

BORING LOG NO. 1

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PROJECT: BRF-030-3(53)--38-37

CLIENT: Iowa Department of Transportation
Ames, IA

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA

GRAPHIC LOG	LOCATION		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
	Latitude: 42.034578° Longitude: -94.288094° Northing: 7450444 Easting: 17593796 Station: 1244+07 Offset: -6 Alignment: US 30 Surface Elev.: 1012.6 (Ft.)											LL-PL-PI
	DEPTH	ELEVATION (Ft.)										
	1.1	1011.5										
	1.6	1011										
	CONCRETE											
	GRAVEL											
	MIXED FILL - BROWN AND GRAY STIFF SANDY CLAY TO CLAYEY SAND											
	(Fill), moist (USCS: Sandy Lean Clay to Clayey Sand, Trace Gravel) (Iowa LRFD Description: Stiff Silty Clay Fill)		5		■	8	4-5-4 N=9	C1				
					□	13		C2	3210	15.1	118	25-15-10
			10		■	15	3-4-5 N=9	C3				
					□	16		C4	2170	16	115	28-16-12
			15		■	9	3-3-4 N=7	C5				
					□	14		C6	1010	22.1	100	
			20		■	13	3-3-5 N=8	D1				
					□	22		E1	8670	14	122	28-14-14
			25		■	18	4-6-8 N=14	E2				
					□	18		E3	9800	12.5	121	
			30		■	18	10-14-14 N=28	E4				
												
			35		■	15	10-9-13 N=22	E5				
												
			40		■	16	6-7-10 N=17	E6				
												
			45		■	17	4-8-9 N=17	E7				
												
			50		■	18	4-6-9 N=15	E8				
												
			55		■	18	13-19-15 N=34	E9				
												
			60		■	18	4-6-6					

Sand and gravel seam encountered from about 55 to 59 feet

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

Hammer Type: Automatic
Abutment

Advancement Method:
0-4 feet: Solid Stem Auger
4-29 feet: Hollow Stem Auger
29-100.5 feet: Wash Bore

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

16 feet During Drilling
14 feet on 5/6/2025

WCI at 16 feet on 5/6/2025



600 SW 7th St, Ste M
Des Moines, IA

Boring Started: 05-05-2025

Drill Rig: 709

Project No.: 08245186

Boring Completed: 05-05-2025

Driller: SA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT SMART_LOG 08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 1

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PROJECT: BRF-030-3(53)--38-37

**CLIENT: Iowa Department of Transportation
Ames, IA**

**SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA**

GRAPHIC LOG	LOCATION Latitude: 42.034578° Longitude: -94.288094° Northing: 7450444 Easting: 17593796 Station: 1244+07 Offset: -6 Alignment: US 30 Surface Elev.: 1012.6 (Ft.) DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
											LL-PL-PI
	GRAY FIRM TO VERY FIRM SANDY CLAY (Glacial), moist (USCS: Sandy Lean Clay, Trace Gravel) (Iowa LRFD Description: Firm to Very Firm Glacial Clay) (continued) Hard below 79 feet (Iowa LRFD Description: Glacial Material)	65				N=12	E10				
			14	8-9-9 N=18	E11						
			18	6-7-8 N=15	E12						
			18	4-6-8 N=14	E13						
			18	11-18-24 N=42	E14						
		85		8	18-30-32 N=62	E15					
		90		18	10-11-16 N=27	E16					
		95		15	14-24-30 N=54	E17					
		100		18	42-51-83 N=134	F1					
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic Abutment											
Advancement Method: 0-4 feet: Solid Stem Auger 4-29 feet: Hollow Stem Auger 29-100.5 feet: Wash Bore								Notes:			
Abandonment Method: Boring backfilled with Auger Cuttings Surface capped with concrete											
WATER LEVEL OBSERVATIONS				 600 SW 7th St, Ste M Des Moines, IA				Boring Started: 05-05-2025		Boring Completed: 05-05-2025	
 16 feet During Drilling								Drill Rig: 709		Driller: SA	
 14 feet on 5/6/2025								Project No.: 08245186			
 WCI at 16 feet on 5/6/2025											

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT_SMART_LOG_08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON.DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 2

