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PROJECT REFERENCE NO.	SHEET NO.
I-4700A	72 - 122

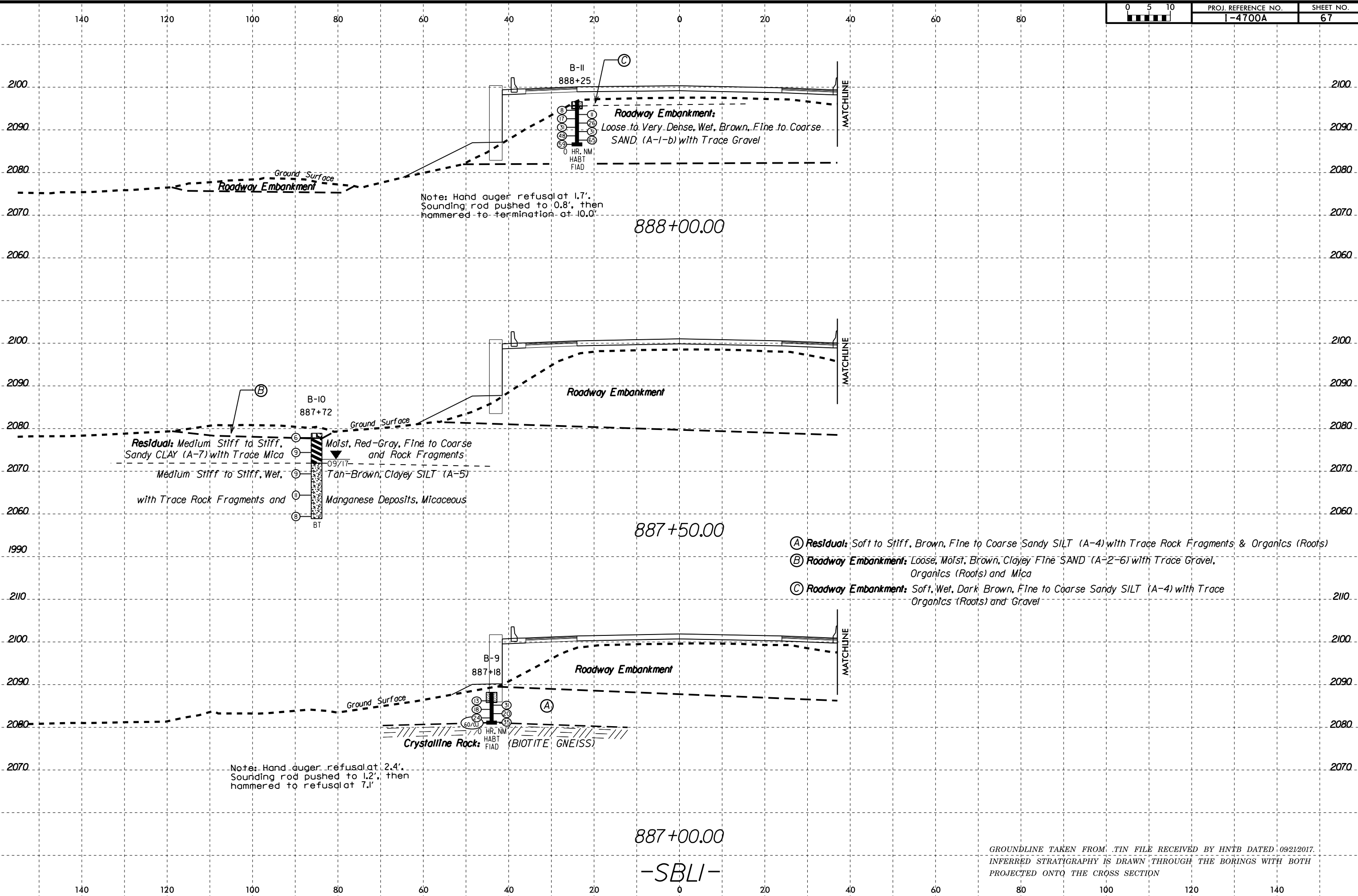
SUBMITTED BY: PATRICK ALTON

DocuSigned by:
Patrick Alton
A270EF78A6DF442...

SUBSURFACE INVENTORY

PT 2 OF 2

6/23/16

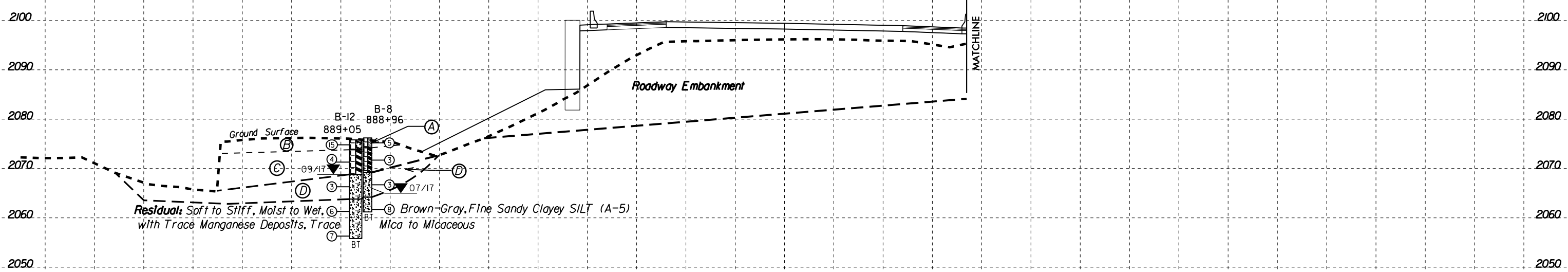
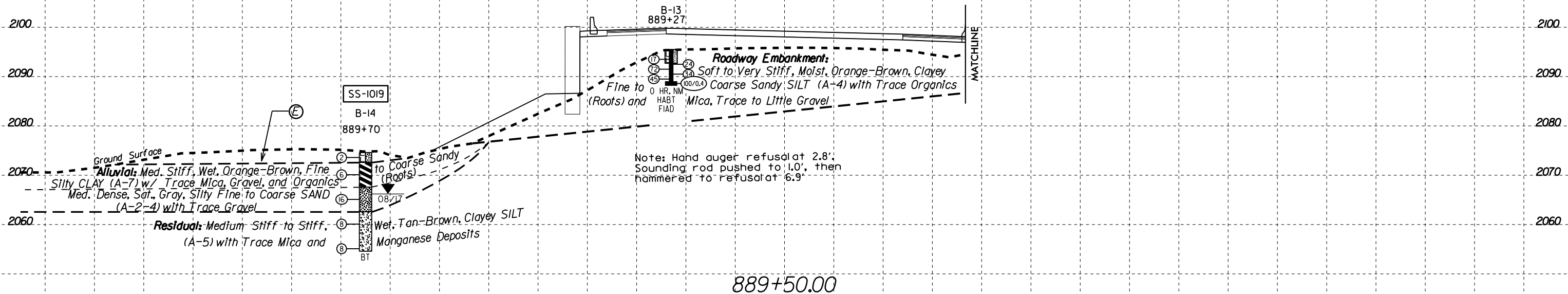


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GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

-SBLI-

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1019	85' LT	889+70	0.1-1.5	A-2-4(0)	34	NP	30.5	36.4	17.0	16.1	87.6	72.6	34.6	24.9	-

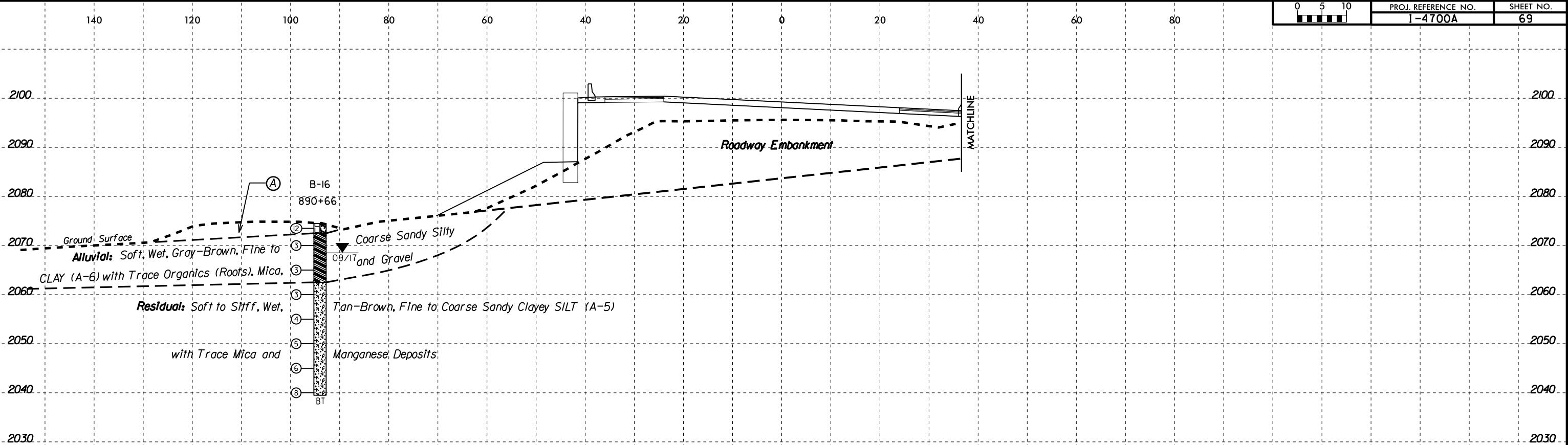
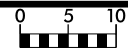


- (A) Roadway Embankment: Medium Stiff, Moist, Brown, Fine to Coarse Sandy SILT (A-4) with Trace Organics (Roots) and Gravel
- (B) Roadway Embankment: Medium Dense, Moist, Red-Brown, Clayey Fine to Coarse SAND (A-2-6) with Trace Organics (Roots) and Mica, Some Gravel
- (C) Roadway Embankment: Soft to Medium Stiff, Moist, Red-Brown & Dark Gray, Fine Sandy Silty CLAY (A-7-6) with Trace Mica, Organics (Roots) & Gravel, Highly Plastic
- (D) Alluvial: Soft, Wet, Gray, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Mica
- (E) Roadway Embankment: Very Loose, Moist, Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots), Mica and Gravel

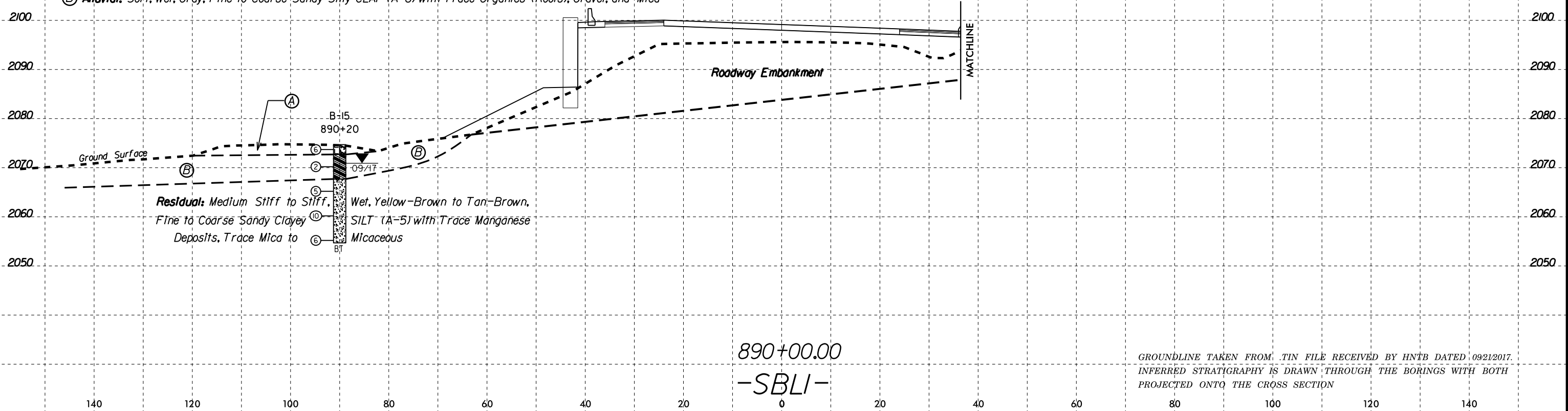
889+00.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16



- (A) Roadway Embankment:** Loose to Medium Dense, Moist to Wet, Red-Brown, Clayey Fine to Coarse SAND (A-2-6) with Trace Organics (Roots), Gravel, and Mica
- (B) Alluvial:** Soft, Wet, Gray, Fine to Coarse Sandy Silty CLAY (A-6) with Trace Organics (Roots), Gravel, and Mica

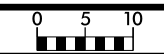


890+00.00
-SBLI-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

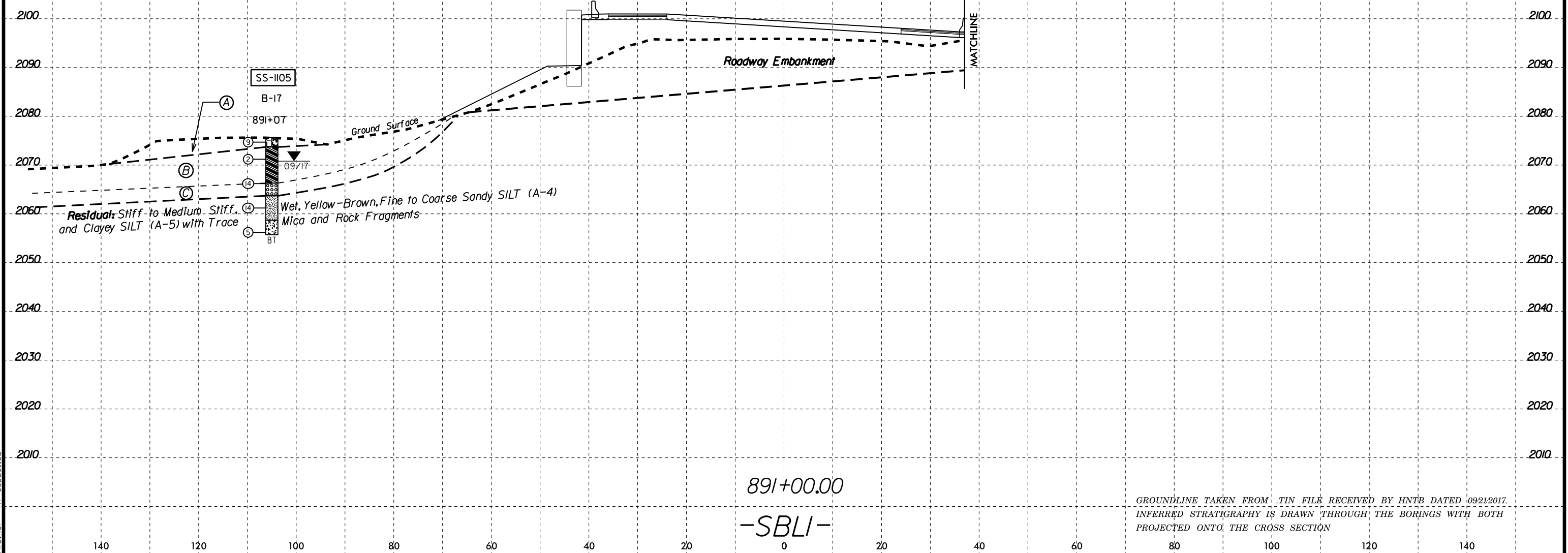
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 6/23/16



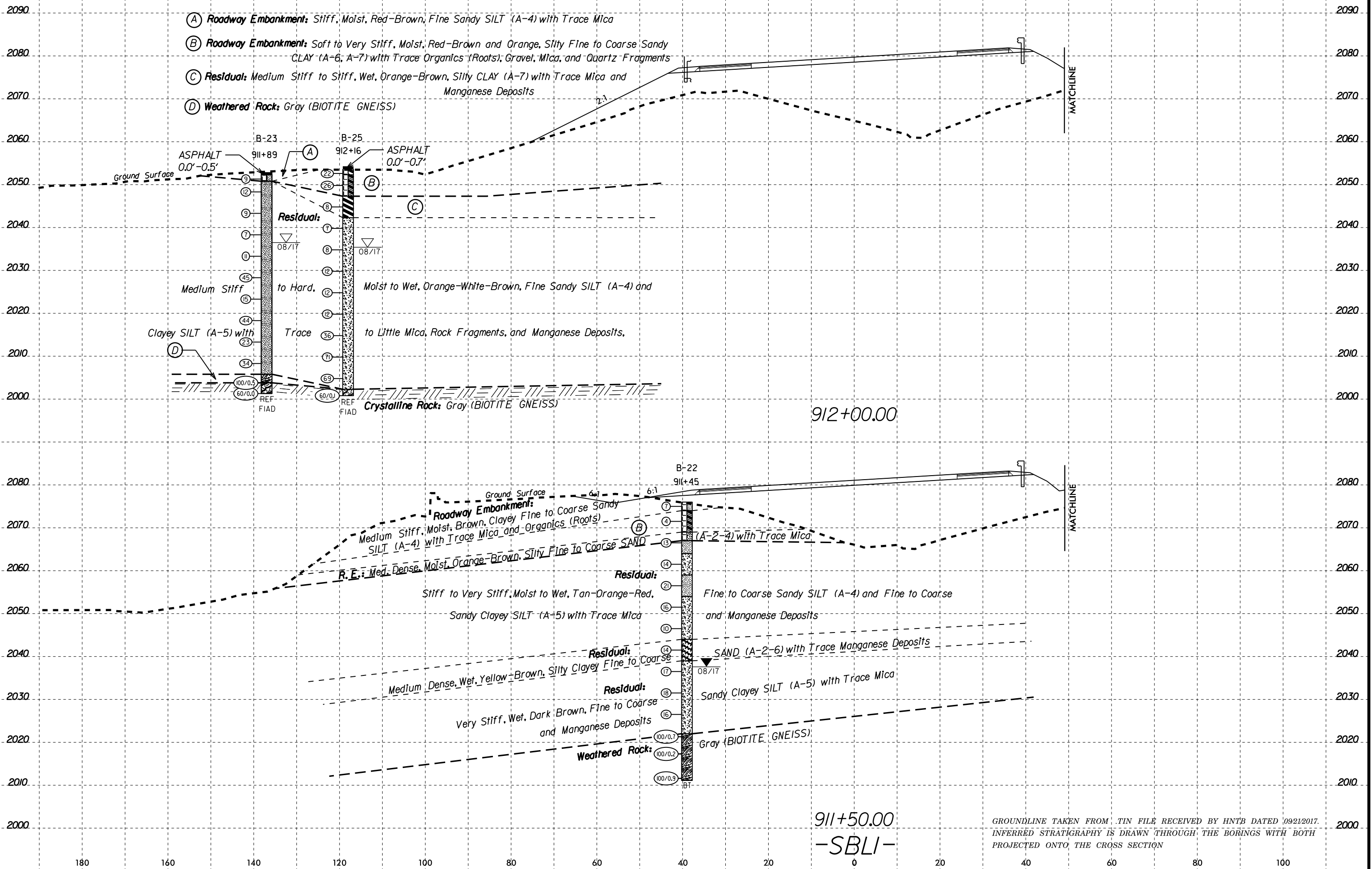
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
							SS-1105	105' LT	891+07	3.5-5.0	A-6(8)	36	14		

