BORING LOG NO. B-1

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.425147° Longitude: -101.355409°

DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3		**4" ASPHALT PAVEMENT**							
		FILL - SILTY SAND WITH GRAVEL, olive brown, frozen				2			
1.1		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', stiff to very stiff, with a trace of gravel							
					23-20-18 N=38	13			
5					4-4-5 N=9	14			
					3-4-6 N=10	14			
10					5-6-10 N=16	15			
11.0		***Boring Terminated at 11 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-5

BORING LOG NO. B-2

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.424145° Longitude: -101.353294°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**5" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, olive brown, frozen						3		NP	23
1.6		**LEAN CLAY WITH SAND (CL)**, olive brown, frozen to 3.5', stiff									
							29-22-17 N=39	15		41-17-24	75
			5				3-4-4 N=8	19			
							3-5-5 N=10	18			
			10				3-6-8 N=14	17			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-6

BORING LOG NO. B-3

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.423116° Longitude: -101.351232°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	6" ASPHALT PAVEMENT 0.5									
	FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen 1.6						3			
	LEAN CLAY (CL), brownish gray, frozen to 3.5, medium stiff to stiff					20-23-14 N=37	23			
		5				2-2-3 N=5	27			
						4-4-4 N=8	17			
	9.0									
	SANDY LEAN CLAY (CL), olive brown, stiff	10				3-6-8 N=14	17			
	11.0									
	Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-7

BORING LOG NO. B-4

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.422166° Longitude: -101.349077°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**5" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.8											
		LEAN CLAY (CL), dark gray, frozen to 3.5'					21-22-13 N=35	19			
4.0											
		SANDY LEAN CLAY (CL), olive brown, stiff to very stiff	5				4-5-5 N=10	18			
							5-6-9 N=15	17			
			10				5-6-10 N=16	17			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-8

BORING LOG NO. B-5

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.421147° Longitude: -101.347023°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.4 **4.5" ASPHALT PAVEMENT**									
	FILL - SILTY SAND WITH GRAVEL (SM), light olive brown, frozen						3			
	1.8									
	LEAN CLAY (CL), dark gray, frozen to 3.5'					19-21-11 N=32	21			
	4.0									
	CLAYEY SAND (SC), olive brown, medium dense	5				4-6-6 N=12	18			22
	7.0									
	SANDY LEAN CLAY (CL), olive brown, medium stiff, medium dense					4-3-4 N=7	16			
	9.0									
	POORLY GRADED SAND WITH SILT (SP-SM), fine grained, brownish gray, medium dense	10				6-5-6 N=11	19			
	11.0									
	Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-9

BORING LOG NO. B-6

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.420263° Longitude: -101.345022°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3		**4" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						2			
1.7		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff, with a trace of gravel					19-19-12 N=31	18			
			5				3-3-4 N=7	18			
							3-3-5 N=8	19			
9.0		**SANDY LEAN CLAY (CL)**, olive brown, stiff	10				4-4-6 N=10	18			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-10

BORING LOG NO. B-7

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.418975° Longitude: -101.342371°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4										
4.2" ASPHALT PAVEMENT										
FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen							3			
1.4										
LEAN CLAY WITH SAND (CL), light olive brown, frozen to 3.5'							22			
4.0										
SANDY LEAN CLAY (CL), olive brown, medium stiff to stiff		5				3-2-3 N=5	16			
						3-4-5 N=9	18			
		10				3-4-5 N=9	16		34-14-20	65
11.0										
Boring Terminated at 11 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC. A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-11

BORING LOG NO. B-8

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.417961° Longitude: -101.340187°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3		**4.1" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3		NP	15
1.3		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff						14			
			5				3-3-3 N=6	20			
							2-3-4 N=7	19			
			10				3-4-4 N=8	18			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-12

BORING LOG NO. B-9

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.41702° Longitude: -101.338104°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.3" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.9											
		SANDY LEAN CLAY (CL), dark gray, frozen to 3.5'						16			
4.0											
		SANDY LEAN CLAY (CL), olive brown, medium stiff to stiff, with a trace of gravel	5				3-3-2 N=5	19			
							2-4-4 N=8	17			
			10				4-6-7 N=13	16			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC. A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-13

BORING LOG NO. B-10

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-2

Latitude: 48.416023° Longitude: -101.335971°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.3" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						2			
1.8											
		SANDY LEAN CLAY (CL), olive brown, frozen to 3.5', medium stiff to stiff						15			
			5				3-3-4 N=7	18			
							3-4-7 N=11	14		37-14-23	65
			10				3-5-7 N=12	18			
11.0											
		Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-14

BORING LOG NO. B-11

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.414668° Longitude: -101.333159°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.5" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.3		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff						17			
			5				2-3-4 N=7	16			
							3-4-4 N=8	17			
			10				3-4-5 N=9	15			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-15

BORING LOG NO. B-12

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.413751° Longitude: -101.331135°