Page 1 of 1

PROJECT: BRF-030-3(53)--38-37

CLIENT: Iowa Department of Transportation
Ames, IA

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA

GRAPHIC LOG	LOCATION		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
	Latitude: 42.034533°	Longitude: -94.28785°										LL-PL-PI
	Northings: 7450429	Easting: 17593863										
	Station: 1244+73	Offset: 10										
	Alignment: US 30											
	Surface Elev.: 1012.7 (Ft.)											
	DEPTH	ELEVATION (Ft.)										
	0.8	1012										
	CONCRETE											
	AIR VOID BELOW BRIDGE DECK											
			5									
			10									
	13.5	999										
	BROWN FINE SAND											
	(Alluvium), wet											
	(USCS: Fine Sand)											
	(Iowa LRFD Description: Silty Sand)											
	20.0	992.5										
	GRAY AND BROWN SANDY CLAY											
	(Alluvium), moist											
	(USCS: Sandy Lean Clay)											
	(Iowa LRFD Description: Soft Silty Clay)											
	24.0	988.5										
	BROWN FINE TO COARSE SAND											
	(Alluvium), wet											
	(USCS: Fine to Coarse Sand)											
	(Iowa LRFD Description: Clayey Sand)											
	29.0	983.5										
	GRAY VERY FIRM SANDY CLAY											
	(Glacial), moist											
	(USCS: Sandy Lean Clay, Trace Gravel)											
	(Iowa LRFD Description: Very Firm Glacial Clay)											
	Driller's Note: wood encountered in spoon sample at 35 feet, presumably an existing timber pile below existing Pier 1.											
	40.5	972										
	Driller's Note: drilling rods binding below about 40 feet, preventing further drilling.											
	Boring Terminated at 40.5 Feet											

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

Hammer Type: Automatic
Pier

Advancement Method:
0-24 feet: Hollow Stem Auger
24-40.5 feet: Wash Bore

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

18 feet During Drilling



600 SW 7th St, Ste M
Des Moines, IA

Boring Started: 05-08-2025

Boring Completed: 05-08-2025

Drill Rig: 709

Driller: SA

Project No.: 08245186

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT_SMART_LOG_08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON.DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 3

Page 1 of 2

PROJECT: BRF-030-3(53)--38-37

**CLIENT: Iowa Department of Transportation
Ames, IA**

**SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA**

GRAPHIC LOG	LOCATION		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
	Latitude: 42.034581° Longitude: -94.287475° Northing: 7450446 Easting: 17593965 Station: 1245+75 Offset: -8 Alignment: US 30 Surface Elev.: 1012.7 (Ft.)											LL-PL-PI
	DEPTH	ELEVATION (Ft.)										
	0.8	1012										
	CONCRETE											
	AIR VOID BELOW BRIDGE DECK											
	14.0	998.5										
	BROWN VERY SOFT SANDY CLAY (Alluvium), moist (USCS: Sandy Lean Clay) (Iowa LRFD Description: Soft Silty Clay)											
	20.5	992										
	GRAY FIRM TO VERY FIRM SANDY CLAY (Glacial), moist (USCS: Sandy Lean Clay, Trace Gravel) (Iowa LRFD Description: Firm to Very Firm Glacial Clay)											

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

Hammer Type: Automatic
Pier

Advancement Method:
0-19 feet: Hollow Stem Auger
19-110.5 feet: Wash Bore

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

19 feet During Drilling



600 SW 7th St, Ste M
Des Moines, IA

Boring Started: 05-07-2025

Boring Completed: 05-07-2025

Drill Rig: 709

Driller: SA

Project No.: 08245186

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT SMART_LOG 08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON_DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 3

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PROJECT: BRF-030-3(53)--38-37

