BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-01**
LOCATION: Station 242+76, Lt. 14
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487881 EASTING: 14252896
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/12/25 END DATE: 07/12/25
SURFACE ELEVATION: 1144.9 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Overcast & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| 1144.1 | | TOPSOIL | | | | | |
| 0.8 | | FILL: LEAN CLAY (CL), brownish gray to brown, moist | | TW 16" | 3 | 26 | DD=93 pcf |
| | | | 5 | TW 16" | 3 | 23 | LL=43, PL=20, PI=23 DD=93 pcf |
| 1138.9 | | | | | | | |
| 6.0 | ▽ | LEAN CLAY (CL), brownish gray to gray, moist, soft to stiff (ALLUVIUM) | | | | | Gravel = 3% Sand = 9% Silt = 64% Clay = 23% |
| | | | 10 | 3-4-5 (9) 18" | | | |
| | | | 15 | 0-2-2 (4) 18" | | 30 | |
| 1127.9 | | | | | | | |
| 17.0 | | SANDY LEAN CLAY (CL), brown and gray, moist, very stiff (ALLUVIUM) | | | | | |
| | | | 20 | 4-12-15 (27) 16" | | | |
| 1122.9 | | | | | | | |
| 22.0 | | SILTY SAND (SM), coarse-grained, gray, moist, dense (ALLUVIUM) | | | | | |
| | | | 25 | 5-15-18 (33) 14" | | 21 | Non-plastic Sand = 62% Silt & Clay = 38% |
| 1117.9 | | | | | | | |
| 27.0 | | POORLY GRADED GRAVEL with SILT (GP-GM), fine to coarse-grained, with big Gravel pieces, brown, wet, medium dense (ALLUVIUM) | | | | | |
| | | | 30 | 15-14-12 (26) 8" | | | |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-01**
LOCATION: Station 242+76, Lt. 14
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487881 EASTING: 14252896
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/12/25 END DATE: 07/12/25
SURFACE ELEVATION: 1144.9 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Overcast & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | POORLY GRADED GRAVEL with SILT (GP-GM), fine to coarse-grained, with big Gravel pieces, brown, wet, medium dense (ALLUVIUM) | 35 | 14-12-11 (23) 18" | | 28 | P200=7% |
| 1107.9 | | | | | | | |
| 37.0 | | SANDY SILTY CLAY (CL-ML), gray, wet to moist, very stiff (GLACIAL TILL) | 40 | 15-9-14 (23) 9" | | | |
| | | | 45 | 12-8-15 (23) 7" | | 24 | LL=24, PL=18, PI=6<br>Silt & Clay = 73%<br>Mud rotary started at 45 feet |
| 1096.9 | | | | | | | |
| 48.0 | | POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, brown, moist, dense (GLACIAL OUTWASH) | 50 | 24-25-23 (48) 0" | | | |
| | | | 55 | 23-18-30 (48) 6" | | 13 | P200=8% |
| | | | 60 | 18-14-27 (41) 8" | | | |
| 1082.9 | | | | | | | |
| 62.0 | | FAT CLAY (CH), little Sand, gray, moist, very stiff to hard (GLACIAL TILL) | | 16-11-13 | | | |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-01**
LOCATION: Station 242+76, Lt. 14
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487881 EASTING: 14252896
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/12/25 END DATE: 07/12/25
SURFACE ELEVATION: 1144.9 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Overcast & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | FAT CLAY (CH), little Sand, gray, moist, very stiff to hard (GLACIAL TILL) | 65 | (24) 9" | | 23 | |
| | | | 70 | 13-12-12 (24) 10" | | | |
| | | | 75 | 5-10-15 (25) 9" | | 25 | |
| | | | 80 | 10-7-12 (19) 8" | | 26 | LL=57, PL=19, PI=38<br>Gravel = 0%<br>Sand = 13%<br>Silt = 45%<br>Clay = 42% |
| | | | 85 | 10-15-15 (30) 9" | | | |
| | | | 90 | 15-20-41 (61) 9" | | 25 | |
| 1052.9<br>92.0 | | SILTY SAND (SM), fine to coarse-grained, gray, moist, dense (GLACIAL OUTWASH) | 95 | 15-20-30 (50) 7" | | | |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-01**
LOCATION: Station 242+76, Lt. 14
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487881 EASTING: 14252896
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/12/25 END DATE: 07/12/25
SURFACE ELEVATION: 1144.9 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Overcast & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | SILTY SAND (SM), fine to coarse-grained, gray, moist, dense (GLACIAL OUTWASH) | | | | | |
| | | | | 20-25-30 (55) 8" | | 25 | Non-plastic<br>Sand = 67%<br>Silt & Clay = 33% |
| 100 | | | | | | | |
| | | | | 23-23-33 (56) 0" | | | |
| 105 | | | | | | | |
| | | | | 32-33-35 (68) 5" | | | |
| 110 | | | | | | | |
| | | | | 30-32-40 (72) 0" | | | |
| 115 | | | | | | | |
| | | | | 30-33-50/3" (REF) 0" | | | |
| 1025.1 | | | | | | | |
| 119.8 | | END OF BORING | | | | | Water observed at 12.0 feet while drilling. |
| 120 | | Boring then backfilled with auger cuttings | | | | | |
| 125 | | | | | | | |

