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 30 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	-	-	-	-	Gray coarse to fine SAND, some coarse to fine gravel, trace silt, trace cobbles, trace boulders (moist)
	0.5	3.4	-	-	-	
	1	3.9	0.5	0.4	23.6	
	1.5	4.3	0.4	0.3	18.9	
	2	4.7	0.4	0.3	18.9	
	2.5	5.1	0.4	0.3	18.9	
	3	5.5	0.4	0.3	18.9	
	3.5	5.9	0.4	0.3	18.9	
				Steady State Rate:	**18.9**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 2 (B)	0	-	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 1.64 in/hr
	0.5	3.4	-	-	-	
	1	3.9	0.5	0.4	23.6	
	1.5	4.4	0.5	0.4	23.6	
	2	4.7	0.3	0.2	14.2	
	2.5	5.2	0.5	0.4	23.6	
	3	5.7	0.5	0.4	23.6	
	3.5	6.2	0.5	0.4	23.6	
	4	6.7	0.5	0.4	23.6	
	4.5	7.2	0.5	0.4	23.6	
				Steady State Rate:	**23.6**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-206 performed in TP-206

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	251.9	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	250.4	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	249.9	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-206 was excavated to a depth of about 18 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 30 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	1.8	-	-	-	Light brown coarse to fine sandy SILT, trace coarse to fine gravel, trace roots (moist)
	0.5	1.9	-	-	-	
	1	2.4	0.5	0.4	23.6	
	1.5	2.7	0.3	0.2	14.2	
	2	2.9	0.2	0.2	9.5	
	2.5	3.2	0.3	0.2	14.2	
	3	3.5	0.3	0.2	14.2	
	3.5	3.7	0.2	0.2	9.5	
	4	3.9	0.2	0.2	9.5	
	4.5	4.2	0.3	0.2	14.2	
	5	4.5	0.3	0.2	14.2	
	5.5	4.8	0.3	0.2	14.2	
	6	5.1	0.3	0.2	14.2	
				Steady State Rate:	**14.2**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	9.7	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.41 in/hr
	0.5	9.9	-	-	-	
	1	10.3	0.4	0.3	18.9	
	1.5	10.9	0.6	0.5	28.4	
	2	11.4	0.5	0.4	23.6	
	2.5	11.8	0.4	0.3	18.9	
	3	12.2	0.4	0.3	18.9	
	3.5	12.7	0.5	0.4	23.6	
	4	13.2	0.5	0.4	23.6	
	4.5	13.5	0.3	0.2	14.2	
	5	13.9	0.4	0.3	18.9	
	5.5	14.3	0.4	0.3	18.9	
	6	14.7	0.4	0.3	18.9	
				Steady State Rate:	**18.9**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-207 performed in TP-207

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	256.5	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	255.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	255.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-207 was excavated to a depth of about 12 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	1.9	-	-	-	Brown coarse to fine SAND, some silt, some coarse to fine gravel, trace cobbles, trace boulders, trace ceramic fragments, trace plastic fragments, trace roots (moist) [FILL]
	1	2.1	-	-	-	
	2	2.5	0.4	0.2	9.5	
	3	2.7	0.2	0.1	4.7	
	4	3.1	0.4	0.2	9.5	
	5	3.2	0.1	0.0	2.4	
	6	3.4	0.2	0.1	4.7	
	7	3.6	0.2	0.1	4.7	
	8	3.8	0.2	0.1	4.7	
	9	4.0	0.2	0.1	4.7	
				Steady State Rate:	**4.7**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	3.6	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.18 in/hr
	1	3.8	-	-	-	
	2	4.3	0.5	0.2	11.8	
	3	4.6	0.3	0.1	7.1	
	4	5.0	0.4	0.2	9.5	
	5	5.3	0.3	0.1	7.1	
	6	5.6	0.3	0.1	7.1	
	7	5.9	0.3	0.1	7.1	
	8	6.2	0.3	0.1	7.1	
				Steady State Rate:	**7.1**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-208 performed in TP-208