CLIENT: Iowa Department of Transportation
Ames, IA

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA

GRAPHIC LOG	LOCATION Latitude: 42.034581° Longitude: -94.287475° Northing: 7450446 Easting: 17593965 Station: 1245+75 Offset: -8 Alignment: US 30 Surface Elev.: 1012.7 (Ft.)	DEPTH (Ft.) ELEVATION (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
											LL-PL-PI
	GRAY VERY FIRM SANDY CLAY (Glacial), moist (USCS: Sandy Lean Clay, Trace Gravel) (Iowa LRFD Description: Firm to Very Firm Glacial Clay) (continued)					N=17	F2				
		65		18	4-7-7 N=14	F3					
		70		18	4-5-7 N=12	F4					
		75		18	4-6-8 N=14	F5					
		80		18	4-8-8 N=16	F6					
		85		14	11-10-10 N=20	F7					
		90		18	8-12-13 N=25	F8					
		95		15	6-8-8 N=16	F9					
		100		18	6-9-11 N=20	F10					
		105		18	10-21-22 N=43	F11					
		110		18	10-11-12 N=23	F12					
		110.5		902		Boring Terminated at 110.5 Feet					
Stratification lines are approximate. In-situ, the transition may be gradual.											
Hammer Type: Automatic Pier											
Advancement Method: 0-19 feet: Hollow Stem Auger 19-110.5 feet: Wash Bore				 600 SW 7th St, Ste M Des Moines, IA				Notes:			
Abandonment Method: Boring backfilled with Auger Cuttings Surface capped with concrete											
WATER LEVEL OBSERVATIONS  19 feet During Drilling								Boring Started: 05-07-2025 Drill Rig: 709 Project No.: 08245186			
								Boring Completed: 05-07-2025 Driller: SA			

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT SMART LOG 08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON.DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 4

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PROJECT: BRF-030-3(53)--38-37

CLIENT: Iowa Department of Transportation
Ames, IA

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA

GRAPHIC LOG	LOCATION		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
	Latitude: 42.034533° Longitude: -94.287272°											LL-PL-PI
	Northing: 7450429 Easting: 17594019 Station: 1246+31 Offset: 10 Alignment: US 30 Surface Elev.: 1012.6 (Ft.)											
DEPTH		ELEVATION (FL)										
	1.1	CONCRETE	1011.5									
	1.3	GRAVEL	1011.5									
	MIXED FILL - BROWN AND GRAY STIFF SANDY CLAY TO CLAYEY SAND											
	(Fill), moist											
	(USCS: Sandy Lean Clay to Clayey Sand, Trace Gravel)											
	(Iowa LRFD Description: Stiff Silty Clay Fill)											
	19.0	GRAY FIRM TO VERY FIRM SANDY CLAY	993.5									
	(Glacial), moist											
	(USCS: Sandy Lean Clay, Trace Gravel)											
	(Iowa LRFD Description: Firm to Very Firm Glacial Clay)											
	Occasional sand seams											
	5				■	18	4-6-7 N=13	C1				
					□	15		C2	760	13.5	112	
	10				■	15	3-4-5 N=9	C3				
					□	18		C4	2410	18.6	104	31-18-13
	15				■	18	3-2-2 N=4	C5				
					□	10		C6	880	21.5	105	26-17-9
	20				■	7	4-4-5 N=9	D1				
					□	18		D2	9480	13.5	121	29-15-14
	25				■	18	3-7-10 N=17	D3				
					□	13		D4	8190	14.5	123	
	30				■	18	5-8-8 N=16	D5				
	35				■	18	4-7-10 N=17	D6				
	40				■	18	4-7-9 N=16	D7				
	45				■	18	5-7-10 N=17	D8				
	50				■	18	5-8-10 N=18	D9				
	55				■	18	5-8-9 N=17	D10				
	60				■	18	4-8-9					

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

Hammer Type: Automatic
Abutment

Advancement Method:
0-3 feet: Solid Stem Auger
3-29 feet: Hollow Stem Auger
29-110.5 feet: Wash Bore

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

18 feet During Drilling
15 feet on 5/7/2025

WCI at 17.5 feet on 5/7/2025



600 SW 7th St, Ste M
Des Moines, IA

Boring Started: 05-06-2025

Drill Rig: 709

Project No.: 08245186

Boring Completed: 05-06-2025

Driller: SA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT SMART LOG 08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON DATATEMPLATE.GDT 7/3/25

BORING LOG NO. 4

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PROJECT: BRF-030-3(53)--38-37