- Ⓐ **Roadway Embankment:** Loose, Moist, Red-Brown, Clayey Fine to Coarse SAND (A-2-6) with Trace Gravel and Organics (Roots)
- Ⓑ **Alluvial:** Soft, Wet, Gray-Brown, Fine to Coarse Sandy Silty CLAY (A-6) with Trace Gravel and Organics (Roots)
- Ⓒ **Alluvial:** Medium Dense, Wet, White-Brown, Fine to Coarse SAND (A-1-b) with Trace Gravel



GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

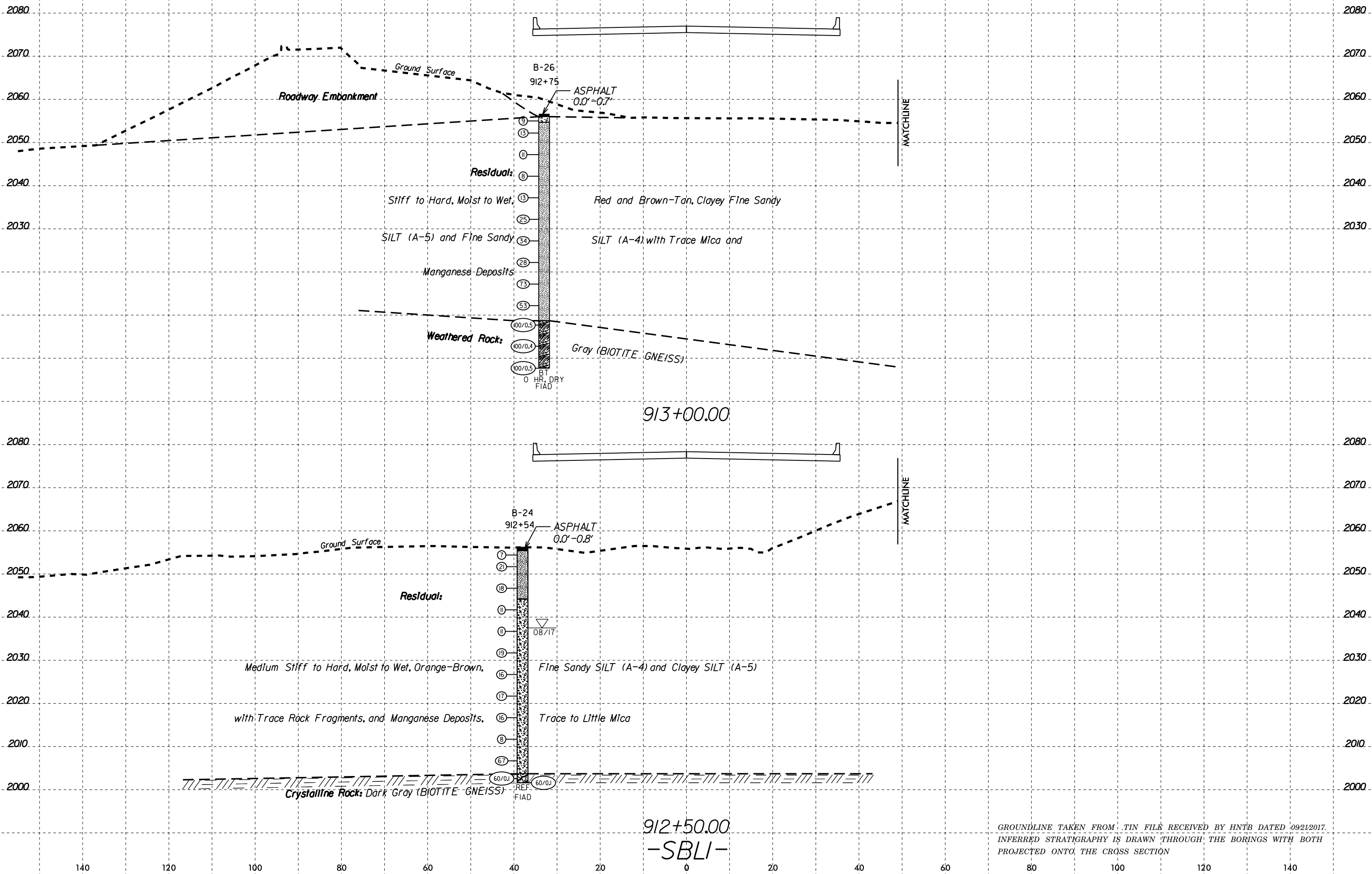
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GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

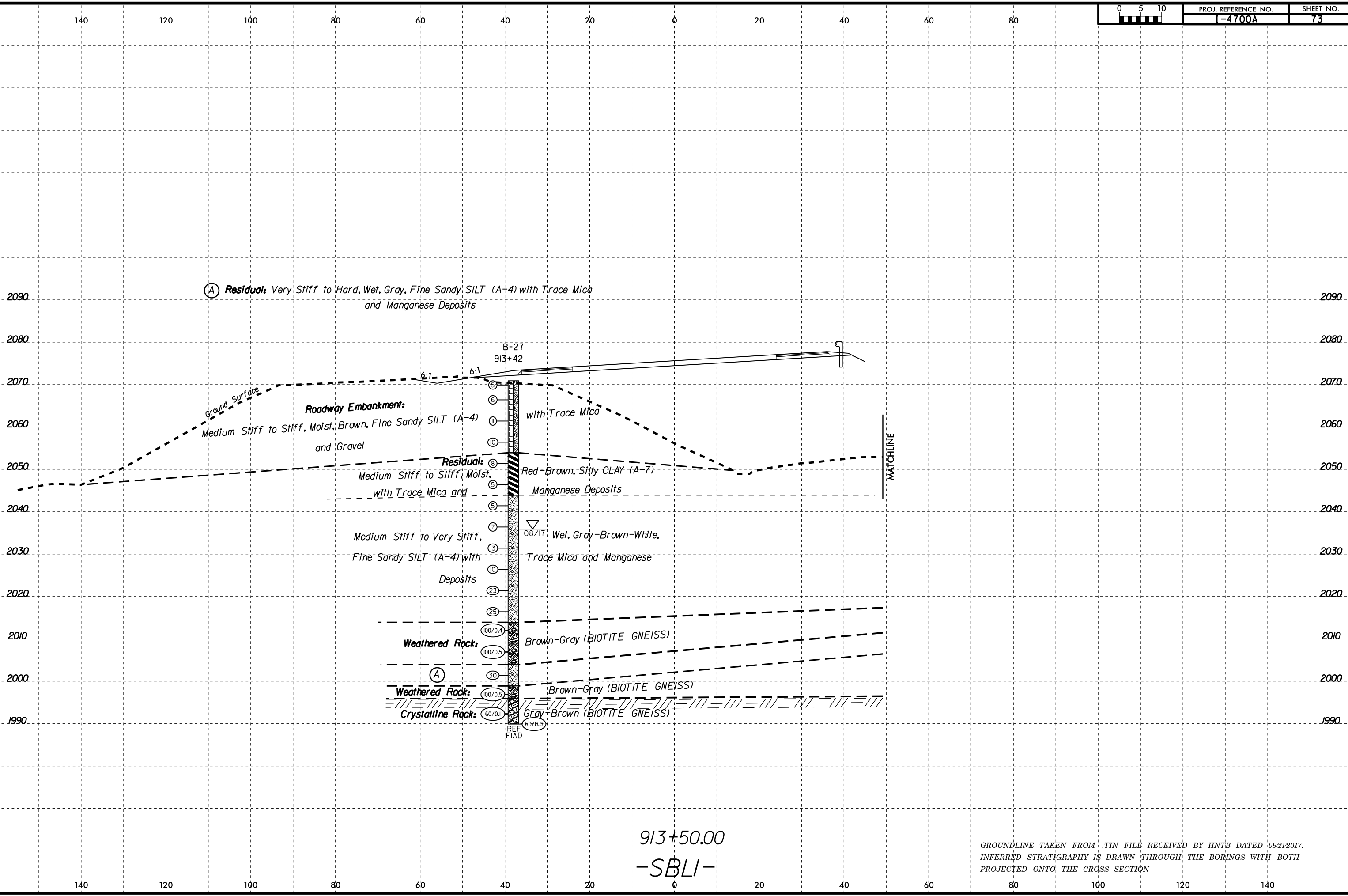
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T.Walker

912+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

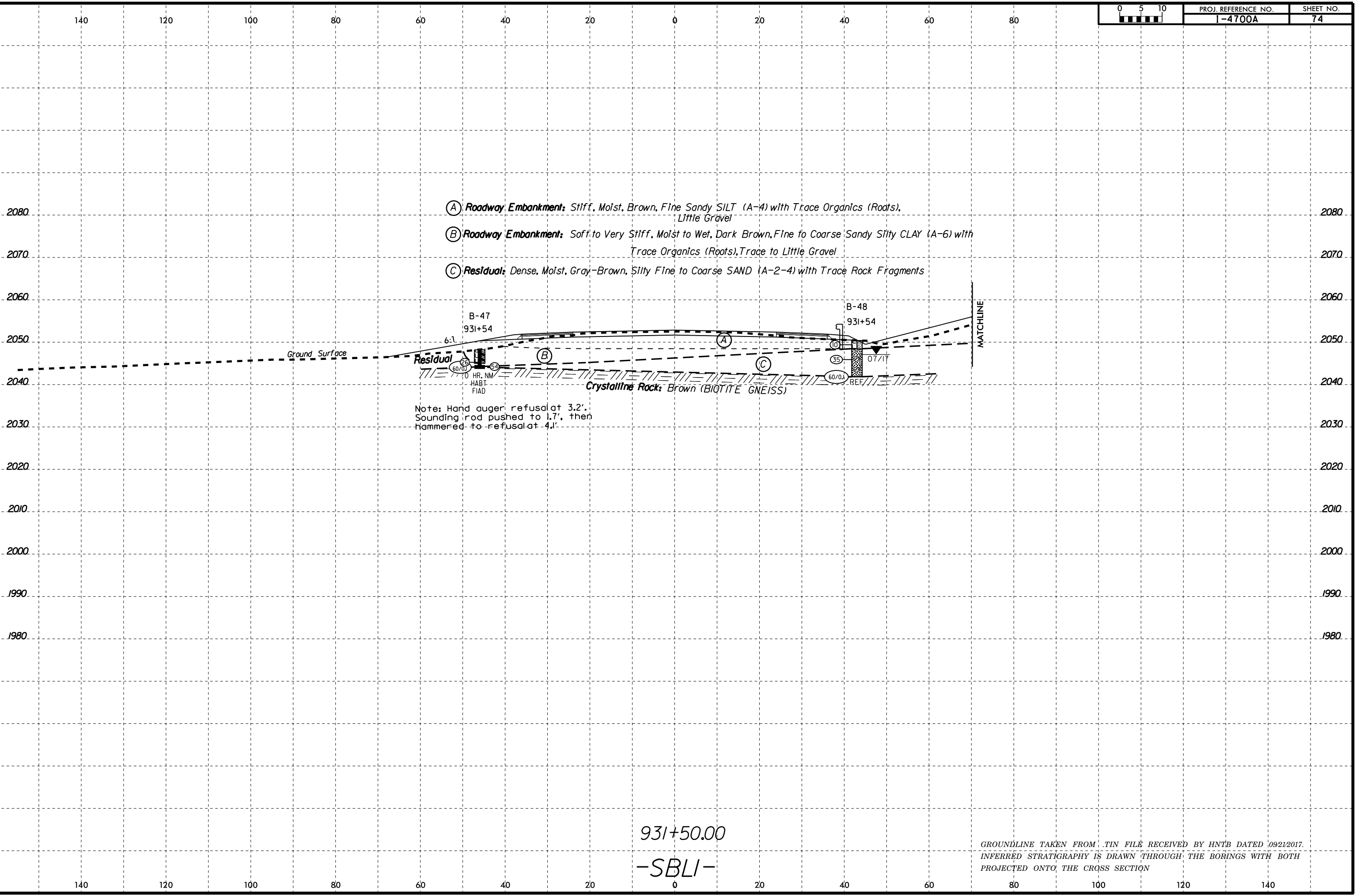


913+50.00
 -SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

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 Walker

6/23/16
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Walker



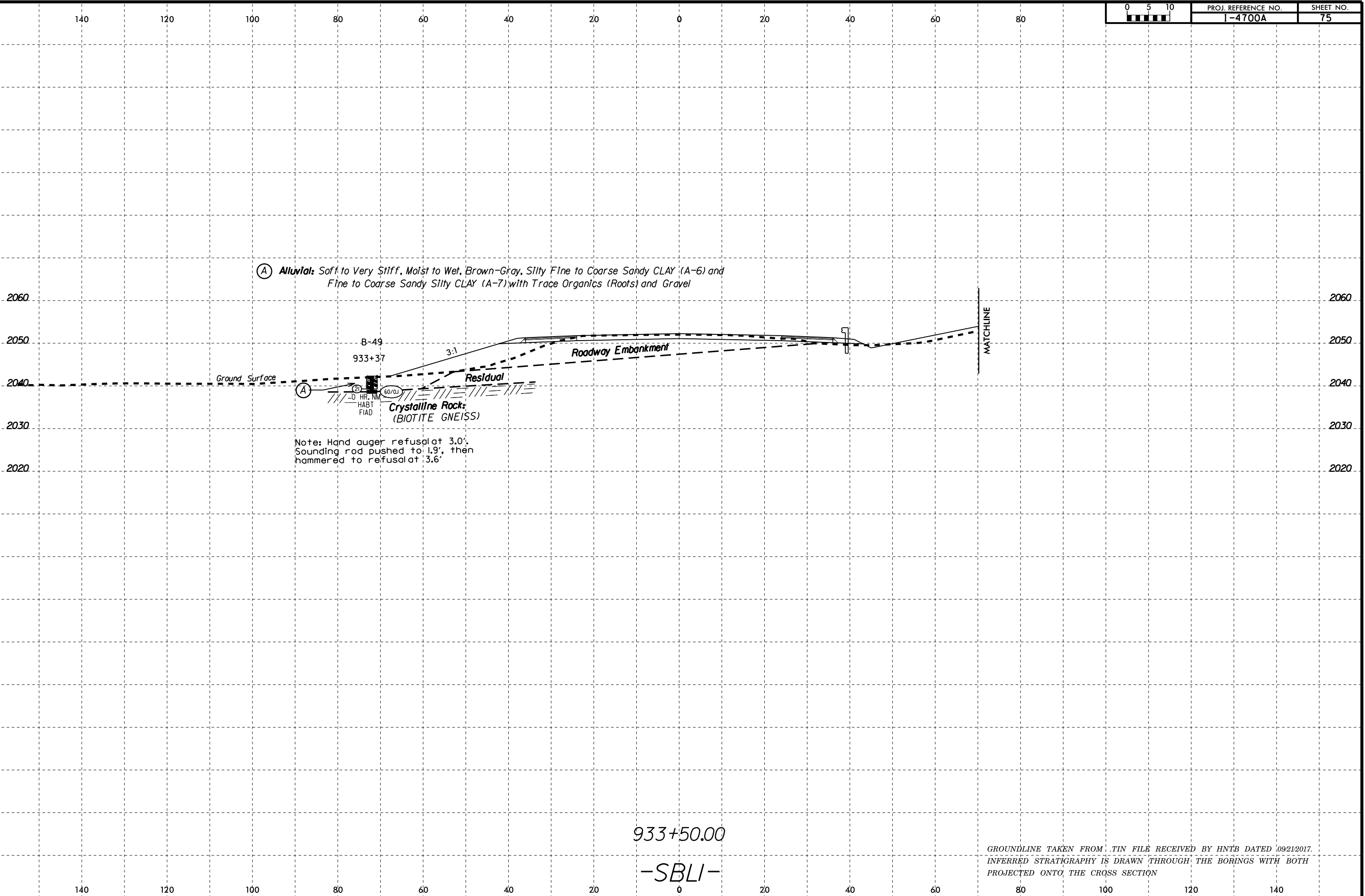
- (A) Roadway Embankment: Stiff, Moist, Brown, Fine Sandy SILT (A-4) with Trace Organics (Roots), Little Gravel
- (B) Roadway Embankment: Soft to Very Stiff, Moist to Wet, Dark Brown, Fine to Coarse Sandy Silty CLAY (A-6) with Trace Organics (Roots), Trace to Little Gravel
- (C) Residual: Dense, Moist, Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Rock Fragments

Note: Hand auger refusal at 3.2'.
Sounding rod pushed to 1.7', then
hammered to refusal at 4.1'

931+50.00
-SBLL-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16



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Walker-A 66026102

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

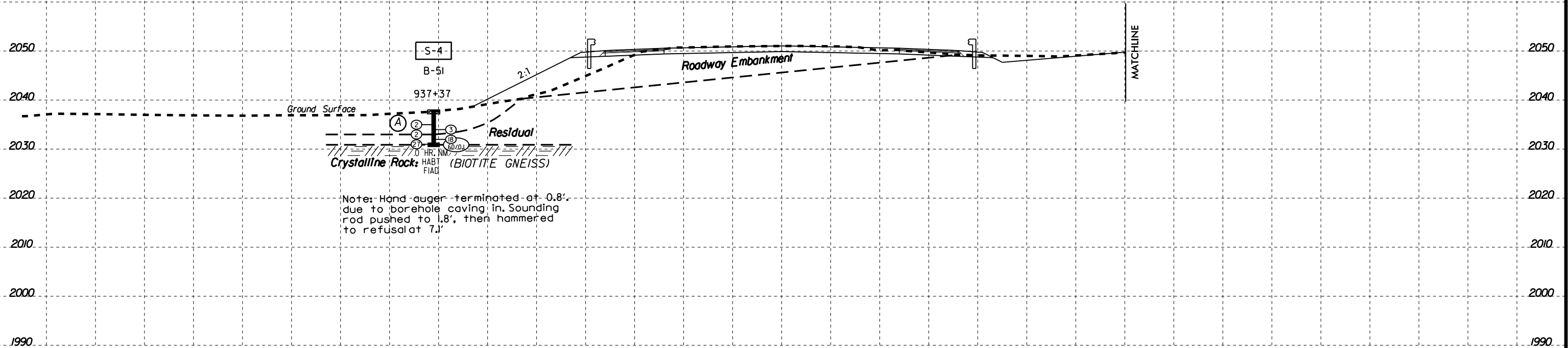
6/23/16



140 120 100 80 60 40 20 0 20 40 60 80

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-4	7' LT	937+37	0.0-0.8	-	-	-	-	-	-	-	-	-	-	440.9	63.9

(A) **Alluvial:** Soft to Very Stiff, Saturated, Black, MUCK



Note: Hand auger terminated at 0.8' due to borehole caving in. Sounding rod pushed to 1.8', then hammered to refusal at 7.1'