DEPTH	GRAPHIC LOG		WATER CONTENT (%)	FIELD TEST RESULTS
0.3		**4" ASPHALT PAVEMENT**		
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen	4	
1.4		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff	15	
5			17	3-3-4 N=7
			17	4-5-7 N=12
10			17	4-5-8 N=13
11.0		***Boring Terminated at 11 Feet***		

DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (Ft.) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 | Boring Completed: 12/17/2013
Drill Rig: Diedrich D50 | Driller: DT
Project No.: M6135013 | Exhibit: A-16

BORING LOG NO. B-13

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.412988° Longitude: -101.329465°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3										
4" ASPHALT PAVEMENT										
FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen							3			
1.3										
SANDY LEAN CLAY (CL), dark gray, frozen to 3.5'							24			
4.0										
SANDY LEAN CLAY (CL), olive brown, medium stiff to stiff, with a trace of gravel		5				1-2-3 N=5	20			
						2-3-4 N=7	19			
		10				3-4-5 N=9	19			
11.0										
Boring Terminated at 11 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC. A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-17

BORING LOG NO. B-14

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.412122° Longitude: -101.327704°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.25" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.4											
		SANDY LEAN CLAY (CL), olive brown, frozen to 3.5'						13			
4.0											
		SILTY SAND (SM), reddish brown, medium dense, fine to medium grained	5				3-5-5 N=10	14			
7.0											
		SANDY LEAN CLAY (CL), grayish brown, medium stiff to stiff, with a trace of gravel					3-2-3 N=5	20			
			10				3-4-6 N=10	22			
11.0											
		Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC. A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-18

BORING LOG NO. B-15

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.411137° Longitude: -101.325569°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3		**4" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.3		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff, with a trace of gravel						15			
			5				2-2-3 N=5	18			
							3-3-4 N=7	18			
			10				3-4-5 N=9	19			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-19

BORING LOG NO. B-16

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.410017° Longitude: -101.32313°

DEPTH	GRAPHIC LOG		WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.25" ASPHALT PAVEMENT**								
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen					3			
1.3		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', medium stiff to stiff, with a trace of gravel					11			
5						3-3-3 N=6	19			
						2-3-4 N=7	20			
10						2-4-5 N=9	18			
11.0		***Boring Terminated at 11 Feet***								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-20

BORING LOG NO. B-17

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.409008° Longitude: -101.321051°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.8" ASPHALT PAVEMENT**									
1.2		**FILL - SILTY SAND WITH GRAVEL**, light olive brown, frozen						3			
4.0		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5'						11		35-13-22	58
7.0		**SANDY LEAN CLAY (CL)**, dark gray, medium stiff	5				3-3-4 N=7	13			
11.0		**SANDY LEAN CLAY (CL)**, olive brown, stiff to very stiff, with a trace of gravel	10				3-4-5 N=9	16			
							4-6-9 N=15	15			
		Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC. A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/17/2013 Boring Completed: 12/17/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-21

BORING LOG NO. B-18

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.408025° Longitude: -101.318946°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		**4.8" ASPHALT PAVEMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						3			
1.6		**SANDY LEAN CLAY (CL)**, olive brown, frozen to 3.5', stiff					100/5" N=100/5"				
			5				4-4-4 N=8	12			
							2-4-4 N=8	20			
9.0		**LEAN CLAY (CL)**, gray, stiff	10				3-4-6 N=10	22			
11.0		***Boring Terminated at 11 Feet***									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013 Boring Completed: 12/16/2013

Drill Rig: Diedrich D50 Driller: DT

Project No.: M6135013 Exhibit: A-22

BORING LOG NO. B-19

PROJECT: Proposed Street Reconstruction

CLIENT: FourFront Design, Inc.
Rapid City, South Dakota

SITE: Bomber Boulevard
Minot Air Force Base, North Dakota

LOCATION See Exhibit A-3

Latitude: 48.40695° Longitude: -101.31654°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3		**4" ASPHALT PAVMENT**									
		FILL - SILTY SAND WITH GRAVEL, light olive brown, frozen						4			
1.3											
		SANDY LEAN CLAY (CL), very dark gray, frozen to 3.5'									
							58-28-21 N=49	16			
4.0											
		SANDY LEAN CLAY (CL), olive brown, stiff, with a trace of gravel and lenses of sand	5				3-4-5 N=9	18			
							3-4-4 N=8	19			
			10				3-5-6 N=11	12			
11.0											
		Boring Terminated at 11 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
2 ¼" Hollow Stem Auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion and patched with cold patch asphalt.

See Exhibit A-4 for description of field procedures
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
2' - N-value influenced by frost

WATER LEVEL OBSERVATIONS

Not measurable before HSA removal

Midwest Testing LABORATORY, INC.
A Terracon COMPANY
1555 N. 42nd St., Unit B
Grand Forks, North Dakota

Boring Started: 12/16/2013	Boring Completed: 12/16/2013
Drill Rig: Diedrich D50	Driller: DT
Project No.: M6135013	Exhibit: A-23