CLIENT: Iowa Department of Transportation
Ames, IA

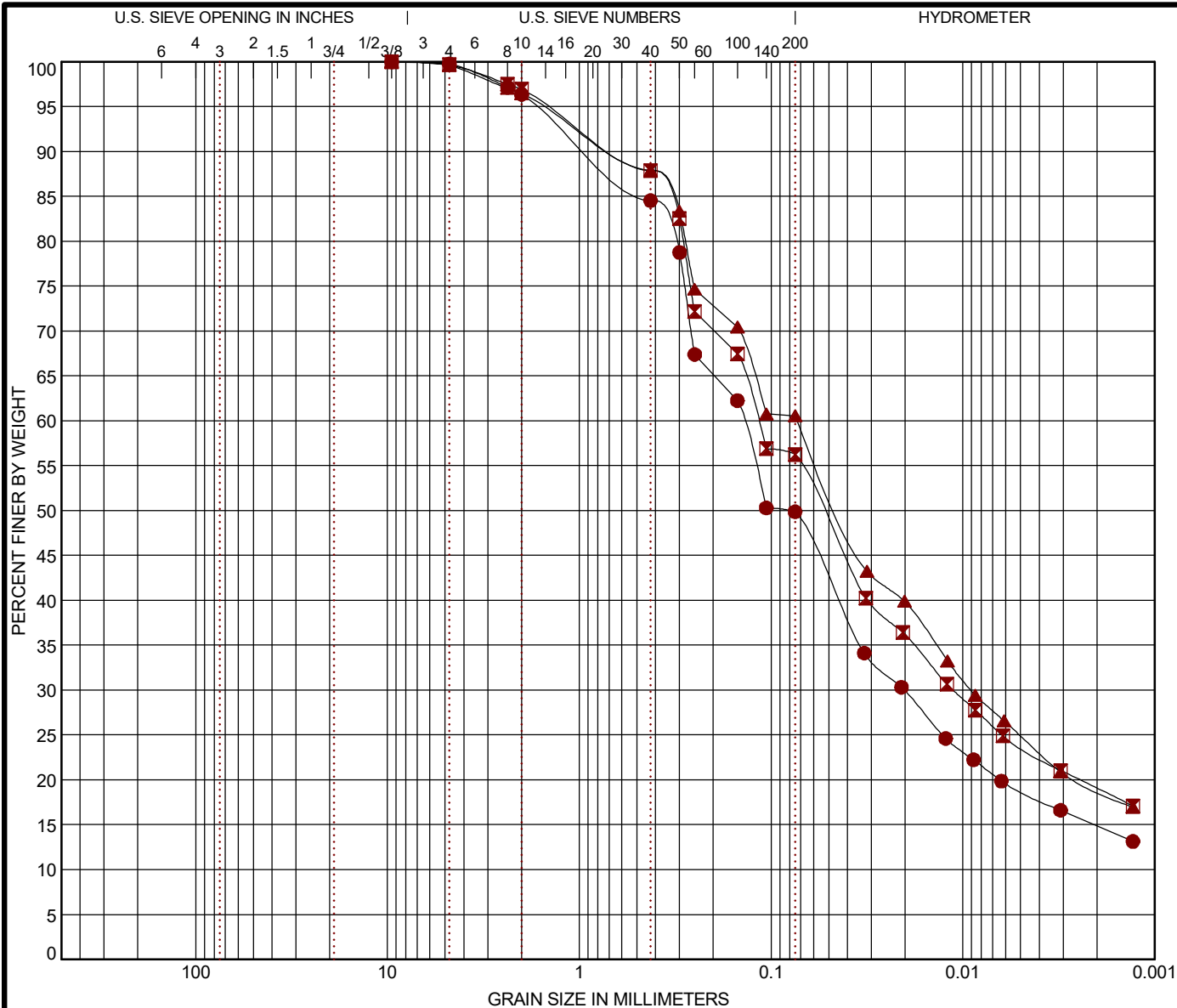
SITE: US 30 over Buttrick Creek, 2.8 mi W of IA 144
Greene County, IA

GRAPHIC LOG	LOCATION Latitude: 42.034533° Longitude: -94.287272° Northing: 7450429 Easting: 17594019 Station: 1246+31 Offset: 10 Alignment: US 30 Surface Elev.: 1012.6 (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	SAMPLE ID	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
											LL-PL-PI
DEPTH	ELEVATION (Ft.)										
	GRAY FIRM TO VERY FIRM SANDY CLAY (Glacial), moist (USCS: Sandy Lean Clay, Trace Gravel) (Iowa LRFD Description: Firm to Very Firm Glacial Clay) (continued)					N=17	D11				
		65		18		4-7-7 N=14	D12				
		70		18		3-5-6 N=11	D13				
		75		18		4-6-10 N=16	D14				
		80		18		4-7-8 N=15	D15				
		85		18		7-12-15 N=27	D16				
		90		18		7-10-15 N=25	D17				
		95		18		3-6-9 N=15	D18				
		100		18		7-11-15 N=26	D19				
		105		18		7-11-12 N=23	D20				
		110		18		4-6-7 N=13	D21				
Boring Terminated at 110.5 Feet											
Stratification lines are approximate. In-situ, the transition may be gradual.											
Hammer Type: Automatic Abutment											
Advancement Method: 0-3 feet: Solid Stem Auger 3-29 feet: Hollow Stem Auger 29-110.5 feet: Wash Bore						Notes:					
Abandonment Method: Boring backfilled with Auger Cuttings Surface capped with concrete											
WATER LEVEL OBSERVATIONS		 600 SW 7th St, Ste M Des Moines, IA				Boring Started: 05-06-2025		Boring Completed: 05-06-2025			
 18 feet During Drilling						Drill Rig: 709		Driller: SA			
 15 feet on 5/7/2025						Project No.: 08245186					
 WCI at 17.5 feet on 5/7/2025											