937+50.00

-SBLI-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

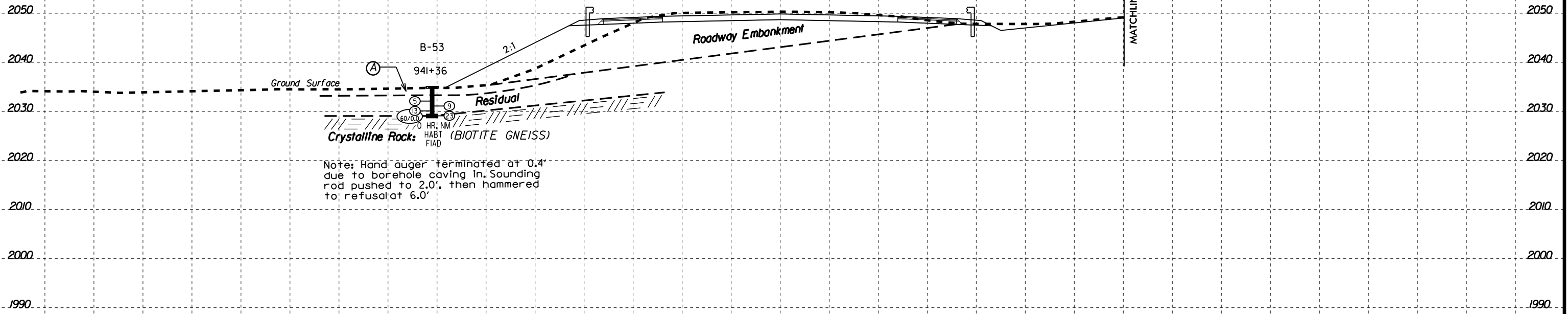
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6/23/16



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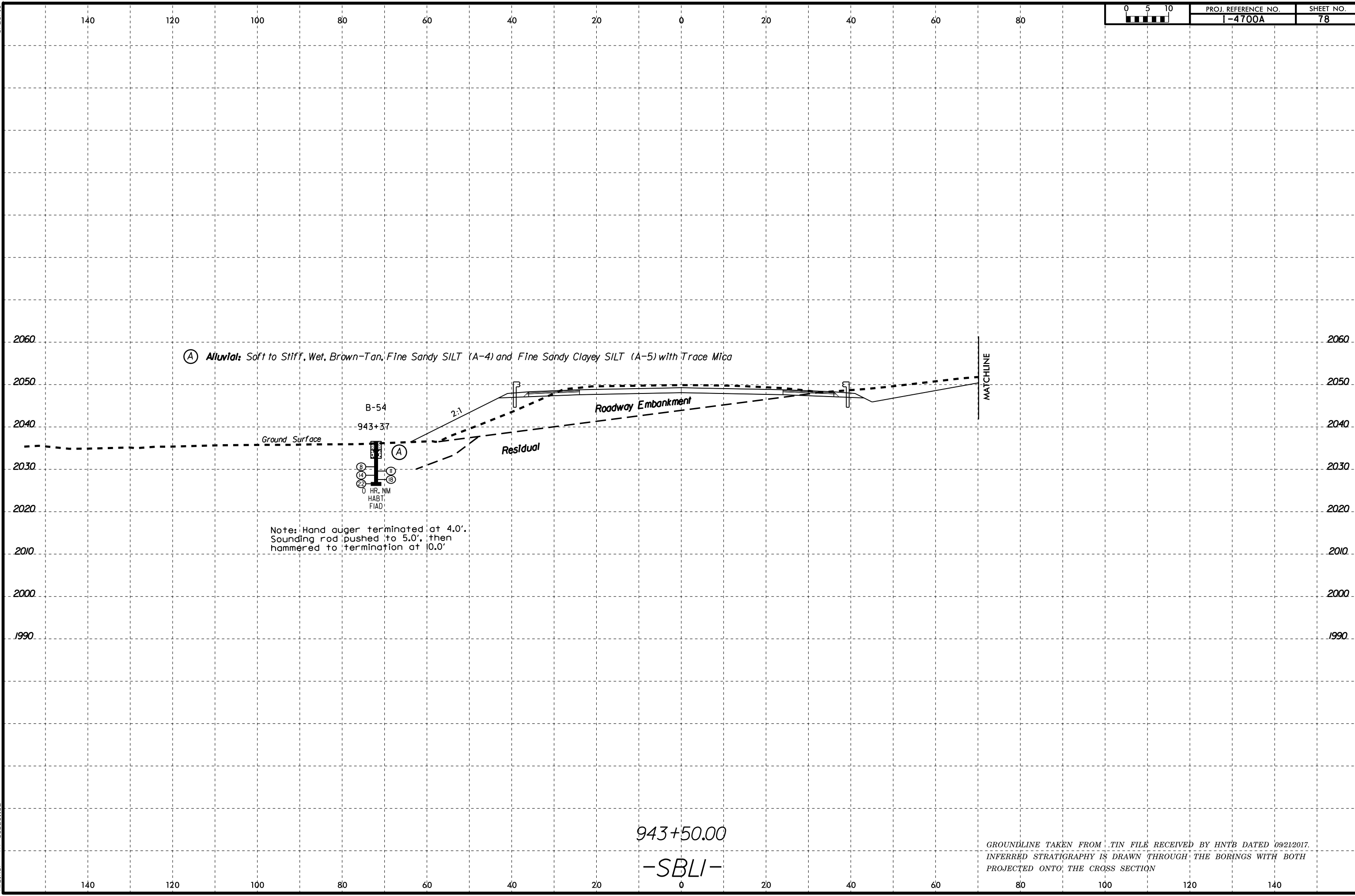
94I+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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Walker-A 66026102

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Walker-A 66026102



(A) Alluvial: Soft to Stiff, Wet, Brown-Tan, Fine Sandy SILT (A-4) and Fine Sandy Clayey SILT (A-5) with Trace Mica

B-54
943+37
[Boring diagram showing depths: 8, 14, 22, 0 HR, NM, HABT, FIAD]

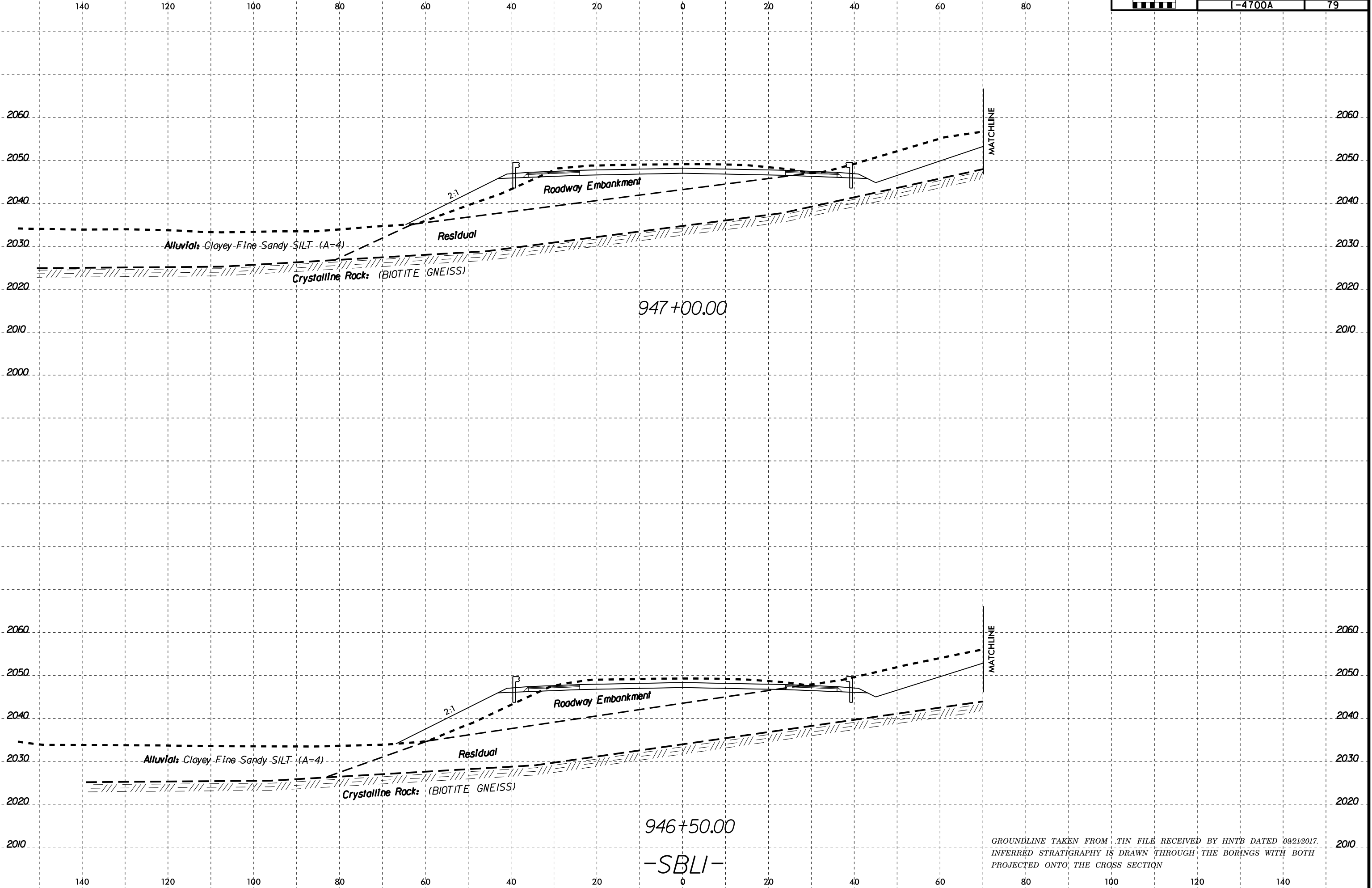
Note: Hand auger terminated at 4.0'.
Sounding rod pushed to 5.0', then
hammered to termination at 10.0'

943+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	1-4700A	79



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Walker_A 66026102

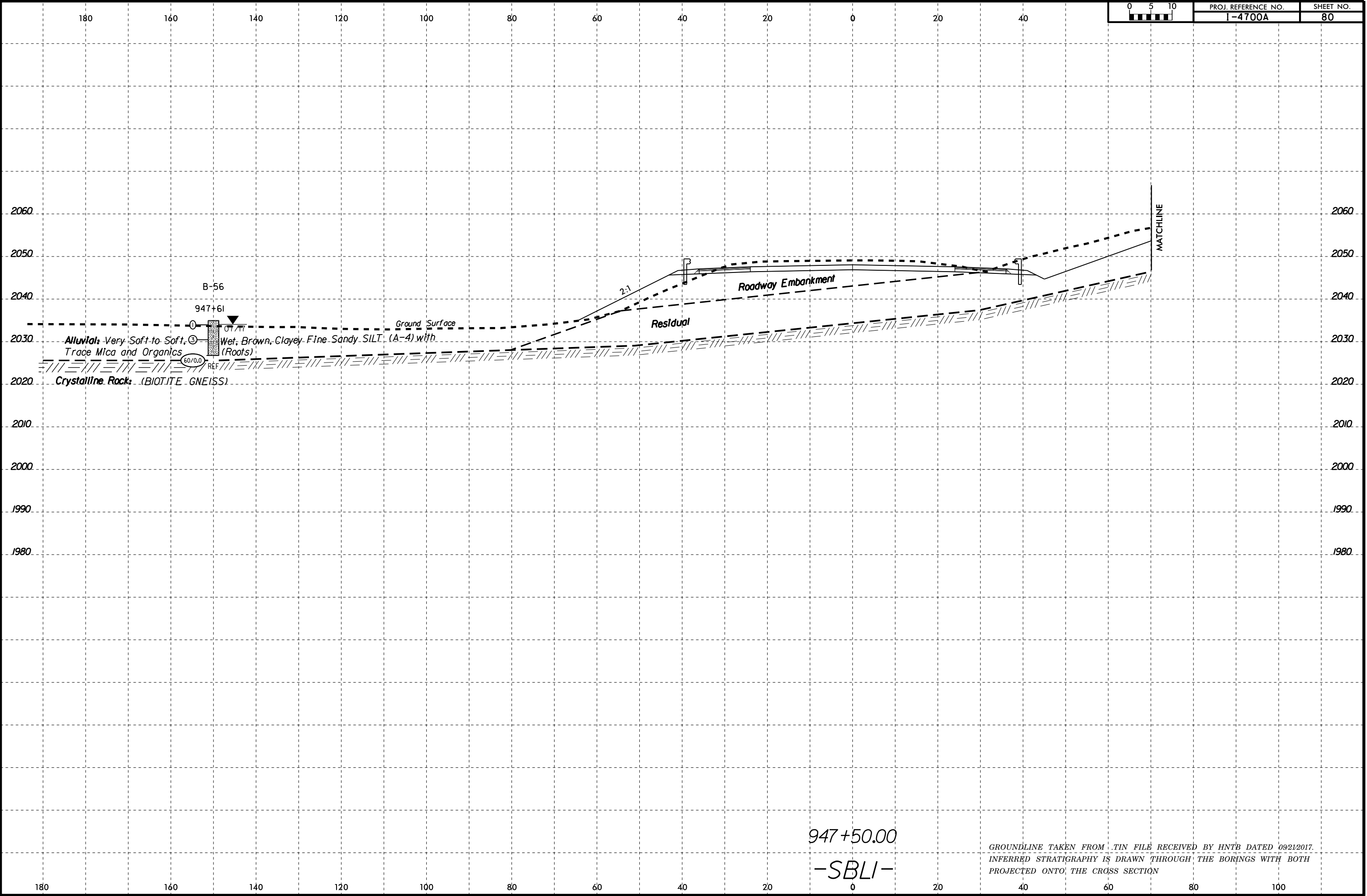
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	80



B-56

947+61

Ground Surface

2:1

Roadway Embankment

Residual

MATCHLINE

Alluvial: Very Soft to Soft, Trace Mica and Organics

Wet, Brown, Clayey Fine Sandy SILT (A-4) with (Roots)

Crystalline Rock: (BIOTITE GNEISS)

947+50.00

-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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180 160 140 120 100 80 60 40 20 0 20 40 60 80 100

2060
2050
2040
2030
2020
2010
2000
1990
1980

180 160 140 120 100 80 60 40 20 0 20 40

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-466	150' LT	951+65	0.1-1.5	A-4(4)	36	6	1.7	43.6	27.3	27.4	100.0	99.6	66.5	43.4	-

2070

2070

2060

2060

2050

2050

2040

2040

2030

2030

2020

2020

2010

2010

2000

2000

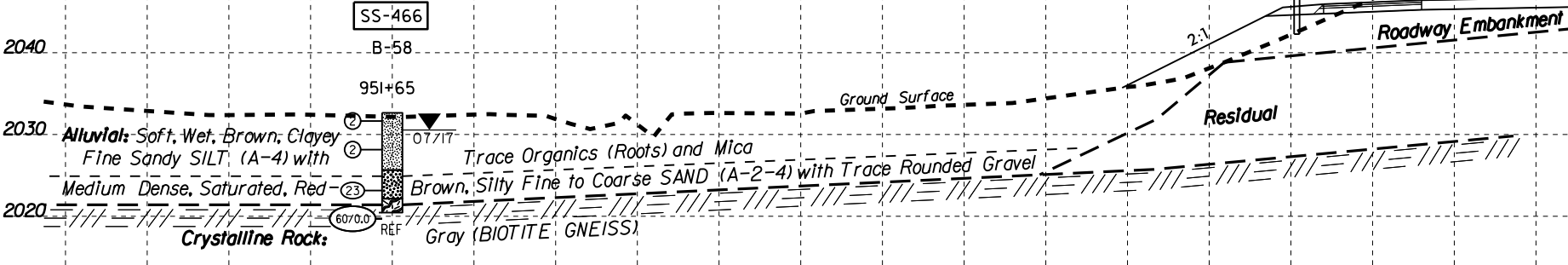
1990

1990

1980

1980

MATCHLINE



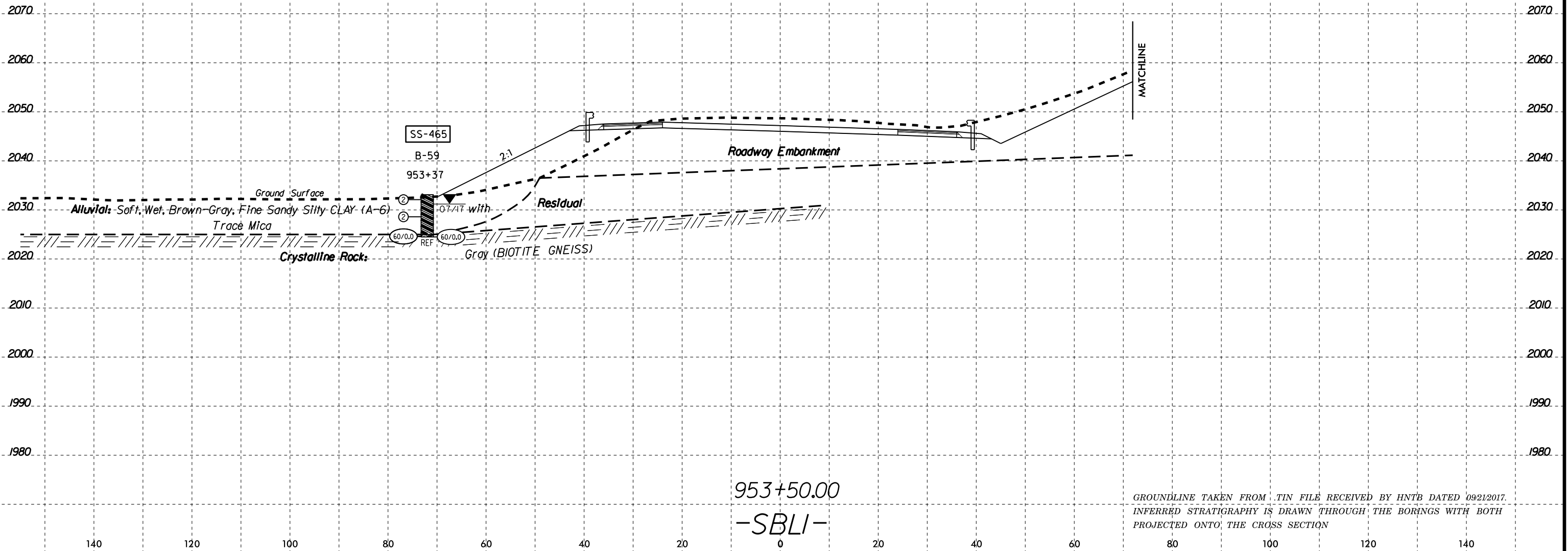
951+50.00
 -SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

180 160 140 120 100 80 60 40 20 0 20 40 60 80 100

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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-465	72' LT	953+37	0.1- 1.5	A-6(7)	34	12	16.5	18.2	30.5	34.8	100.0	91.4	68.9	29.8	-