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-02**
LOCATION: Station 244+19, Lt. 17
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487983 EASTING: 14253015
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/21/25 END DATE: 07/22/25
SURFACE ELEVATION: 1144.7 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 80

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| 1143.9 | | TOPSOIL | | | | | |
| 0.8 | | FILL: LEAN CLAY (CL), dark brown and gray, moist | | TW 18" | 3.5 | 5 | DD=118 pcf |
| 1138.7 | | | 5 | TW 18" | 3.5 | 23 | DD=98 pcf |
| 6.0 | | LEAN CLAY (CL), little Sand, brown, moist, soft to medium (ALLUVIUM) | 10 | | | | |
| | | | 15 | 3-3-3 (6) 8" | | | |
| | | | 20 | 2-3-1 (4) 9" | | 36 | LL=36, PL=24, PI=12<br>Gravel = 0%<br>Sand = 14%<br>Silt = 67%<br>Clay = 19% |
| 1122.7 | | | | | | | |
| 22.0 | ▽ | POORLY GRADED SAND with CLAY (SP-SC), fine to coarse-grained, with Gravel, brown, wet, dense (ALLUVIUM) | | 8-40-50/3" (REF) 7" | | 12 | P200=8% |
| | | | 25 | | | | Mud rotary started at 25 feet |
| | | | 30 | 40-40-50/3" (REF) 0" | | | |
| 1112.7 | | | | | | | |
| 32.0 | | Continued on next page | | | | | |

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-02**
LOCATION: Station 244+19, Lt. 17
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487983 EASTING: 14253015
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/21/25 END DATE: 07/22/25
SURFACE ELEVATION: 1144.7 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 80

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | POORLY GRADED SAND (SP), fine to coarse-grained, brown, moist, very loose (ALLUVIUM) | 35 | 6-2-2 (4) 7" | | 7 | P200=1% |
| 1107.7 | | | | | | | |
| 37.0 | | CLAYEY SAND (SC), fine to coarse-grained, brown and gray, moist, loose (ALLUVIUM) | 40 | 3-2-4 (6) 18" | | | |
| 1102.7 | | | | | | | |
| 42.0 | | SANDY FAT CLAY (CH), gray, moist, stiff to hard (GLACIAL TILL) | 45 | 5-7-6 (13) 7" | | 26 | |
| | | | 50 | 6-9-8 (17) 10" | | | |
| | | | 55 | 7-9-10 (19) 8" | | 34 | LL=59, PL=22, PI=37<br>Gravel = 0%<br>Sand = 8%<br>Silt = 47%<br>Clay = 45% |
| | | | 60 | 9-11-7 (18) 9" | | | |
| | | | | 5-8-12 | | | |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-02**
LOCATION: Station 244+19, Lt. 17
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487983 EASTING: 14253015
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/21/25 END DATE: 07/22/25
SURFACE ELEVATION: 1144.7 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 80

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | SANDY FAT CLAY (CH), gray, moist, stiff to hard (GLACIAL TILL) | 65 | (20) 8" | | 28 | |
| | | | 70 | 6-7-9 (16) 10" | | | |
| | | | 75 | 10-12-11 (23) 8" | | 44 | |
| | | | 80 | 14-13-10 (23) 6" | | | |
| 1060.7 | | | | | | | |
| 84.0 | | POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, gray, moist, dense (GLACIAL OUTWASH) | 85 | 20-32-50/3" (REF) 0" | | | |
| | | | 90 | 24-35-50/3" (REF) 8" | | | |
| | | | 95 | 23-32-43 (75) 8" | | 23 | Non-plastic<br>Sand = 90%<br>Silt & Clay = 10% |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **BR-02**
LOCATION: Station 244+19, Lt. 17
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487983 EASTING: 14253015
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 07/21/25 END DATE: 07/22/25
SURFACE ELEVATION: 1144.7 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 80