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT SMART LOG 08245186 US 30 BRIDGE BUTTRICK CREEK GPJ TERRACON.DATATEMPLATE.GDT 7/3/25

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL	SAND	SILT OR CLAY
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	BORING ID	DEPTH	% GRAVEL	% SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	1	6.5 - 8.5	4	46	35	15	25	15	10
☒	1	11.5 - 13.5	3	41	37	19	28	16	12
▲	1	21.5 - 23.5	4	35	42	19	28	14	14

●		☒		▲		Soil Classification*				
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer	Boring ID	Depth	USCS	AASHTO	USDA
3/8"	100.0	3/8"	100.0	3/8"	100.0	1	6.5 - 8.5	CLAYEY SAND (SC)	A-4 (2)	LOAM
#4	99.76	#4	99.67	#4	99.59					
#8	97.16	#8	97.52	#8	97.03					
#10	96.38	#10	96.94	#10	96.47	1	11.5 - 13.5	SANDY LEAN CLAY (CL)	A-6 (4)	LOAM
#40	84.53	#40	87.89	#40	87.91					
#50	78.76	#50	82.54	#50	83.39					
#60	67.39	#60	72.16	#60	74.67	1	21.5 - 23.5	SANDY LEAN CLAY (CL)	A-6 (5)	LOAM
#100	62.25	#100	67.44	#100	70.44					
#140	50.29	#140	56.89	#140	60.77					
#200	49.87	#200	56.26	#200	60.58					
* Per Iowa DOT Design Manual, Chapter 200D-1										

PROJECT: BRF-030-3(53)--38-37

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA
144
Greene County, IA

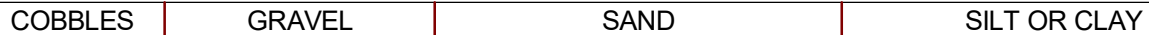


PROJECT NUMBER: 08245186

CLIENT: Iowa Department of Transportation
Ames, IA

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. IADOT_GRAIN_SIZE_REPORT_08245186_US_30_BRIDGE_BUTTRICK_CREEK.GPJ TERRACON_DATATEMPLATE.GDT 6/6/25

ASTM D422 / ASTM C136



●		☒		▲		Soil Classification*				
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer	Boring ID	Depth	USCS	AASHTO	USDA
3/8"	100.0	3/8"	100.0	3/8"	100.0	4	11.5 - 13.5	SANDY LEAN CLAY (CL)	A-6 (4)	LOAM
#4	99.91	#4	97.23	#4	99.25					
#8	99.49	#8	90.91	#8	97.04					
#10	99.27	#10	89.43	#10	96.33	4	16.5 - 18.5	CLAYEY SAND (SC)	A-2-4 (0)	GRAVELLY SANDY LOAM
#40	91.94	#40	69.07	#40	87.11					
#50	85.68	#50	62.56	#50	82.09					
#60	71.81	#60	48.97	#60	72.52	4	21.5 - 23.5	SANDY LEAN CLAY (CL)	A-6 (5)	LOAM
#100	65.17	#100	43.24	#100	67.92					
#140	51.52	#140	33.11	#140	58.07					
#200	51.0	#200	32.74	#200	57.76	* Per Iowa DOT Design Manual, Chapter 200D-1				

* Per Iowa DOT Design Manual, Chapter 200D-1

SITE: US 30 over Buttrick Creek, 2.8 mi W of IA
144
Greene County, IA



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Ames, IA