953+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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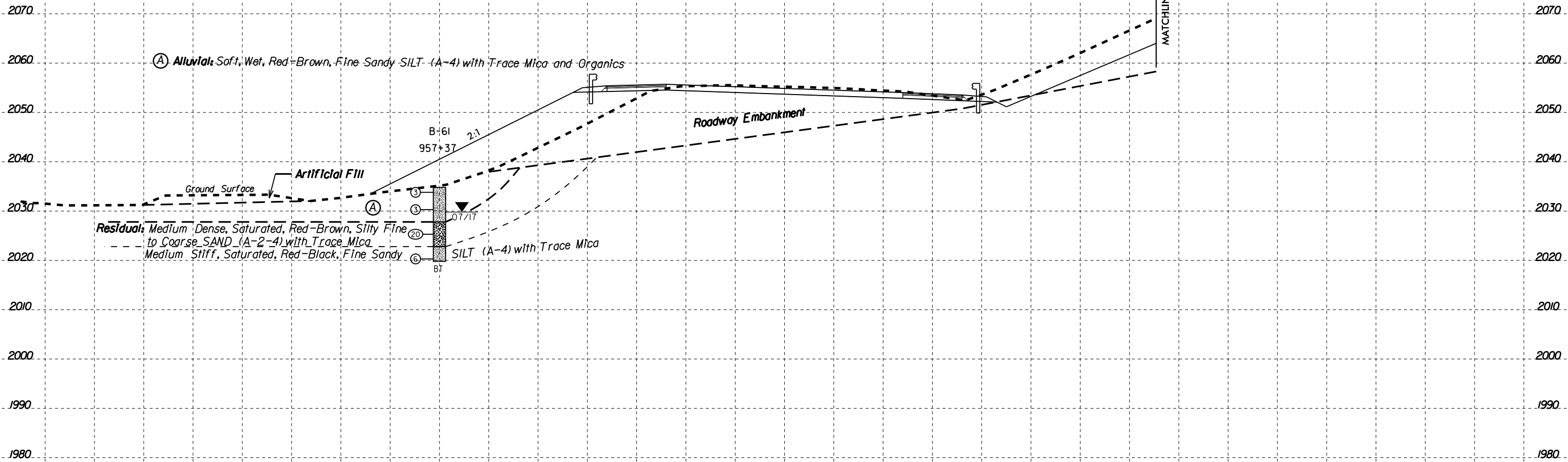
6/23/16



PROJ. REFERENCE NO. 1-4700A

SHEET NO. 84

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957+50.00

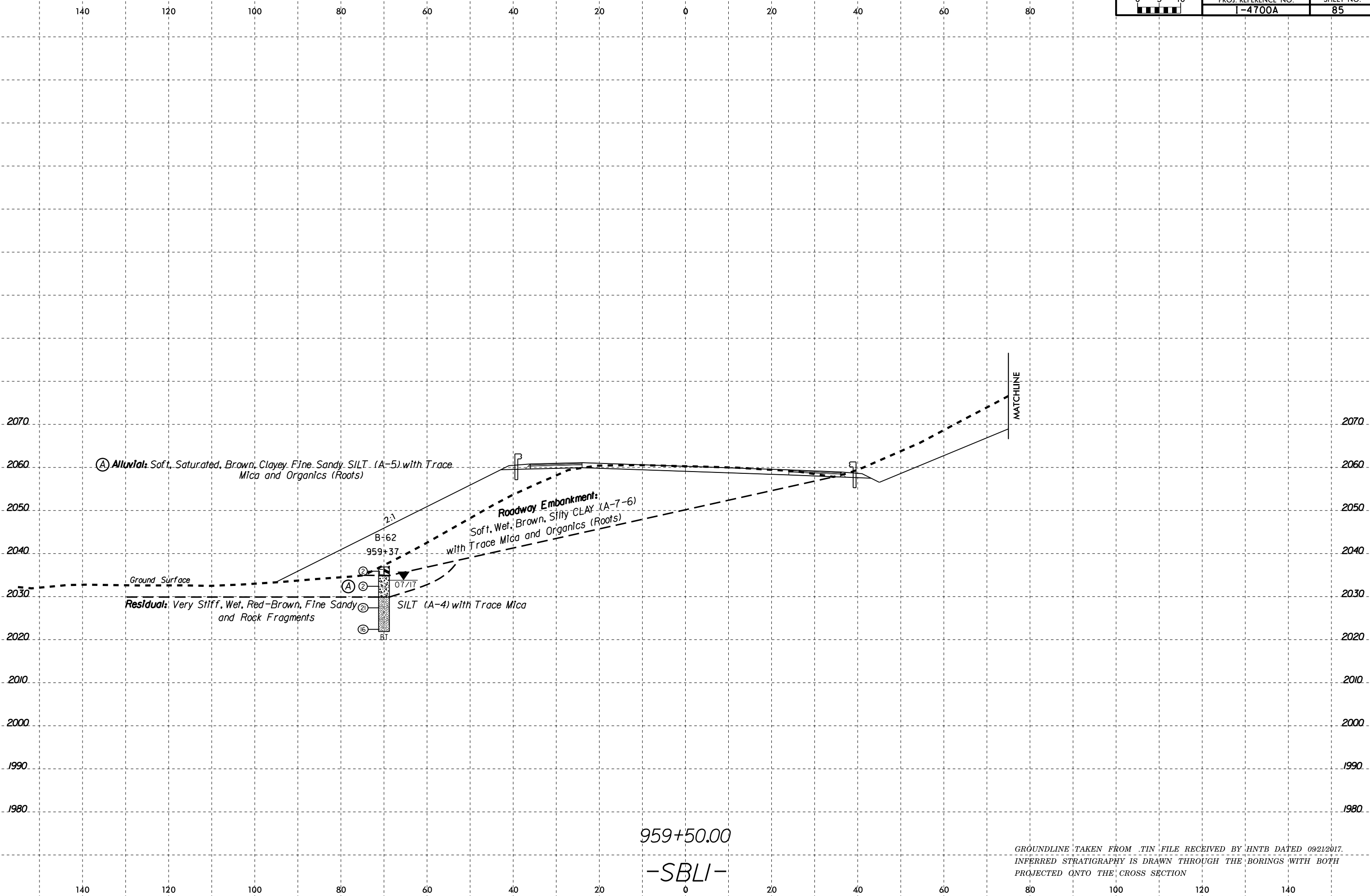
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GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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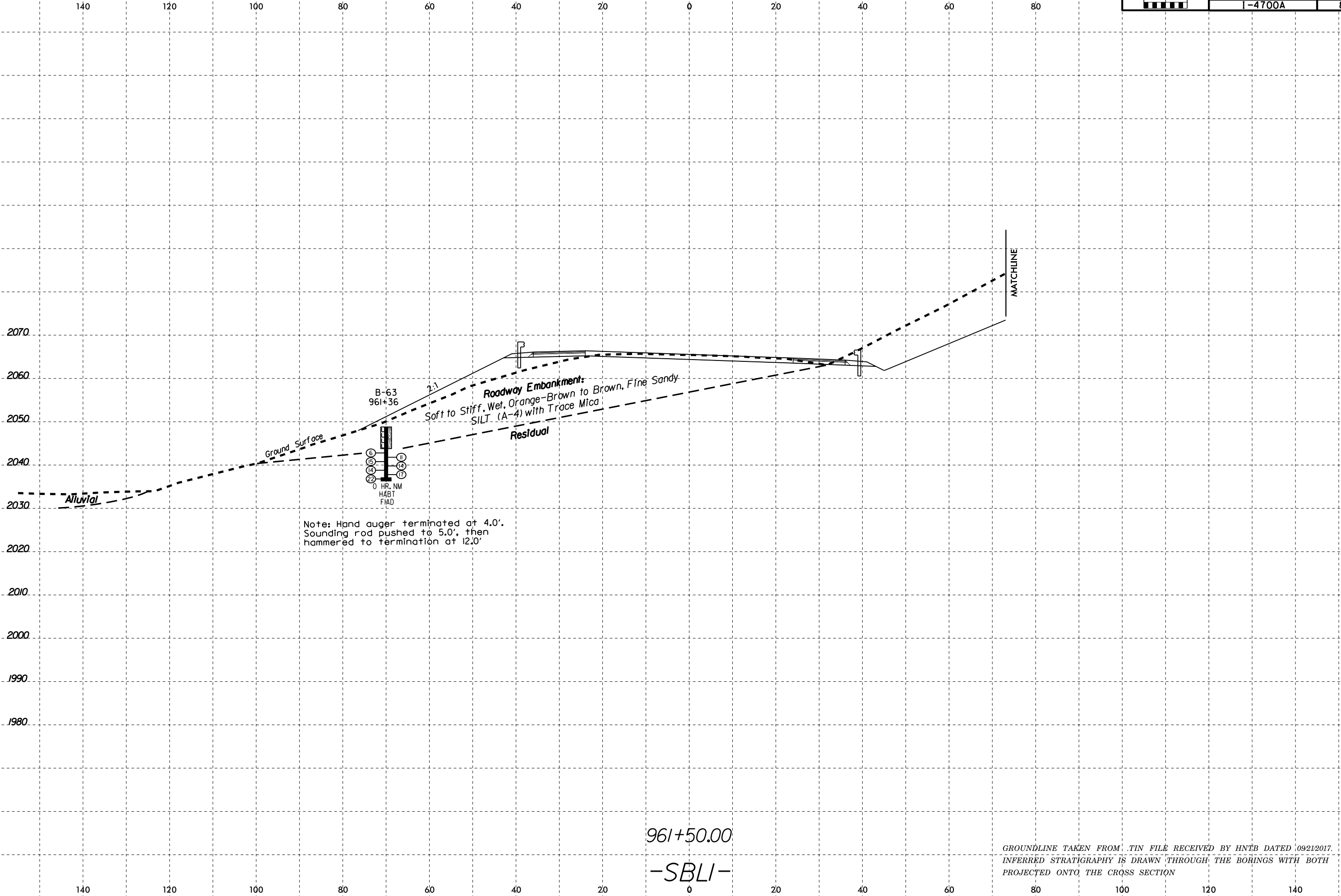
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959+50.00
-SBLI-

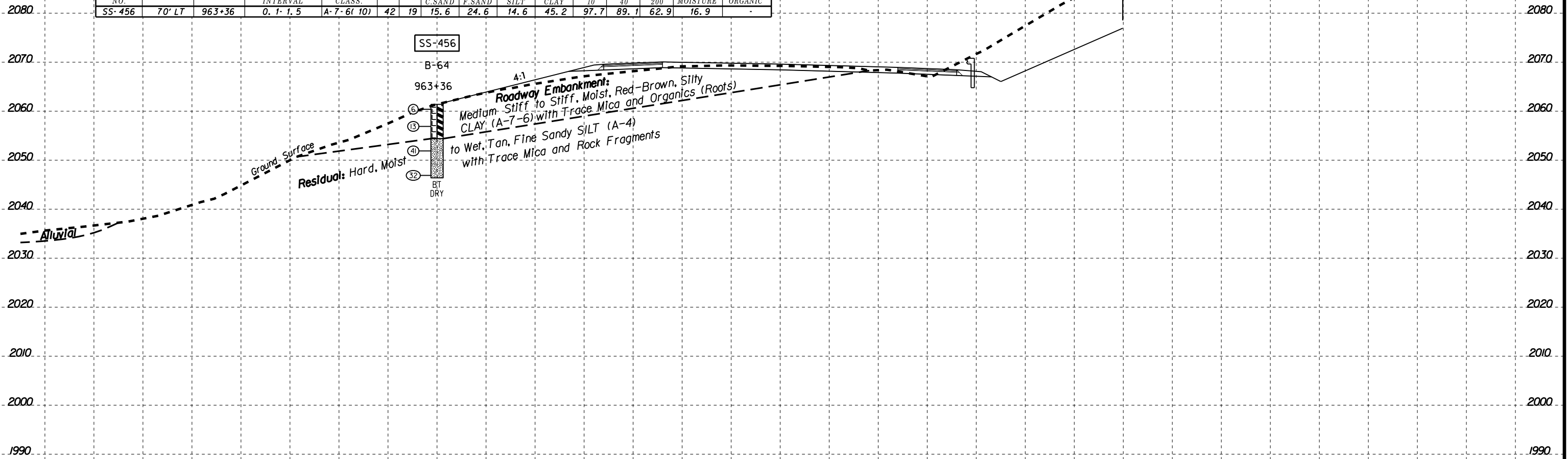
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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION



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GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

140 120 100 80 60 40 20 0 20 40 60 80



SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-456	70' LT	963+36	0.1-1.5	A-7-6(10)	42	19	15.6	24.6	14.6	45.2	97.7	89.1	62.9	16.9	-

SS-456

B-64

963+36

6

13

41

32

BT DRY

Roadway Embankment:
 4:1
 Medium-Stiff to Stiff, Moist, Red-Brown, Silty CLAY (A-7-6) with Trace Mica and Organics (Roots)
 to Wet, Tan, Fine Sandy SILT (A-4) with Trace Mica and Rock Fragments

Residual: Hard, Moist

Ground Surface

Alluvial

MATCHLINE

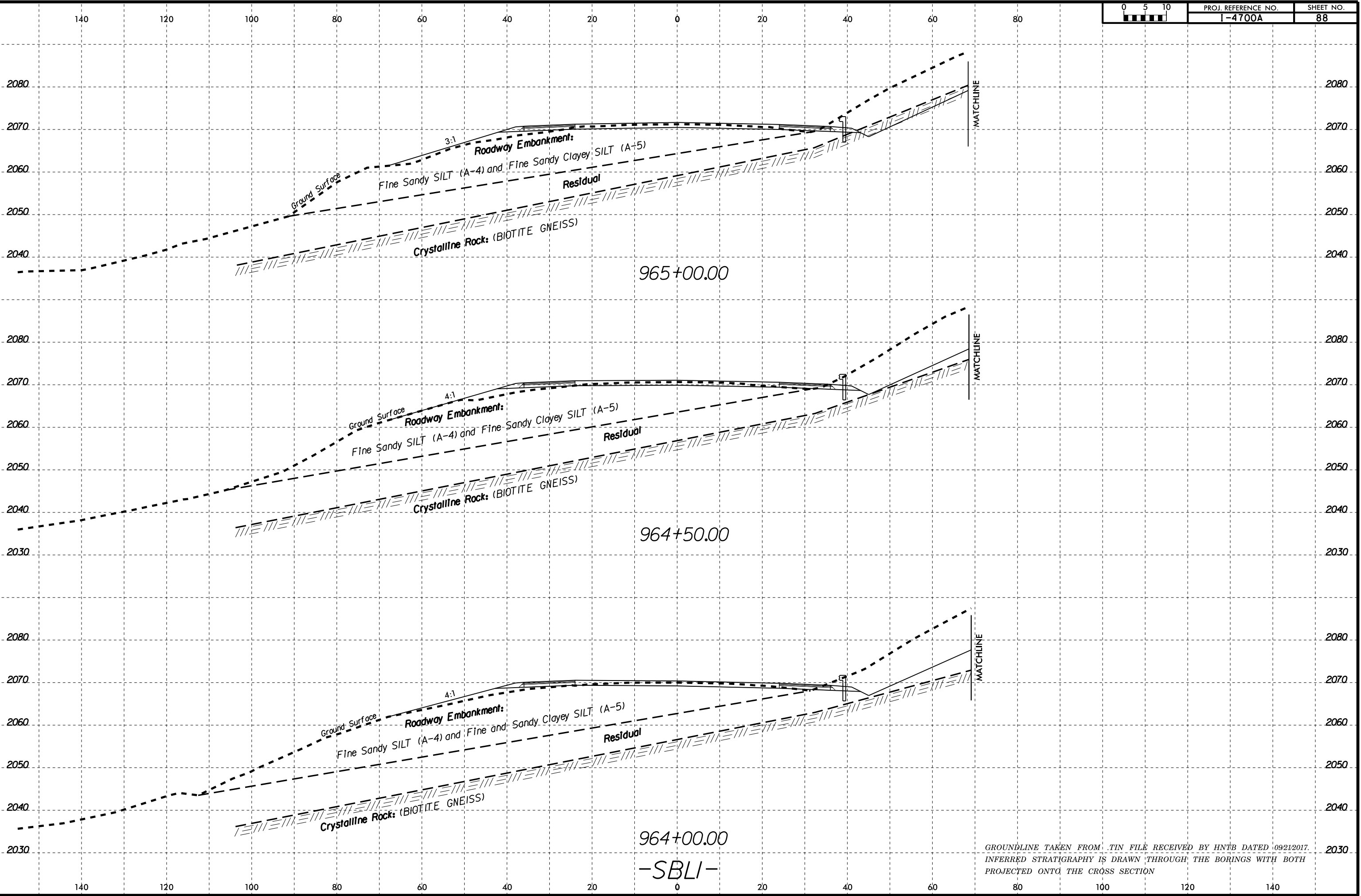
963+50.00

-SBLI-

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 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

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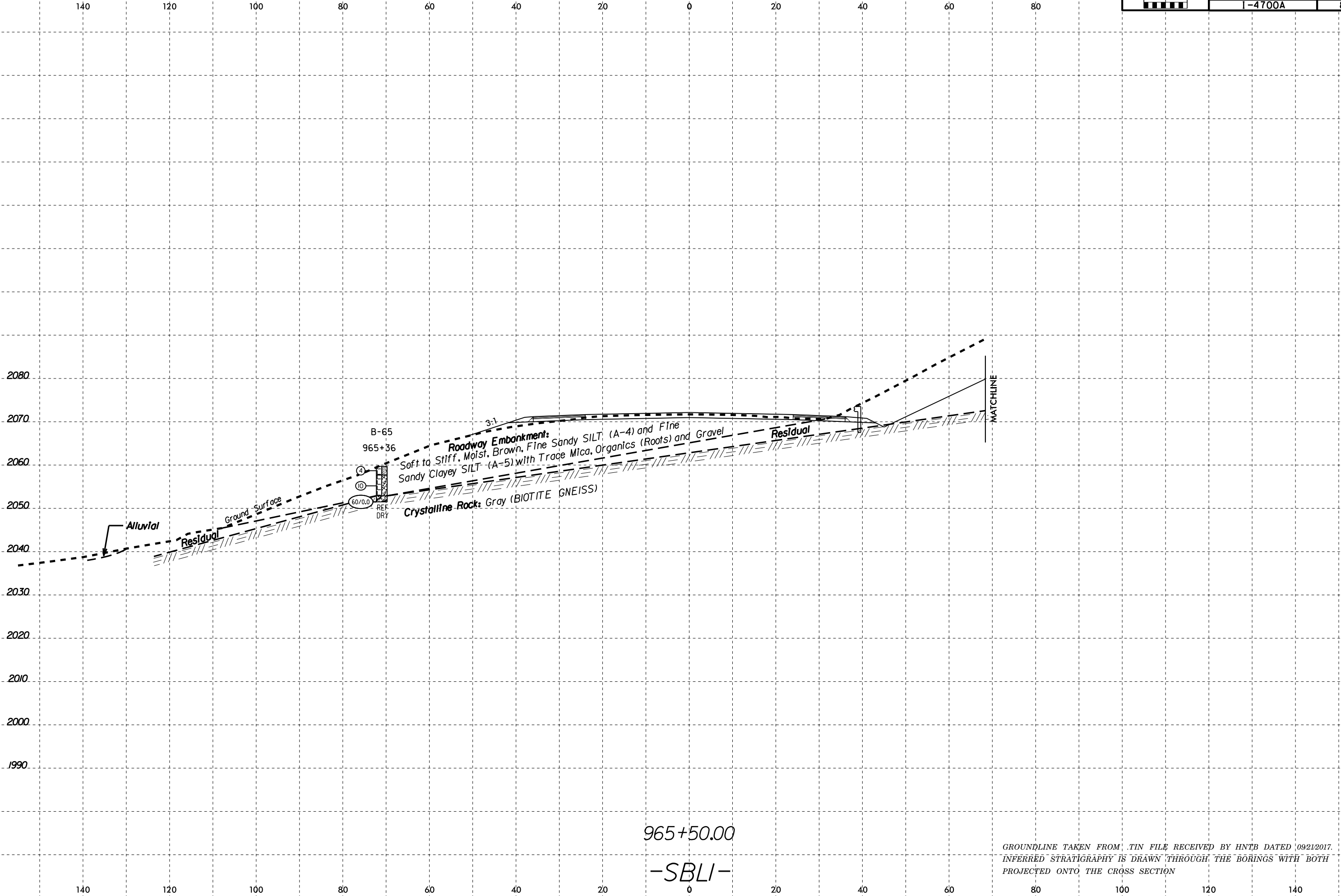
6/23/16