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	3	**Surface Elevation**	Approx.	259.4	Town of Belmont Datum
2	6	**Top of Hole Elevation**	Approx.	256.4	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	255.9	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-208 was excavated to a depth of about 36 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 3 cm and H2 = 6 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	0.4	-	-	-	Light brown coarse to fine SAND, some silt, some fine gravel (moist)
	1	0.6	-	-	-	
	2	1.2	0.6	0.2	14.2	
	3	1.6	0.4	0.2	9.5	
	4	2.0	0.4	0.2	9.5	
	5	2.1	0.1	0.0	2.4	
	6	2.4	0.3	0.1	7.1	
	7	2.7	0.3	0.1	7.1	
	8	3.0	0.3	0.1	7.1	
	9	3.3	0.3	0.1	7.1	
				Steady State Rate:	**7.1**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 2 (B)	0	1.3	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.94 in/hr
	1	2.4	-	-	-	
	2	3.1	0.7	0.3	16.5	
	3	4.0	0.9	0.4	21.3	
	4	4.2	0.2	0.1	4.7	
	5	4.5	0.3	0.1	7.1	
	6	4.9	0.4	0.2	9.5	
	7	5.4	0.5	0.2	11.8	
	8	6.0	0.6	0.2	14.2	
	9	6.5	0.5	0.2	11.8	
	10	7.0	0.5	0.2	11.8	
	11	7.5	0.5	0.2	11.8	
				Steady State Rate:	**11.8**	**inches/hour**

LANGAN

INFILTRATION TESTS

IT-209 performed in TP-209

PROJECT	Belmont Hill School	**PROJECT NO.**	151014301
LOCATION	Belmont, MA	**DATE**	October 16th, 2021
INSPECTOR	Alex Macon	**WEATHER**	Sunny, 65-70 degrees

TEST NUMBER	STATIC HEAD (CM)	ELEVATION AND DATUM			
1	5	**Surface Elevation**	Approx.	262.0	Town of Belmont Datum
2	10	**Top of Hole Elevation**	Approx.	257.5	Town of Belmont Datum
		Bottom of Hole Elevation	Approx.	257.0	Town of Belmont Datum

METHOD OF INFILTRATION TEST

TP-209 was excavated to a depth of about 54 inches below existing grades. A 6-inch-deep and 6-centimeter-diameter hole was then advanced using a hand auger. The hole was cleaned using a well prep brush and a sizing auger. The infiltration test was performed using a Guelph Permeameter with the two head method. H1 = 5 cm and H2 = 10 cm for these tests. After every 60 seconds, the height of the water was measured to calculate the total drop of water over the time period. Test 1 (A) and Test 2 (B) were measured using both the inner and outer reservoir cylinders. The table below summarizes the field data and the calculations for determining the rates in which the water infiltrated.

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	SOIL CONDITIONS
TEST 1 (A)	0	1.4	-	-	-	Light brown sandy SILT, trace coarse to fine gravel, trace roots (moist)
	1	1.8	-	-	-	
	2	2.1	0.3	0.1	7.1	
	3	2.6	0.5	0.2	11.8	
	4	2.8	0.2	0.1	4.7	
	5	3.2	0.4	0.2	9.5	
	6	3.5	0.3	0.1	7.1	
	7	3.7	0.2	0.1	4.7	
	8	4.0	0.3	0.1	7.1	
	9	4.2	0.2	0.1	4.7	
	10	4.4	0.2	0.1	4.7	
	11	4.7	0.3	0.1	7.1	
	12	5.0	0.3	0.1	7.1	
	13	5.3	0.3	0.1	7.1	
				Steady State Rate:	**7.1**	**inches/hour**

	TIME (MIN)	HEIGHT OF WATER (CM)	DROP (CM)	RATE (IN/MIN)	RATE (IN/HOUR)	
TEST 2 (B)	0	2.9	-	-	-	Field Saturated Hydraulic Conductivity, Ksat: 0.38 in/hr
	1	3.1	-	-	-	
	2	3.8	0.7	0.3	16.5	
	3	4.4	0.6	0.2	14.2	
	4	5.1	0.7	0.3	16.5	
	5	5.6	0.5	0.2	11.8	
	6	6.1	0.5	0.2	11.8	
	7	6.6	0.5	0.2	11.8	
	8	7.1	0.5	0.2	11.8	
				Steady State Rate:	**11.8**	**inches/hour**