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | POORLY GRADED SAND with SILT (SP-SM), fine to coarse-grained, gray, moist, dense (GLACIAL OUTWASH) | | | | | |
| | | | | 25-42-50/3" (REF) 5" | | | |
| 100 | | | | | | | |
| | | | | 40-48-50/3" (REF) | | | |
| 105 | | | | | | | |
| | | | | 42-47-50/3" (REF) | | | |
| 110 | | | | | | | |
| | | | | 43-43-50/3" (REF) | | | |
| 115 | | | | | | | |
| | | | | 45-49-50/3" (REF) | | | |
| 1024.9 | | | | | | | |
| 119.8 | | END OF BORING | | | | | Water observed at 25.0 feet while drilling. |
| 120 | | Boring then backfilled with auger cuttings | | | | | |
| 125 | | | | | | | |

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **SB-01**
LOCATION: Station 242+56, Lt. 25
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487877 EASTING: 14252875
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 06/15/25 END DATE: 06/15/25
SURFACE ELEVATION: 1144.4 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 90

| Elev./ Depth ft | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|
| 1143.5 | TOPSOIL | | | | | |
| 0.8 | FILL: LEAN CLAY (CL), brown, dry to moist | | 3-4-5 (9) 1" | | 19 | |
| | | | TW 2" | 3.5 | | |
| 1137.4 | | | 2-7-9 (16) 1" | | | |
| 7.0 | LEAN CLAY (CL), little Sand, dark brown brownish gray, moist, very stiff (ALLUVIUM) | | TW 2" | 1 | | |
| | | | 2-8-9 (17) 2" | | | |
| | | | TW 1" | | 33 | LL=36, PL=21, PI=15<br>Gravel = 0%<br>Sand = 14%<br>Silt = 64%<br>Clay = 22% |
| | | | 3-5-7 (12) 1" | | | |
| 1117.4 | | | | | | |
| 27.0 | CLAYEY SAND (SC), fine to coarse-grained, gray, moist, medium dense (ALLUVIUM) | | 5-7-8 (15) 0" | | | |
| 1114.4 | | | | | | |
| 30.0 | END OF BORING<br>Boring then backfilled with auger cuttings | | | | | Water observed at 20.0 feet while drilling. |

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **SB-02**
LOCATION: Station 244+44, Rt. 16
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487974 EASTING: 14253040
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 06/16/25 END DATE: 06/16/25
SURFACE ELEVATION: 1144.4 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| 1143.6 | | TOPSOIL | | | | | |
| 0.8 | | FILL: LEAN CLAY (CL), dark brownish gray, moist | | TW 2" | 4 | | |
| | | | 5 | TW 1" | 1 | | |
| | | | | 2-2-3 (5) 1" | | 32 | LL=45, PL=24, PI=21<br>Sand = 17%<br>Silt & Clay = 83% |
| 1136.4 | | | | | | | |
| 8.0 | | LEAN CLAY (CL), brownish gray and dark gray, moist, soft to stiff (ALLUVIUM) | | TW 1" | 1.25 | | |
| | | | 10 | | | | |
| | | | | 1-2-1 (3) 2" | | | |
| | | | 15 | | | | |
| | | | | 4-3-2 (5) 1" | | 27 | LL=35, PL=19, PI=16<br>Sand = 10%<br>Silt & Clay = 90% |
| | | | 20 | | | | |
| | | | | 3-2-3 (5) 2" | | | |
| | | | 25 | | | | |
| 1117.4 | | | | | | | |
| 27.0 | | POORLY GRADED SAND with CLAY (SP-SC), fine to coarse-grained, dark gray, moist, medium dense to dense (ALLUVIUM) | | 4-8-8 (16) 2" | | 14 | P200=11% |
| | | | 30 | | | | |

Continued on next page

BRAUN INTERTEC
the science you build on

# LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

**Project Number B2503507**
**Geotechnical Evaluation**
**IA-175 over Reynolds Creek**
**Woodbury County, Iowa**

BORING: **SB-02**
LOCATION: Station 244+44, Rt. 16
DATUM: NAD83(2011) / IaRCS zone 4
NORTHING: 8487974 EASTING: 14253040
DRILLER: MB/RM LOGGED BY: N. Techau START DATE: 06/16/25 END DATE: 06/16/25
SURFACE ELEVATION: 1144.4 ft RIG: 7513 METHOD: 3 1/4" HSA SURFACING: Topsoil WEATHER: Sunny & 70

| Elev./ Depth ft | Water Level | Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908) | Sample | Blows (N-Value) Recovery | $q_p$ tsf | MC % | Tests or Remarks |
|---|---|---|---|---|---|---|---|
| | | POORLY GRADED SAND with CLAY (SP-SC), fine to coarse-grained, dark gray, moist, medium dense to dense (ALLUVIUM) | | 4-15-21 (36) 1" | | | |
| | | | | 5-18-23 (41) 1" | | | |
| 1104.4 40.0 | | END OF BORING<br><br>Boring then backfilled with auger cuttings | | | | | |

35 40 45 50 55 60