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964+00.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

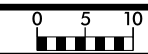


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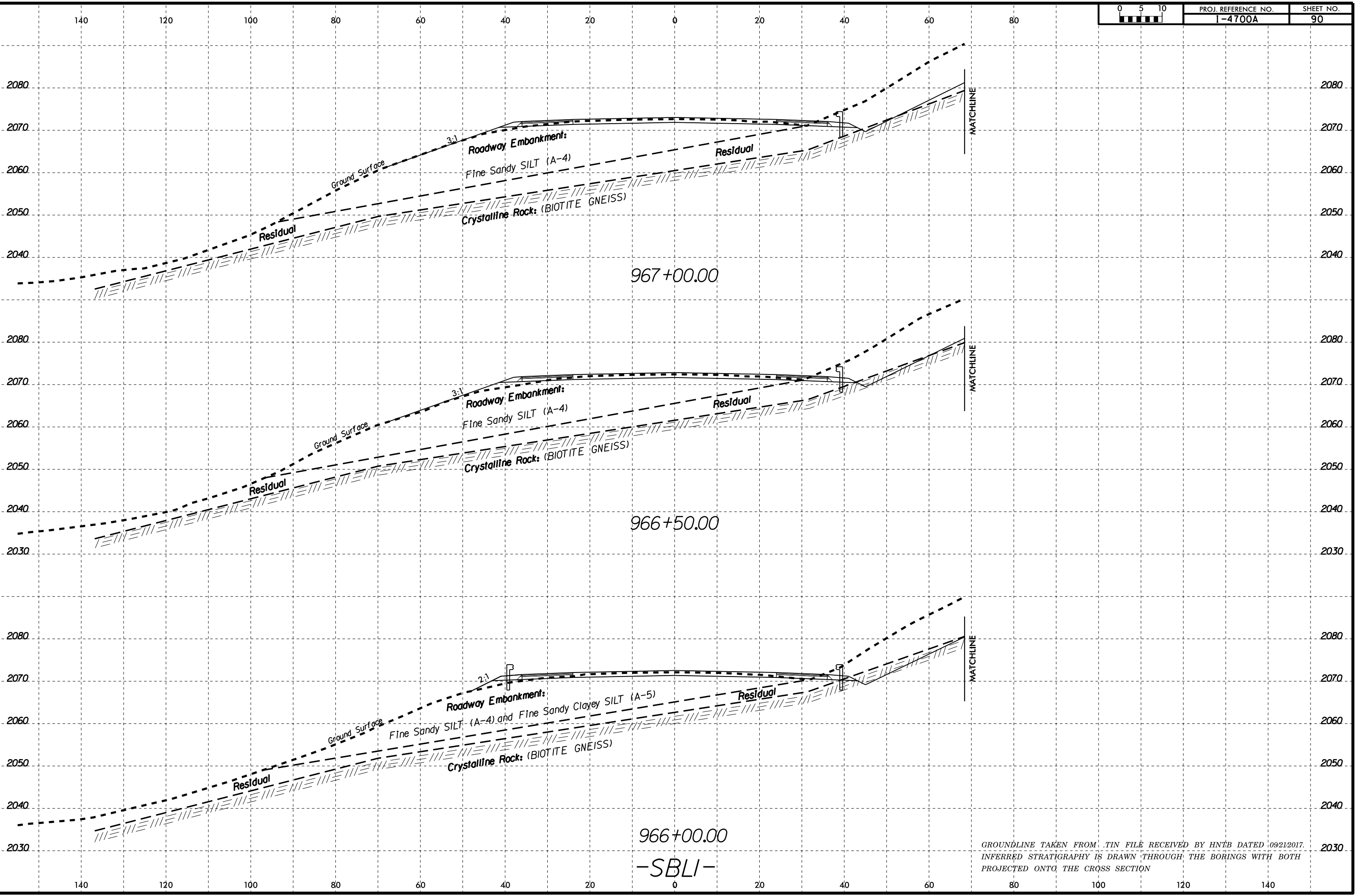
965+50.00
-SBLI-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16
 05-SEP-2018 10:59
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 Walker A 66026102



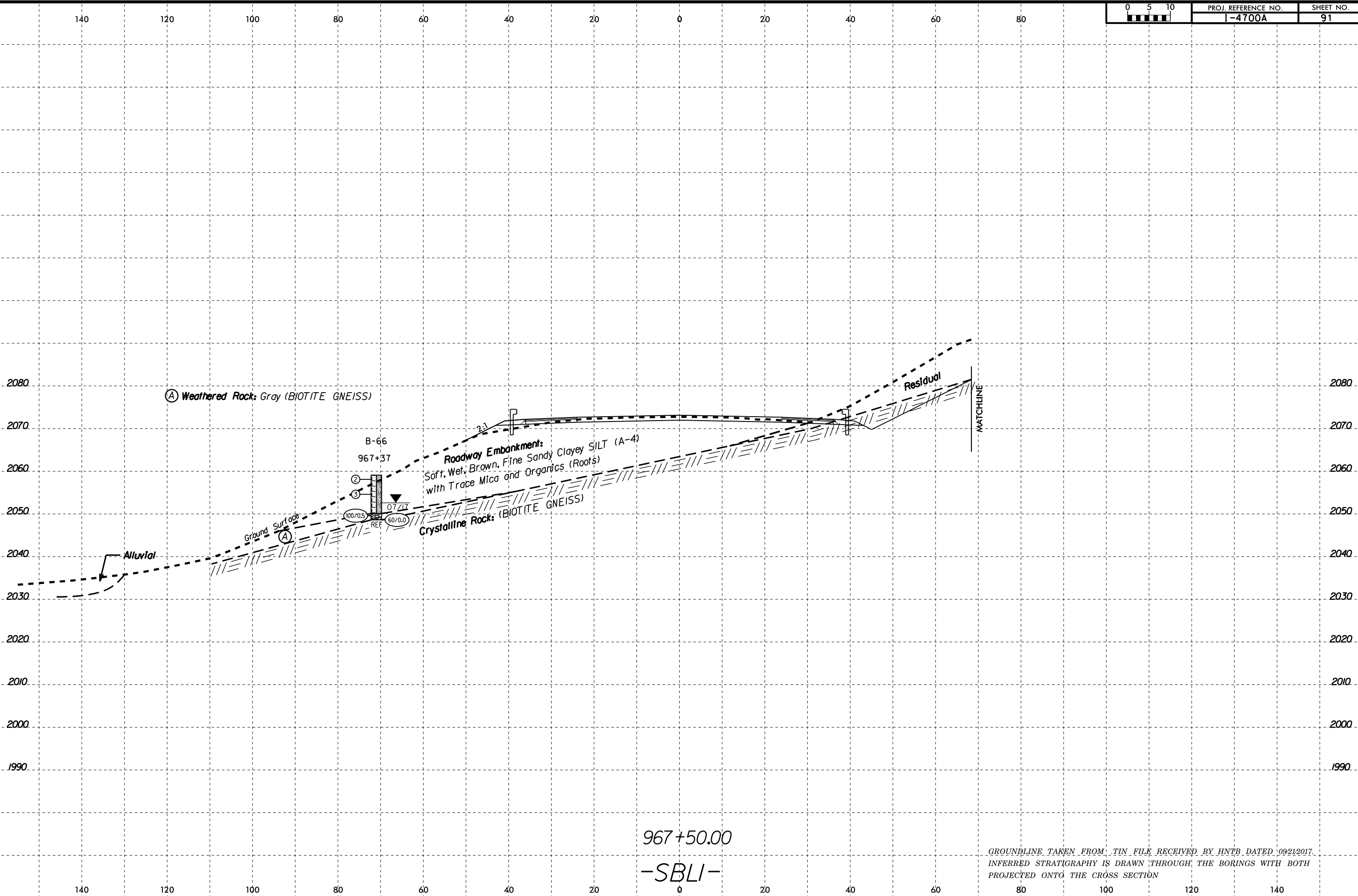
PROJ. REFERENCE NO. 1-4700A	SHEET NO. 90
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967+00.00
 966+50.00
 966+00.00
 -SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

6/23/16



(A) Weathered Rock: Gray (BIOTITE GNEISS)

B-66
967+37

Roadway Embankment:
Soft, Wet, Brown, Fine Sandy Clayey SILT (A-4)
with Trace Mica and Organics (Roots)

Crystalline Rock: (BIOTITE GNEISS)

Residual

MATCHLINE

Ground Surface

Alluvial

967+50.00

-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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6/23/16

140

120

100

80

60

40

20

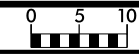
0

20

40

60

80



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	92

2090

2090

2080

2080

2070

2070

2060

2060

2050

2050

2040

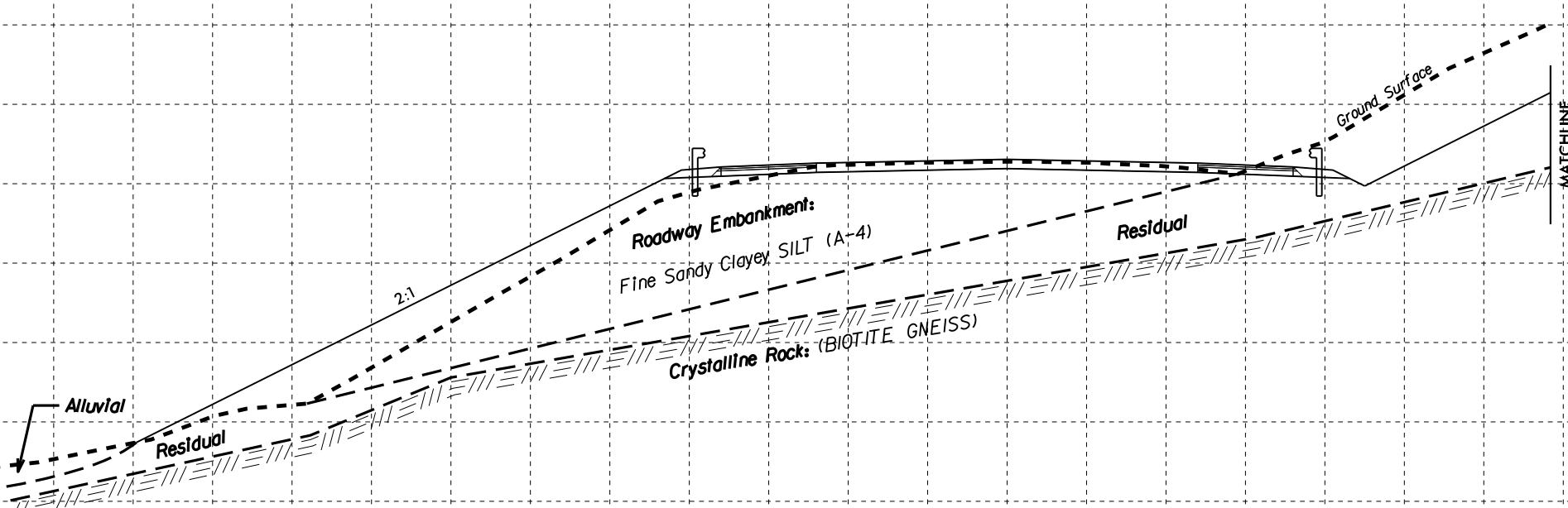
2040

2030

2030

2020

2020



968+50.00

2100

2100

2090

2090

2080

2080

2070

2070

2060

2060

2050

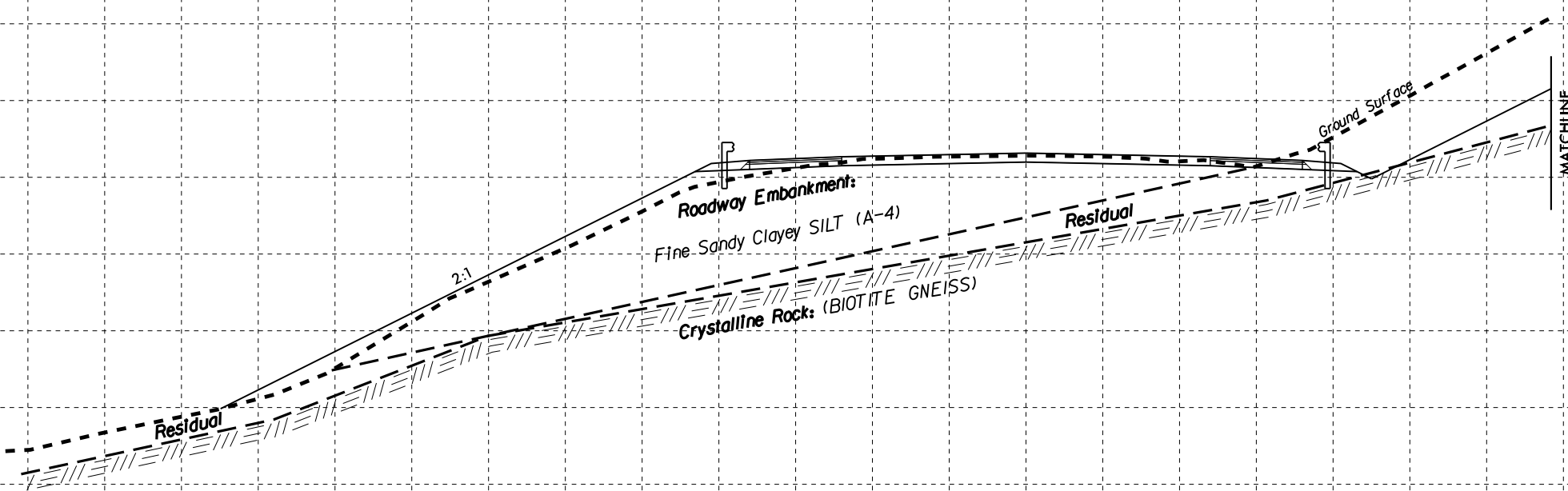
2050

2040

2040

2030

2030



968+00.00

-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

2020

140

120

100

80

60

40

20

0

20

40

60

80

100

120

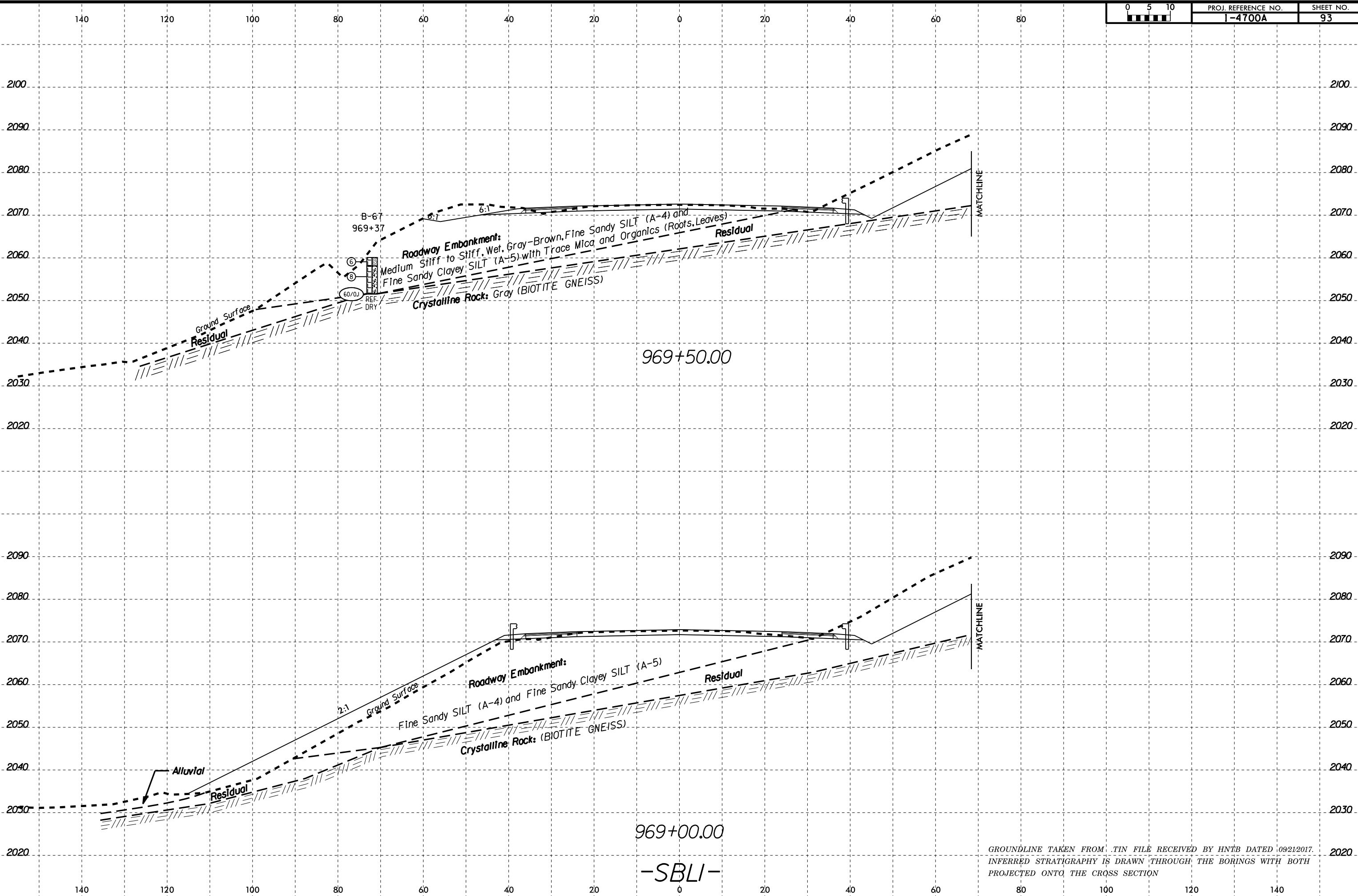
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
1-4700A	93



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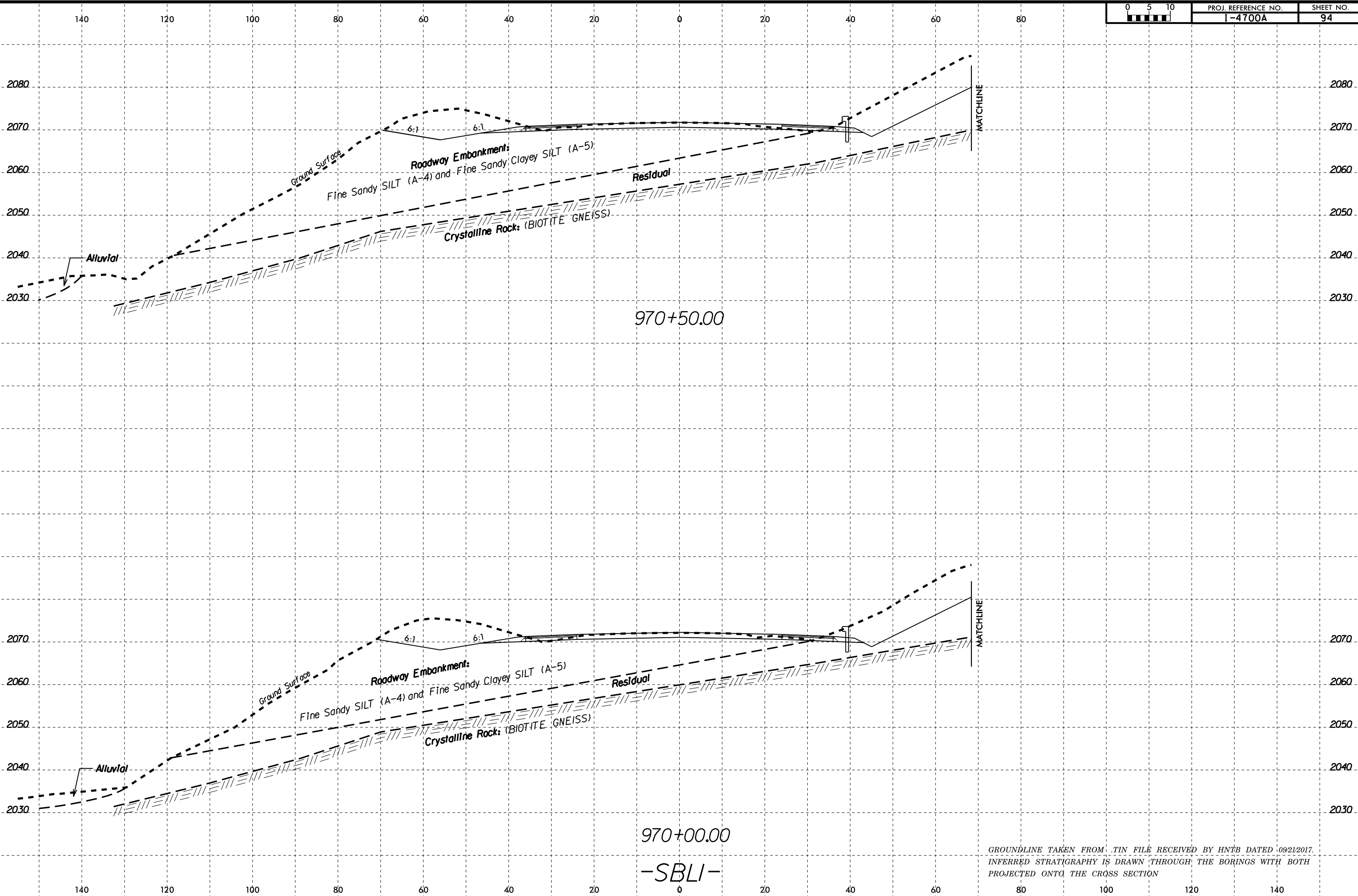
969+50.00
 969+00.00
 -SBLI-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	94



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 Walker-A 66026102

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

-SBLI-

6/23/16

140

120

100

80

60

40

20

0

20

40

60

80



PROJ. REFERENCE NO.
1-4700A

SHEET NO.
95

2100

2090

2080

2070

2060

2050

2040

2030

2100

2090

2080

2070

2060

2050

2040

2030

Ground Surface

Alluvial

B-68

971+36

2:1

Weathered Rock: Gray-Brown (BIOTITE GNEISS)

Crystalline Rock: Gray-Brown (BIOTITE GNEISS)

Roadway Embankment:
Very Soft to Stiff, Wet, Brown, Clayey SILT (A-5)
with Trace Mica

Residual

MATCHLINE

971+50.00

2090

2080

2070

2060

2050

2040

2030

2020

2090

2080

2070

2060

2050

2040

2030

2020

Alluvial

Ground Surface

Roadway Embankment:
Clayey SILT (A-5)

Weathered Rock: (BIOTITE GNEISS)

Crystalline Rock: (BIOTITE GNEISS)

Residual

MATCHLINE

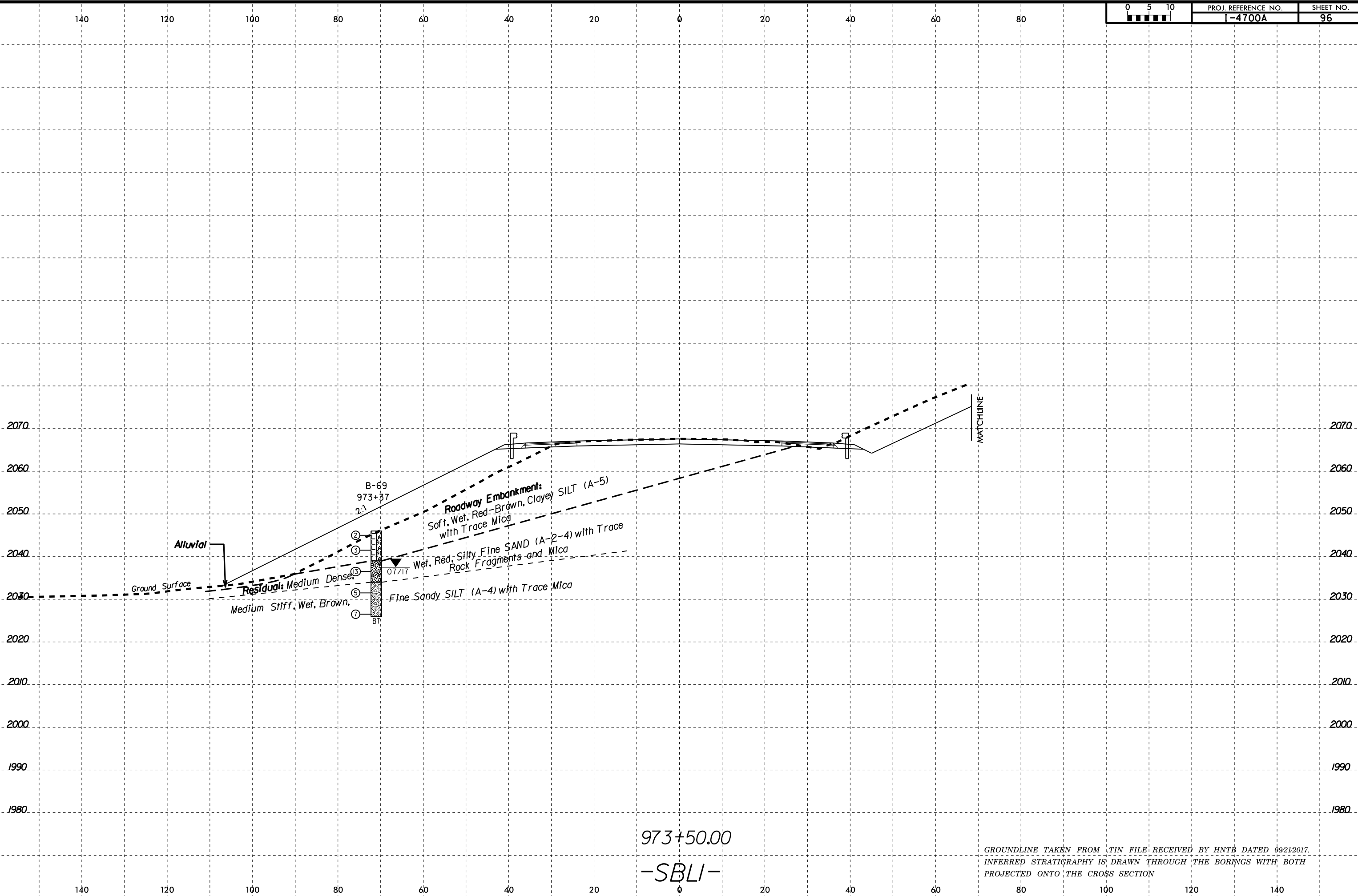
971+00.00

-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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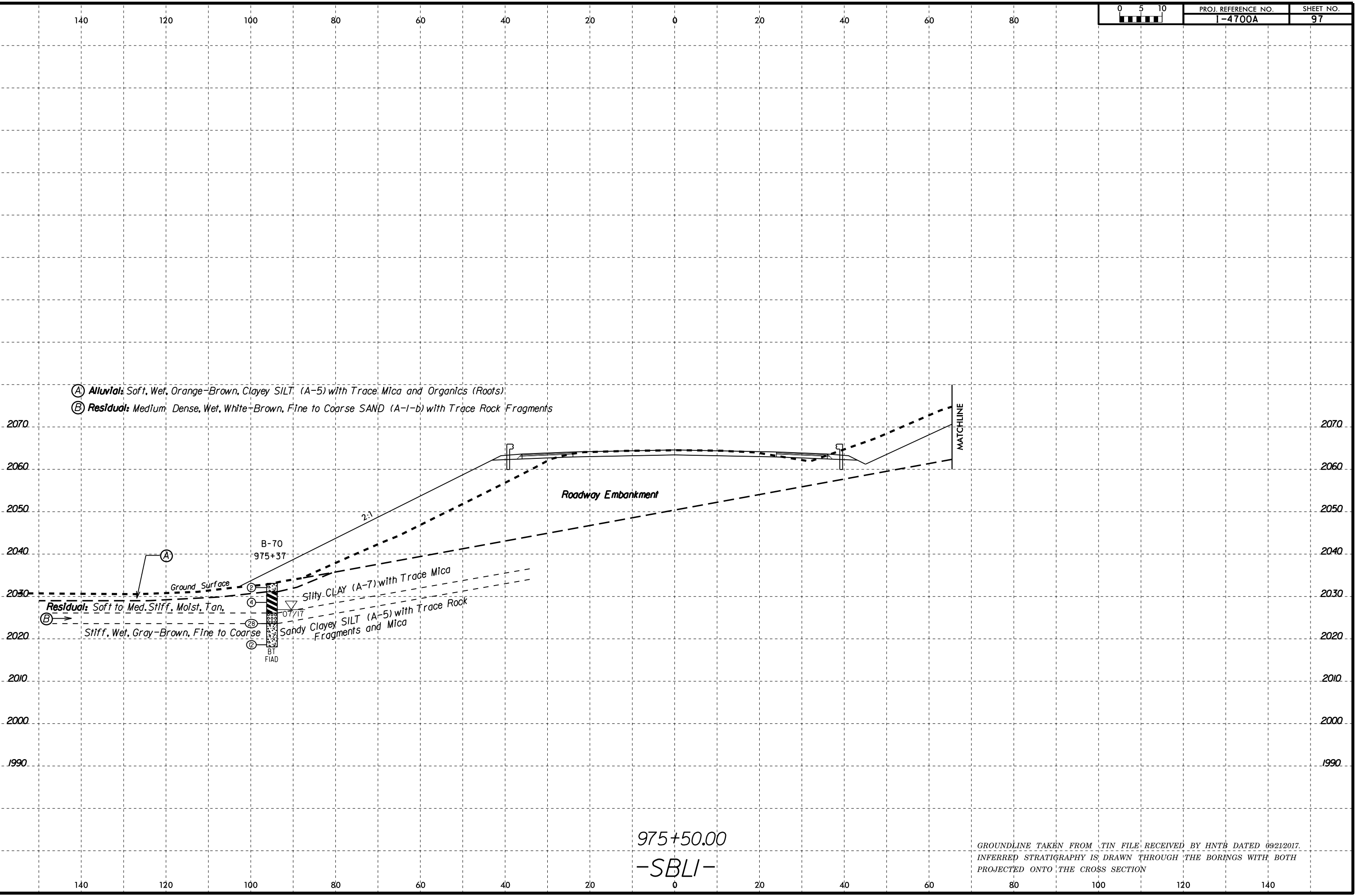
6/23/16



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973+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION



05-SEP-2018 11:00 AM C:\Users\Buncombe Co\14700A\Buncombe Co\14700A\GEO\RDWY\CADD\GEO\TECH\XSC\14700A_geo_xsi.ML - SBLI.dgn

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

6/23/16

140

120

100

80

60

40

20

0

20

40

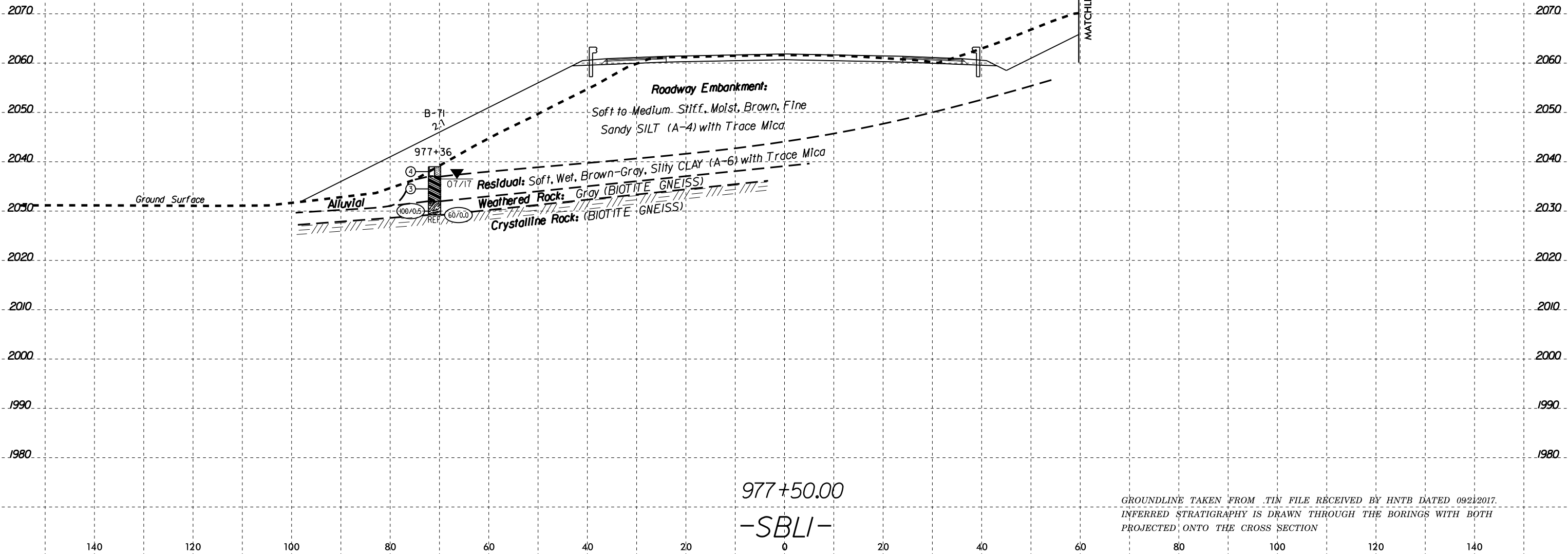
60

80



PROJ. REFERENCE NO.
I-4700A

SHEET NO.
98



B-71

977+36

4

3

108/0.2

REF

60/0.0

07/17

Roadway Embankment:

Soft to Medium Stiff, Moist, Brown, Fine
Sandy SILT (A-4) with Trace Mica

Residual: Soft, Wet, Brown-Gray, Silty CLAY (A-6) with Trace Mica

Weathered Rock: Gray (BIOTITE GNEISS)

Crystalline Rock: (BIOTITE GNEISS)

Ground Surface

Alluvial

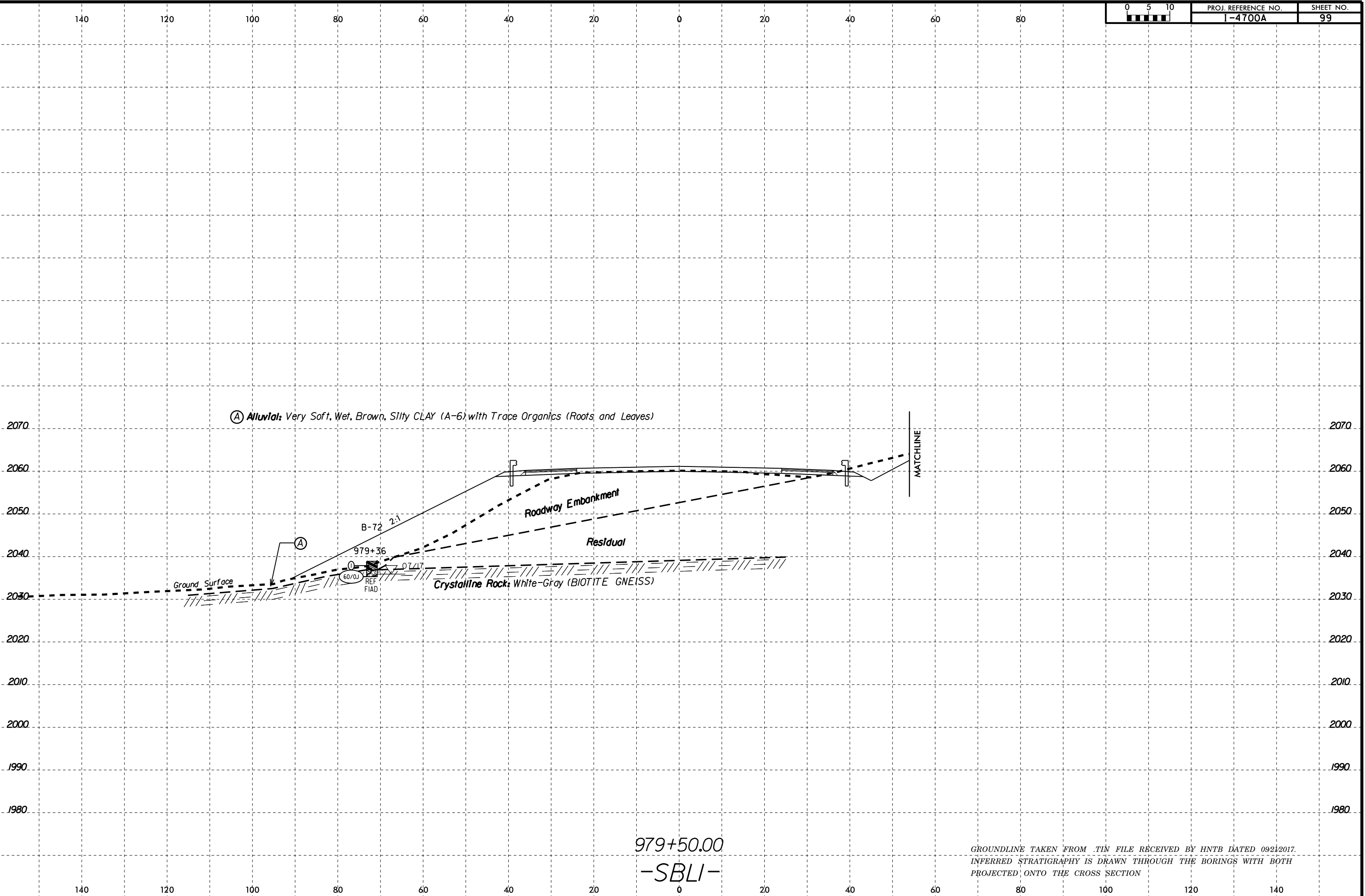
MATCHLINE

977+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

05-SEP-2018 11:00 AM C:\Users\Buncombe Co\14700A\Buncombe Co\14700A\GEO\RDWY\GADD_GEO\TECH\XSC\14700A_geo_xsi.ML - SBLI.dgn
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Walker

6/23/16



979+50.00
-SBLI-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

05-SEP-2018 11:00 AM C:\Users\Buncombe Co\14700A\Buncombe Co\14700A\GEO\RDWY\CADD\GEO\TECH\XSC\14700A_geo_xsi.ML - SBLI.dgn
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 T:\walker

6/23/16

140

120

100

80

60

40

20

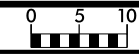
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20

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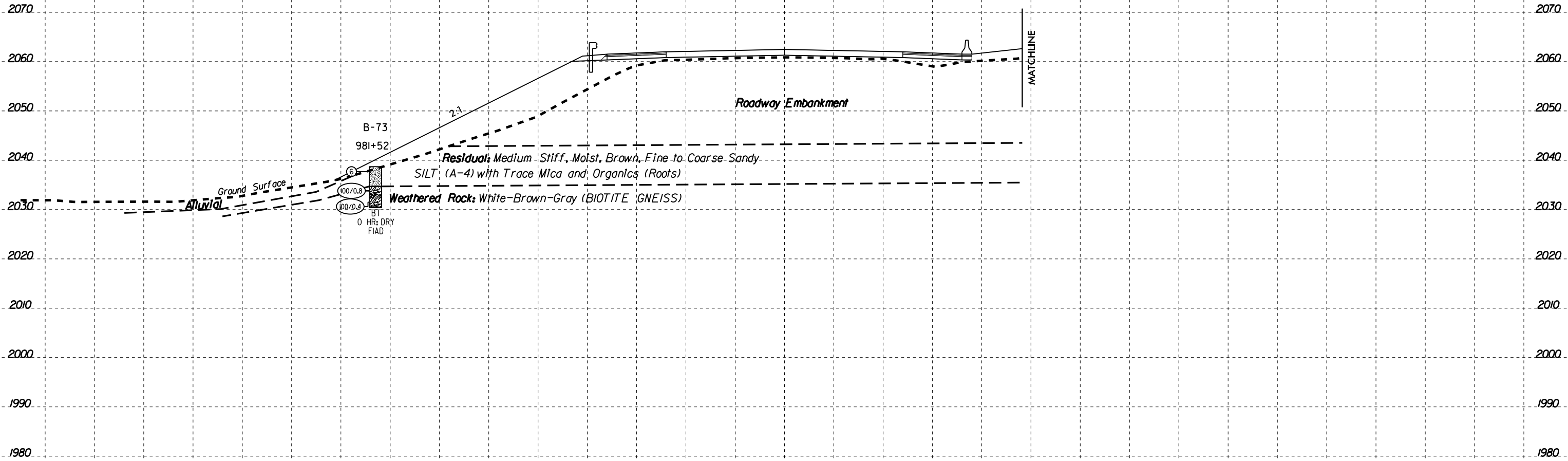
60

80



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	100

PROJ. REFERENCE NO.	SHEET NO.
I-4700A	100



981+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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140

120

100

80

60

40

20

0

20

40

60

80

100

120

140

6/23/16

140

120

100

80

60

40

20

0

20

40

60

80



PROJ. REFERENCE NO.
I-4700A

SHEET NO.
101

2070
2060
2050
2040
2030
2020
2010
2000
1990
1980

(A) Alluvial: Medium Stiff, Moist, Dark Brown, Fine to Coarse Sandy SILT (A-4) with Trace Organics (Roots and Wood Fragments)

(A)

B-93
982+61

07/17

Ground Surface

Residual: Soft, Moist, Brown, Fine to Coarse Sandy Silty CLAY (A-7) with Trace Mica

Stiff, Wet, Gray-Brown, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Rock Fragments and Mica

Crystalline Rock: White-Gray (BIOTITE GNEISS)

Roadway Embankment

MATCHLINE

05-SEP-2018 11:00 AM C:\Users\Buncombe Co\14700A\Buncombe Co\14700A\GEO\RDWY\CADD\GEO\TECH\XSC\14700A_geo_xsi_ML - SBLL.dgn
P:\Projects\660261102\660261102\660261102

982+50.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

140

120

100

80

60

40

20

0

20

40

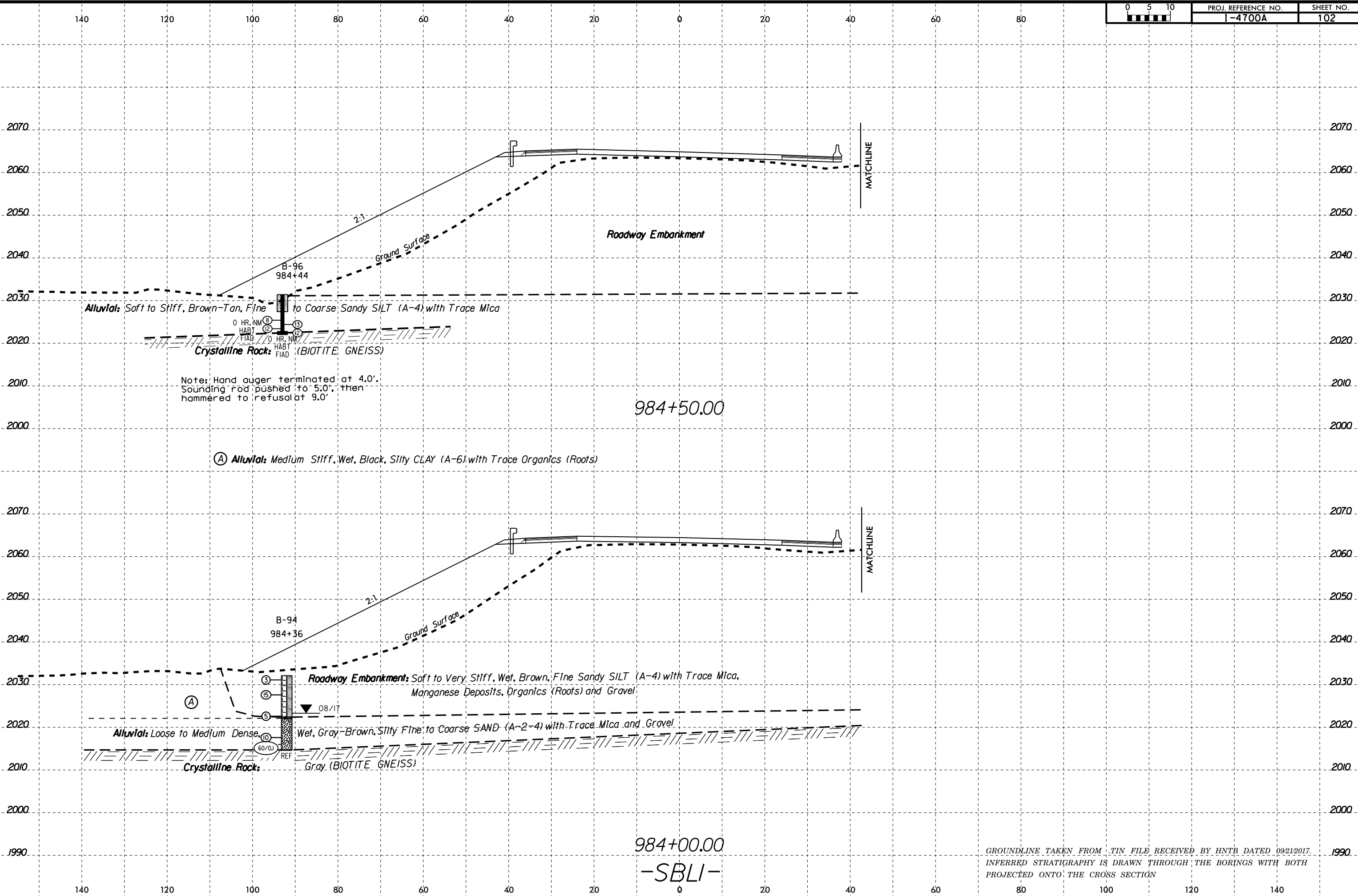
60

80

100

120

140



05-SEP-2018 11:00 I:\00\666\666\0046 (NCDDOT-1-4700A Buncombe Co)\14700A.GEO\RDWY\CADD\GEO\TECH\XSC\14700A_geo_xsi.ML - SBLI.dgn

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16



PROJ. REFERENCE NO.
1-4700A

SHEET NO.
103

140

120

100

80

60

40

20

0

20

40

60

80

2070

2060

2050

2040

2030

2020

2010

2000

1990

1980

2070

2060

2050

2040

2030

2020

2010

2000

1990

1980

2:1

Ground Surface

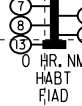
Roadway Embankment

MATCHLINE

B-98

985+03

Alluvial, Soft to Stiff, Brown-Tan, Fine Sandy SILT (A-4)



Note: Hand-auger terminated at 4.0'.
Sounding rod pushed to 5.0', then
hammered to termination at 10.0'

985+00.00
-SBLI-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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140

120

100

80

60

40

20

0

20

40

60

80

100

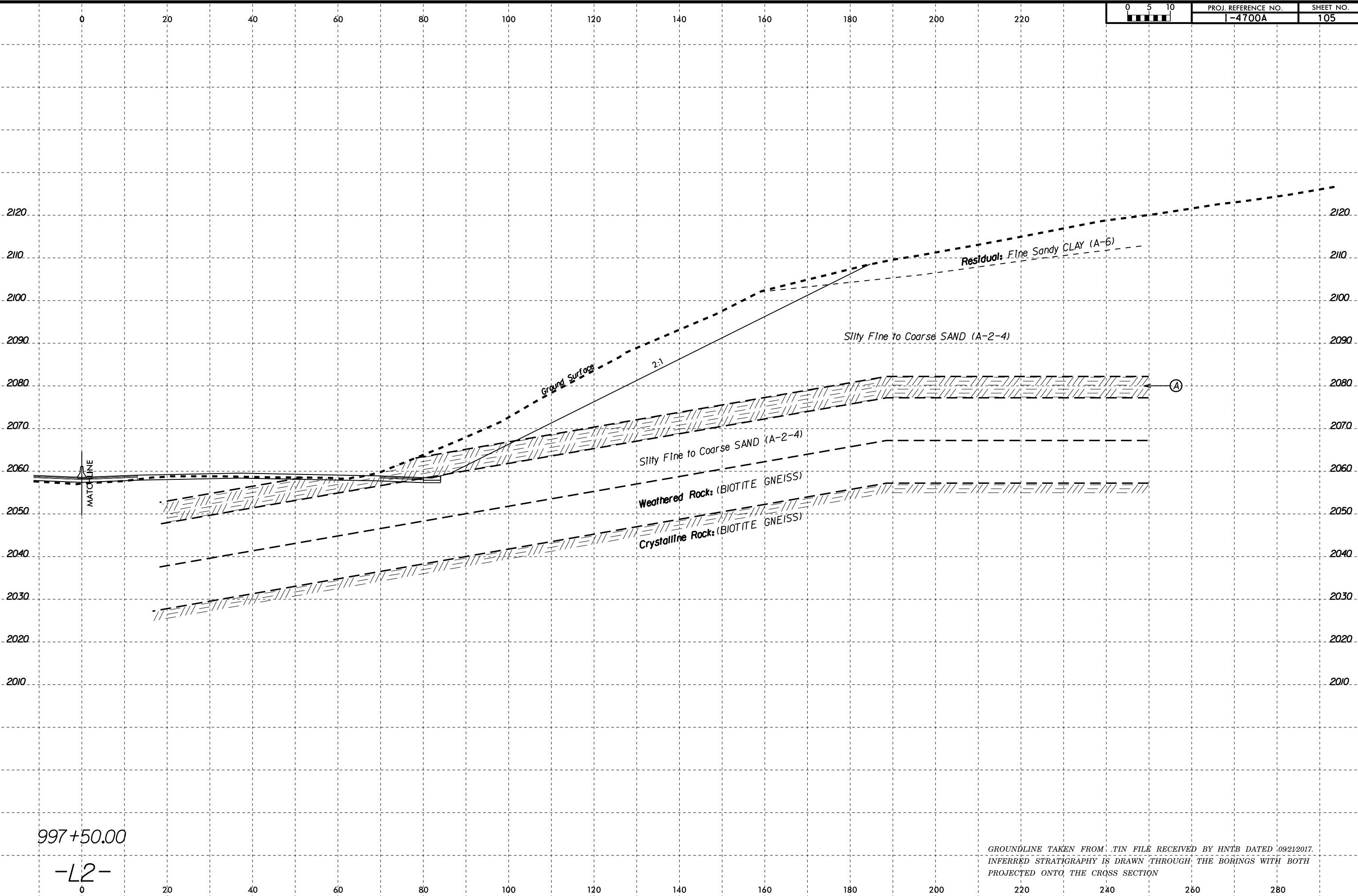
120

140

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	105



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 T.Walker-A 66026102

997+50.00

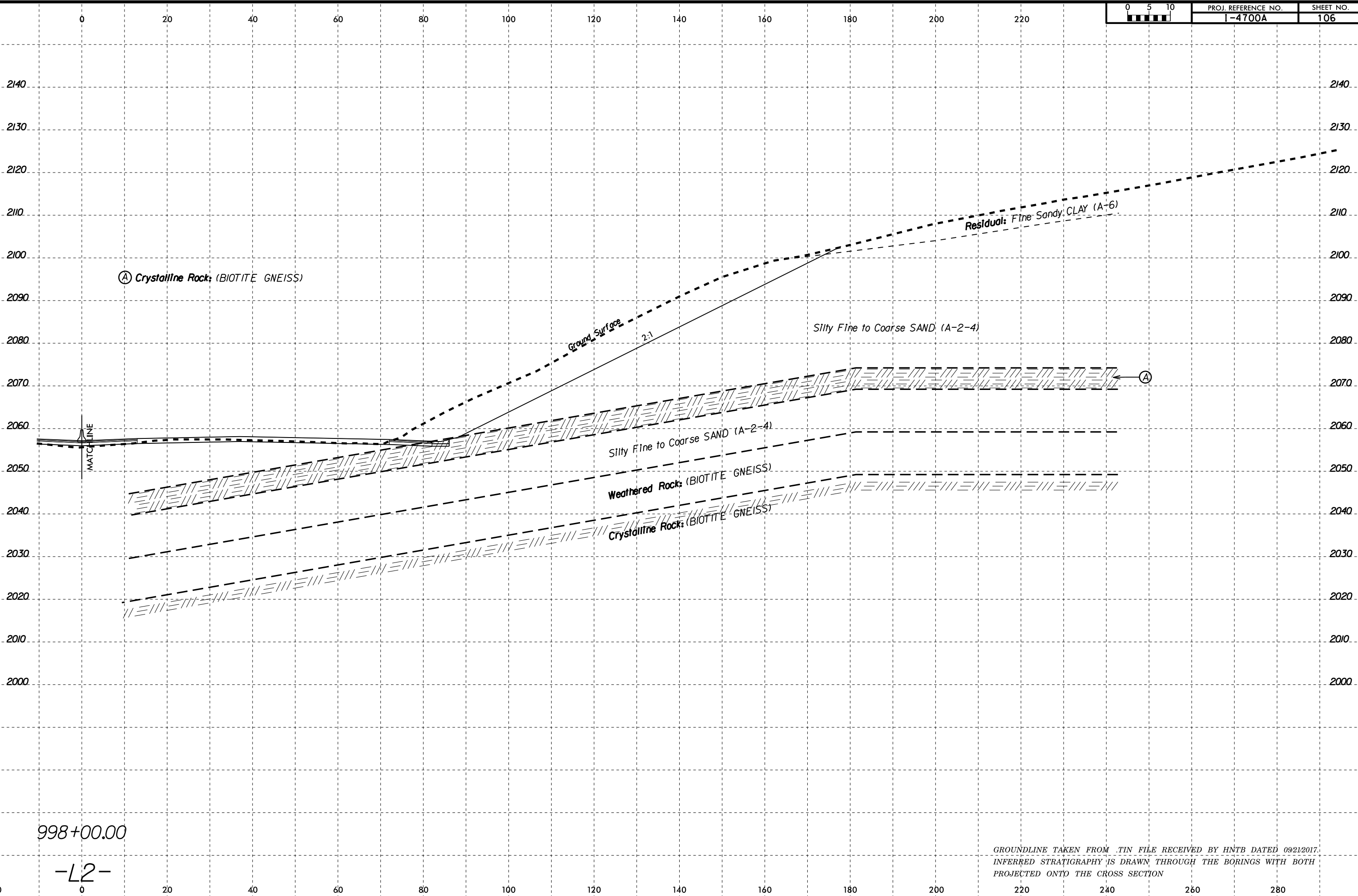
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 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	106



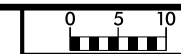
998+00.00

-L2-

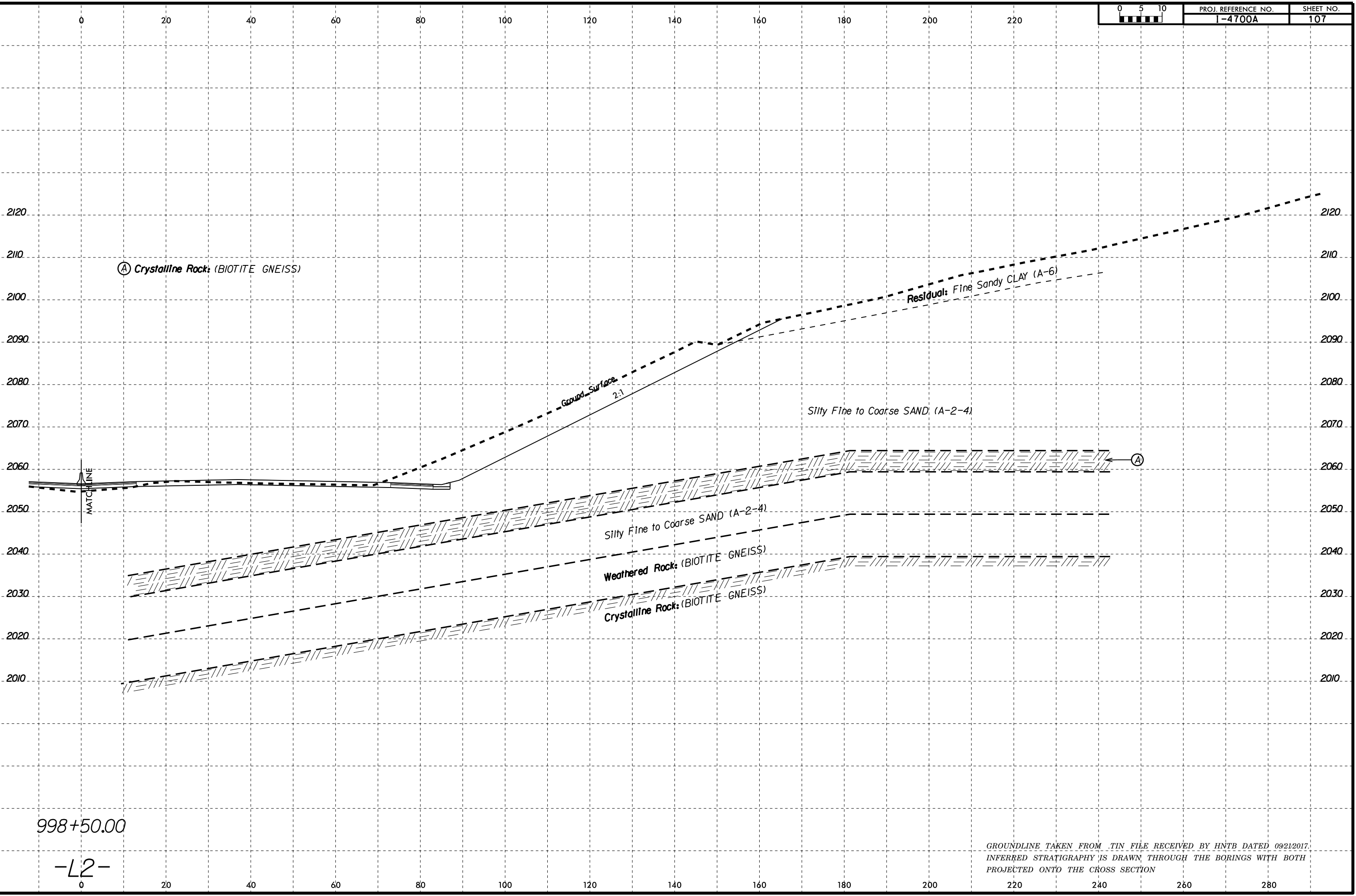
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 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

05-SEP-2018 10:45
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 User: j...

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
I-4700A	107



Ⓐ Crystalline Rock: (BIOTITE GNEISS)

Residual: Fine Sandy CLAY (A-6)

Ground Surface
2:1

Silty Fine to Coarse SAND (A-2-4)

MATCH LINE

Ⓐ

Silty Fine to Coarse SAND (A-2-4)

Weathered Rock: (BIOTITE GNEISS)

Crystalline Rock: (BIOTITE GNEISS)

998+50.00

-L2-

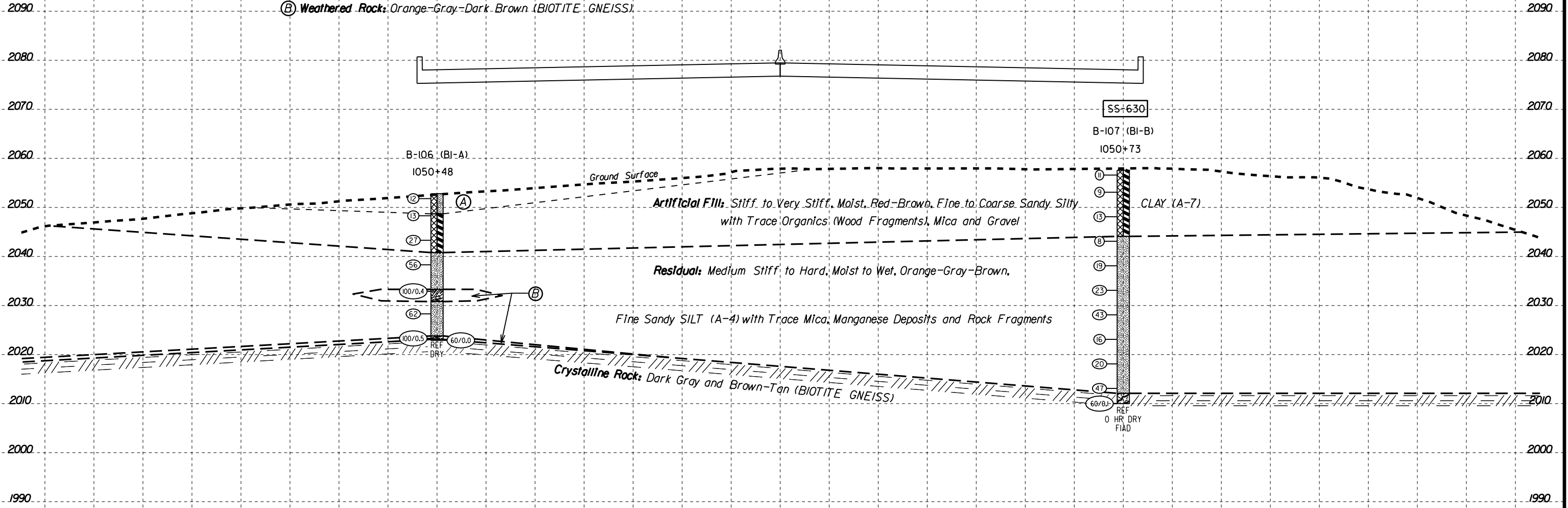
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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

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Walker



SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-630	70' RT	1050+73	0, 1- 1.5	A-7-6(10)	49	24	14.6	32.2	5.4	47.8	90.9	86.3	52.6	21.2	-

- (A) Artificial Fill: Stiff, Moist, Brown and Gray, Fine Sandy SILT (A-4) with Trace Mica, Organics (Roots) and Gravel
- (B) Weathered Rock: Orange-Gray-Dark Brown (BIOTITE GNEISS)



1050+50.00

-L2-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16



PROJ. REFERENCE NO.
I-4700B

SHEET NO.
110

140

120

100

80

60

40

20

0

20

40

60

80

2090

2090

2080

2080

2070

2070

2060

2060

2050

2050

2040

2040

2030

2030

2020

2020

2010

2010

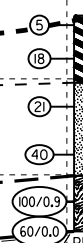
2000

2000

1990

1990

B-108 (EB2-A)
1051+09



Residual: Medium Stiff to Very Stiff, Moist, Red-Brown, Silty Fine Sandy CLAY (A-7)
with Trace Organics (Roots, Wood Fragments), Mica and Rock Fragments

Very Stiff to Hard, Moist, Orange-Gray-Brown,
Fine Sandy SILT (A-4) with Trace Mica

Weathered Rock:
Dark Brown (BIOTITE GNEISS)

Crystalline Rock: (BIOTITE GNEISS)

Ground Surface

Roadway Embankment

1051+00.00

-L2-

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

05-SEP-2018 10:45
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Walker

140

120

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60

80

100

120

140

6/23/16

140

120

100

80

60

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20

40

60

80



PROJ. REFERENCE NO.
I-4700A

SHEET NO.
111

Ⓐ Roadway Embankment: Loose, Moist, Tan, Fine SAND (A-3) with Trace Gravel

2090

2080

2070

2060

2050

2040

2030

2020

2010

2000

1990

2090

2080

2070

2060

2050

2040

2030

2020

2010

2000

1990

B-109(2) (EB2-C(2))

1051+60

Ⓐ

Ground Surface

Roadway Embankment: Soft to Medium Stiff, Moist,

Tan-Brown, Clayey SILT (A-5) with Trace Mica, Gravel,
and Manganese Deposits

Medium Stiff to Very Stiff, Moist, Red-Orange,

Silty CLAY (A-7) with Trace Gravel and Mica

Residual: Hard, Moist, Tan-Orange-White,

Clayey Fine to Coarse, Sandy SILT (A-4)

WR: Brown (BIOTITE)

GNEISS

with Trace Manganese Deposits

Weathered Rock:

Brown (BIOTITE, GNEISS)

Crystalline Rock:

(BIOTITE, GNEISS)

1051+50.00

-L2-

GROUNDLINE TAKEN FROM TIN FILE RECEIVED BY HNTB, DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

05-SEP-2018 10:45
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Walker-A 66026102

140

120

100

80

60

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20

0

20

40

60

80

100

120

140

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST M. Arnold										
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)									
BORING NO. B-102		STATION 1033+31		OFFSET 366 ft RT		ALIGNMENT -L2-										
COLLAR ELEV. 2,167.5 ft		TOTAL DEPTH 43.3 ft		NORTHING 650,973		EASTING 940,502										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 08/28/17		COMP. DATE 08/28/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2170	2,167.5	0.0	3	7	8									2,167.5	GROUND SURFACE	0.0
2165	2,164.0	3.5	7	8	11									2,165.5	RESIDUAL Red-Brown, Fine Sandy SILT (A-4) with Trace Organics (Roots) and Mica Red-Brown, Silty CLAY (A-6) with Trace Organics (Roots) and Mica	2.0
2160	2,159.0	8.5	6	6	3									2,160.5	Red-Brown, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Mica and Manganese Deposits	7.0
2155	2,154.0	13.5	8	6	21									2,150.5	WEATHERED ROCK Gray-Red-Brown (BIOTITE GNEISS)	17.0
2150	2,149.0	18.5	34	66/0.2												
2145	2,144.0	23.5	100/0.5													
2140	2,139.0	28.5	45	55/0.2												
2135	2,134.0	33.5	24	40	60/0.3											
2130	2,129.0	38.5	100/0.3													
2125	2,124.2	43.3	60/0.0													

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST W. Hamrick										
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)									
BORING NO. B-103(1)		STATION 1035+24		OFFSET 374 ft RT		ALIGNMENT -L2-										
COLLAR ELEV. 2,165.1 ft		TOTAL DEPTH 25.0 ft		NORTHING 651,106		EASTING 940,412										
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 86% 1/30/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER J. Hoyle		START DATE 06/24/17		COMP. DATE 06/24/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2170																
2165	2,165.1	0.0	2	6	7									2,165.1	GROUND SURFACE	0.0
2160	2,161.6	3.5	6	5	5										RESIDUAL Red, Silty CLAY (A-6) with Trace Mica	
2155	2,156.6	8.5	7	7	6									2,158.1	Red-Tan, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Mica and Manganese Deposits	7.0
2150	2,151.6	13.5	5	6	9											
2145	2,146.6	18.5	6	9	11											
	2,141.6	23.5	12	8	8											

Boring Terminated at Elevation 2,140.1 ft in SILT (RESIDUAL)

- Notes:
 1) 0.0'-0.1' = SURFICIAL ORGANIC SOILS
 2) Boring terminated due to rig breakdown, offset to B-103(2)

NCDOT BORE DOUBLE I4700A_GEO_BH_RDWY.GPJ NC_DOT.GDT 9/5/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST M. Arnold										
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)									
BORING NO. B-103(2)		STATION 1035+25		OFFSET 379 ft RT		ALIGNMENT -L2-										
COLLAR ELEV. 2,165.5 ft		TOTAL DEPTH 60.0 ft		NORTHING 651,109		EASTING 940,416										
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 86% 1/30/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER J. Hoyle		START DATE 08/27/17		COMP. DATE 08/27/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2170																
2165															2,165.5	0.0
2160																
2155															2,158.5	7.0
2150																
2145																
2140																
2135	2,137.0	28.5	9	9	12										2,138.5	27.0
2130	2,132.0	33.5	8	10	11											
2125	2,127.0	38.5	19	17	18											
2120	2,122.0	43.5	9	17	20											
2115	2,117.0	48.5	6	15	20											
2110	2,112.0	53.5	16	27	31											
	2,107.0	58.5	12	11	17											
															2,105.5	60.0
Boring Terminated at Elevation 2,105.5 ft in SILT (RESIDUAL)																
Note: Auger probe from 0-28.5'																

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST M. Arnold										
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)									
BORING NO. B-104		STATION 1036+79		OFFSET 369 ft RT		ALIGNMENT -L2-										
COLLAR ELEV. 2,160.5 ft		TOTAL DEPTH 59.7 ft		NORTHING 651,211		EASTING 940,339										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 08/27/17		COMP. DATE 08/27/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2165																
2160	2,160.5	0.0	2	5	4										2,160.5	0.0
2155	2,157.0	3.5	5	5	6											
2150	2,152.0	8.5	4	3	4											
2145	2,147.0	13.5	3	4	4											
2140	2,142.0	18.5	5	4	5											
2135	2,137.0	23.5	5	5	8											
2130	2,132.0	28.5	8	9	15											
2125	2,127.0	33.5	21	22	21											
2120	2,122.0	38.5	7	10	15											
2115	2,117.0	43.5	6	8	8											
2110	2,112.0	48.5	48	52/0.2											100/0.7	
2105	2,107.0	53.5	23	100/0.5											100/0.5	
	2,102.0	58.5	25	45	55/0.2										100/0.7	
															2,100.8	59.7
Boring Terminated at Elevation 2,100.8 ft in WEATHERED ROCK (BIOTITE GNEISS)																

NCDOT BORE DOUBLE I4700A_GEO_BH_RDWY.GPJ NC_DOT.GDT 9/5/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST S.Woods									
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)								
BORING NO. B-109(1) (EB2-C(1))		STATION 1051+65		OFFSET 5 ft LT		ALIGNMENT -L2-									
COLLAR ELEV. 2,081.0 ft		TOTAL DEPTH 3.8 ft		NORTHING 652,455		EASTING 939,671									
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER S. Davis		START DATE 08/28/17		COMP. DATE 08/28/17		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2085															
2080	2,081.0	0.0	1	2	5									2,081.0	0.0
	2,077.5	3.5												2,077.2	3.8
		100/0.2													

GROUND SURFACE
ELEV. 2,081.0

ROADWAY EMBANKMENT
Dark Brown, Clayey Fine to Coarse Sandy SILT (A-4) with Trace Organics (Roots), Mica, and Gravel

Tan, Fine SAND (A-3) with Trace Gravel

Boring Terminated at Elevation 2,077.2 ft in SAND (ROADWAY EMBANKMENT)

Note:
Possible obstruction encountered at 3.8', auger refusal. Boring offset to B-109(2) (EB2-C(2)).

WBS 36030.1.FS4		TIP I-4700A		COUNTY BUNCOMBE		GEOLOGIST S. Woods									
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)							GROUND WTR (ft)								
BORING NO. B-112(1)		STATION 963+00		OFFSET 36 ft RT		ALIGNMENT -NBL1-									
COLLAR ELEV. 2,095.2 ft		TOTAL DEPTH 4.3 ft		NORTHING 644,520		EASTING 943,160									
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 82% 02/20/2018			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER S. Davis		START DATE 03/27/18		COMP. DATE 03/27/18		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2100															
2095	2,095.2	0.0	2	4	5									2,095.2	0.0
														2,092.7	2.5
														2,090.9	4.3

GROUND SURFACE
ELEV. 2,095.2

RESIDUAL
Brown, Fine Sandy SILT (A-4) with Trace Mica, Rock Fragments, and Organics (Roots)

Rock Fragments

Boring Terminated at Elevation 2,090.9 ft on Possible Boulder

Note:
1. 0.0'-0.1'= SURFICIAL ORGANIC SOILS
2. Auger Refusal at 4.3'
3. Offset to B-112(2) due to Auger Becoming Crooked

NCDOT BORE DOUBLE I4700A_GEO_BH_RDWY.GPJ NC_DOT.GDT 9/5/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 36030.1.FS4	TIP I-4700A	COUNTY BUNCOMBE	GEOLOGIST S. Woods
SITE DESCRIPTION I-26 from Near NC 280 (Exit 40) to Near NC 146 (Exit 37)			GROUND WTR (ft)
BORING NO. B-112(3)	STATION 963+10	OFFSET 35 ft RT	ALIGNMENT -NBL1-
COLLAR ELEV. 2,094.5 ft	TOTAL DEPTH 2.8 ft	NORTHING 644,529	EASTING 943,155
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 82% 02/20/2018		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER S. Davis	START DATE 03/27/18	COMP. DATE 03/27/18	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2095															
	2,094.5	0.0	1	2	4									GROUND SURFACE	0.0
	2,091.7	2.8												RESIDUAL Brown, Fine Sandy SILT (A-4) with Trace Mica, Rock Fragments, and Organics (Roots)	2.1 2.8
														CRYSTALLINE ROCK Gray (BIOTITE GNEISS)	

Boring Terminated with Standard Penetration Test Refusal at Elevation 2,091.7 ft on CRYSTALLINE ROCK (BIOTITE GNEISS)

Note:
1. 0.0'-0.1' = SURFICIAL ORGANIC SOILS
2. Auger Refusal at 2.8'

NCDOT BORE DOUBLE I4700A_GEO_BH_ROWY.GPJ NC_DOT.GDT 9/5/18

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: I-4700A
DESCRIPTION: I-26 from near NC 280 (Exit 40) to near NC 146 (Exit 37)

REPORT ON SAMPLES OF: SOIL FOR QUALITY

F&R PROJECT #: 66V-0046
DATE SAMPLED: 6/17-8/17
SAMPLED FROM: -NBL1- and -L2-
SUBMITTED BY: D. Racey

COUNTY: Buncombe
RECEIVED: 8/17
REPORTED: 9/17
BY: D. Jenks
Cert No. 101-02-0603

TEST RESULTS

PROJ. SAMPLE NO.	SS-34	SS-104	SS-633	SS-634								
BORING NO.	B-85(1)	B-103(2)	B-103(1)	B-103(1)								
Retained #4 Sieve %	0.3	0.0	0.5	0.0								
Passing #10 Sieve %	99.1	100.0	98.8	100.0								
Passing #40 Sieve %	82.9	98.0	92.1	95.4								
Passing #200 Sieve %	42.9	38.6	58.5	43.2								

SOIL MORTAR - 100%												
Coarse Sand Ret - #60 %	29.9	18.3	19.0	14.0								
Fine Sand Ret - #270 %	32.8	51.5	24.5	53.0								
Silt 0.053 - 0.010 mm %	22.3	20.1	12.4	20.3								
Clay < 0.010 mm %	15.0	10.1	44.1	12.7								
L.L.	34	32	33	42								
P.L.	31	NP	20	NP								
P.I.	3	NP	13	NP								
AASHTO Classification	A-4(0)	A-4(0)	A-6(5)	A-5(0)								
Station	965+22	1035+25	1035+24	1035+24								
Offset	42' LT.	379' RT.	374' RT.	374' RT.								
Depth (ft)	0.1	28.5	0.1	8.5								
to	1.5	30.0	1.5	10.0								
Alignment	-NBL1-	-L2-	-L2-	-L2-								
Moisture Content (%)	18.7	17.8	15.5	15.4								
Organic Content (%)	NT	NT	NT	NT								

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer