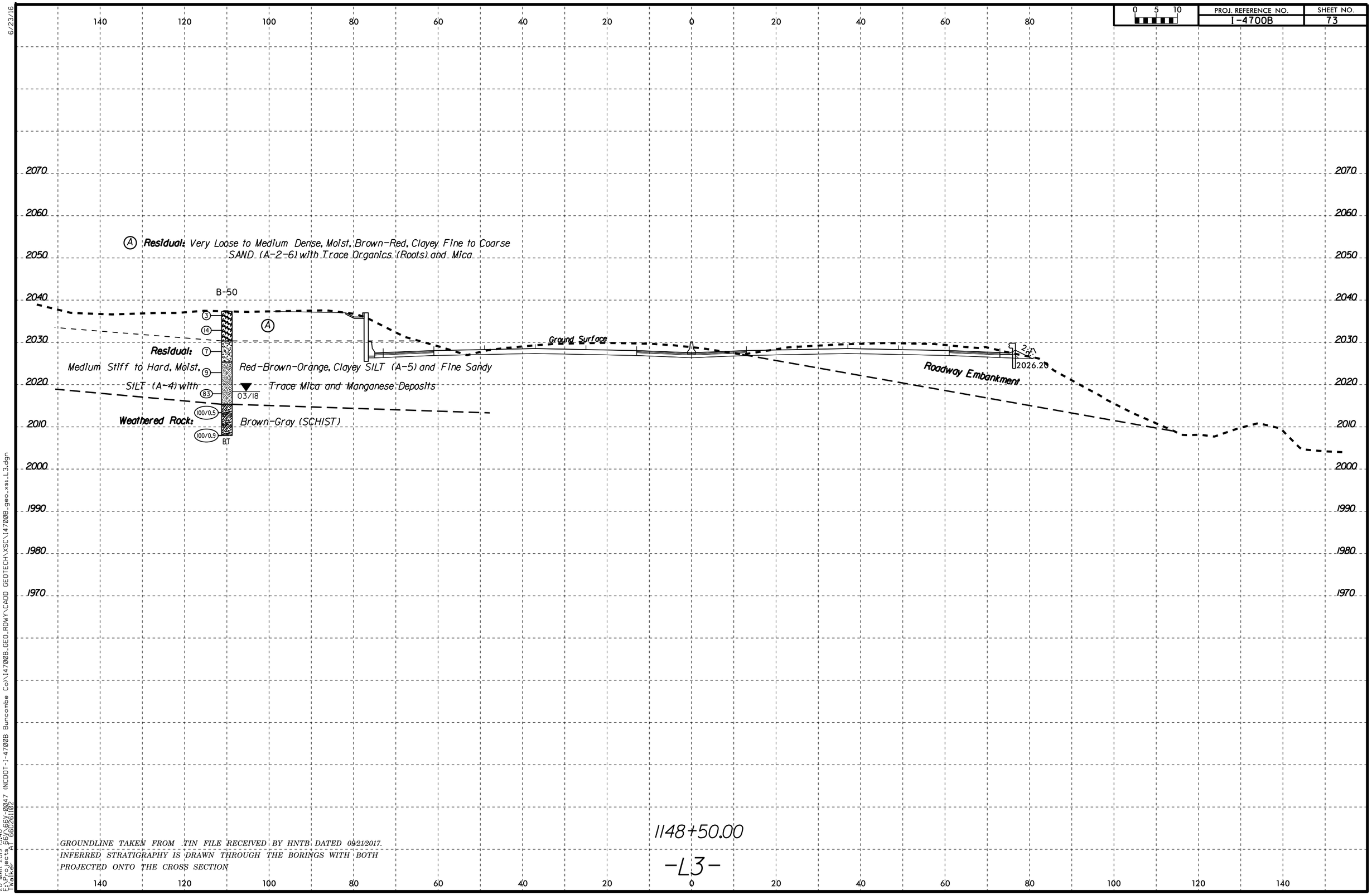
PROJECT REFERENCE NO.	SHEET NO.
I-4700B	73 – 153

SUBMITTED BY: PATRICK ALTON

DocuSigned by:
Patrick Alton
A270EF78A6DF442...
4/3/2019

SUBSURFACE INVENTORY

PT 2 OF 2



6/23/16

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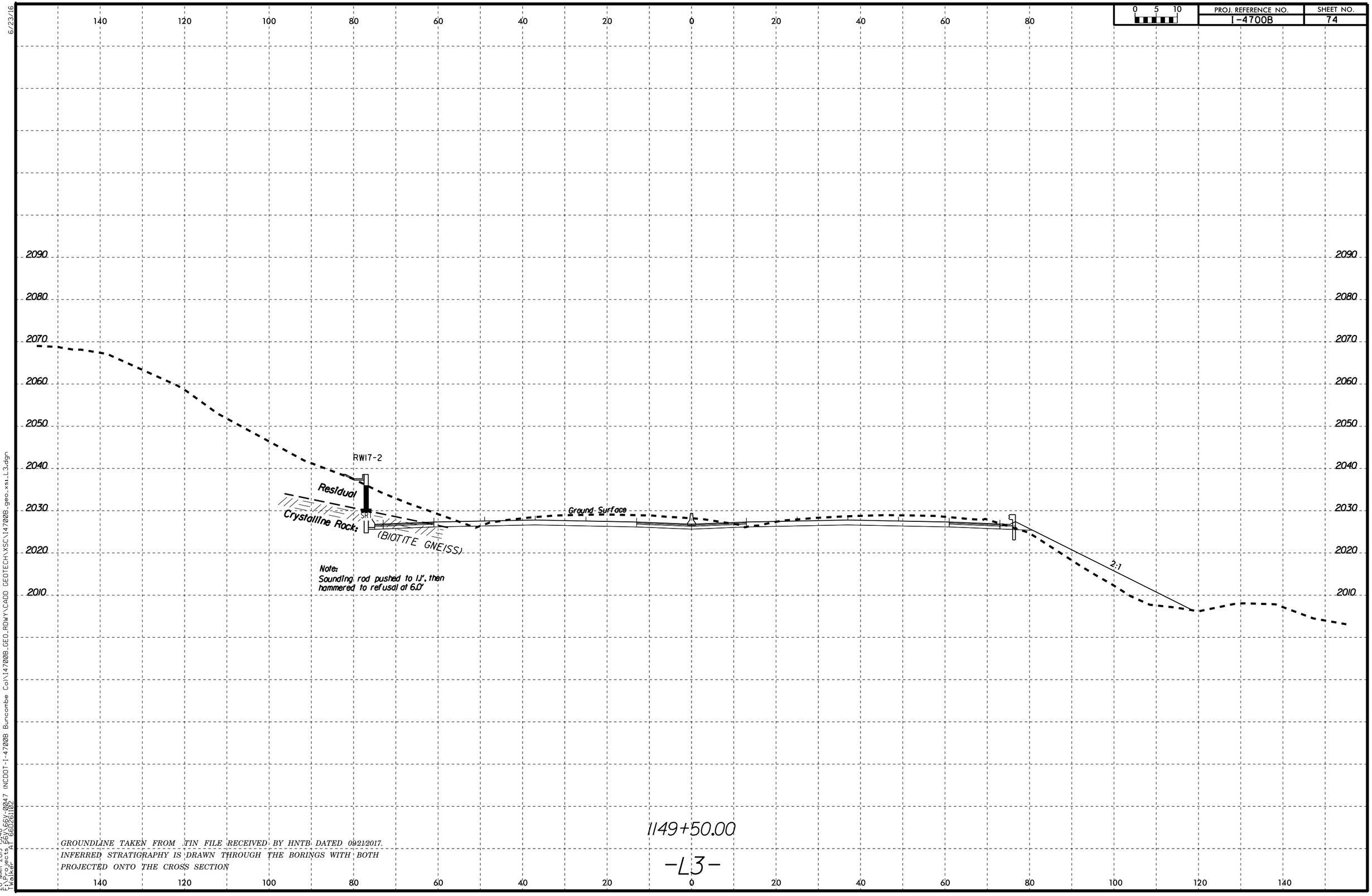

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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16

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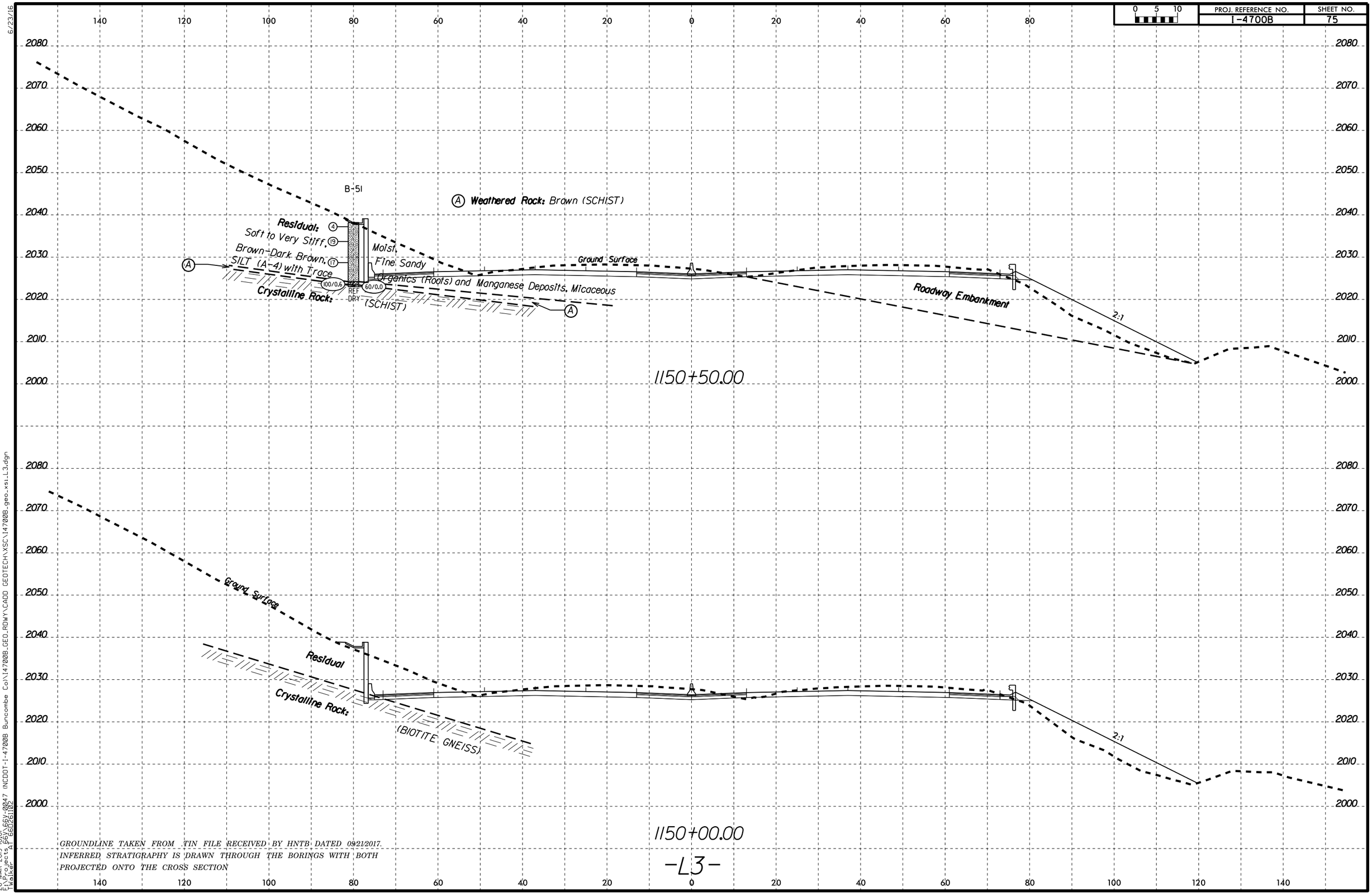

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6/23/16

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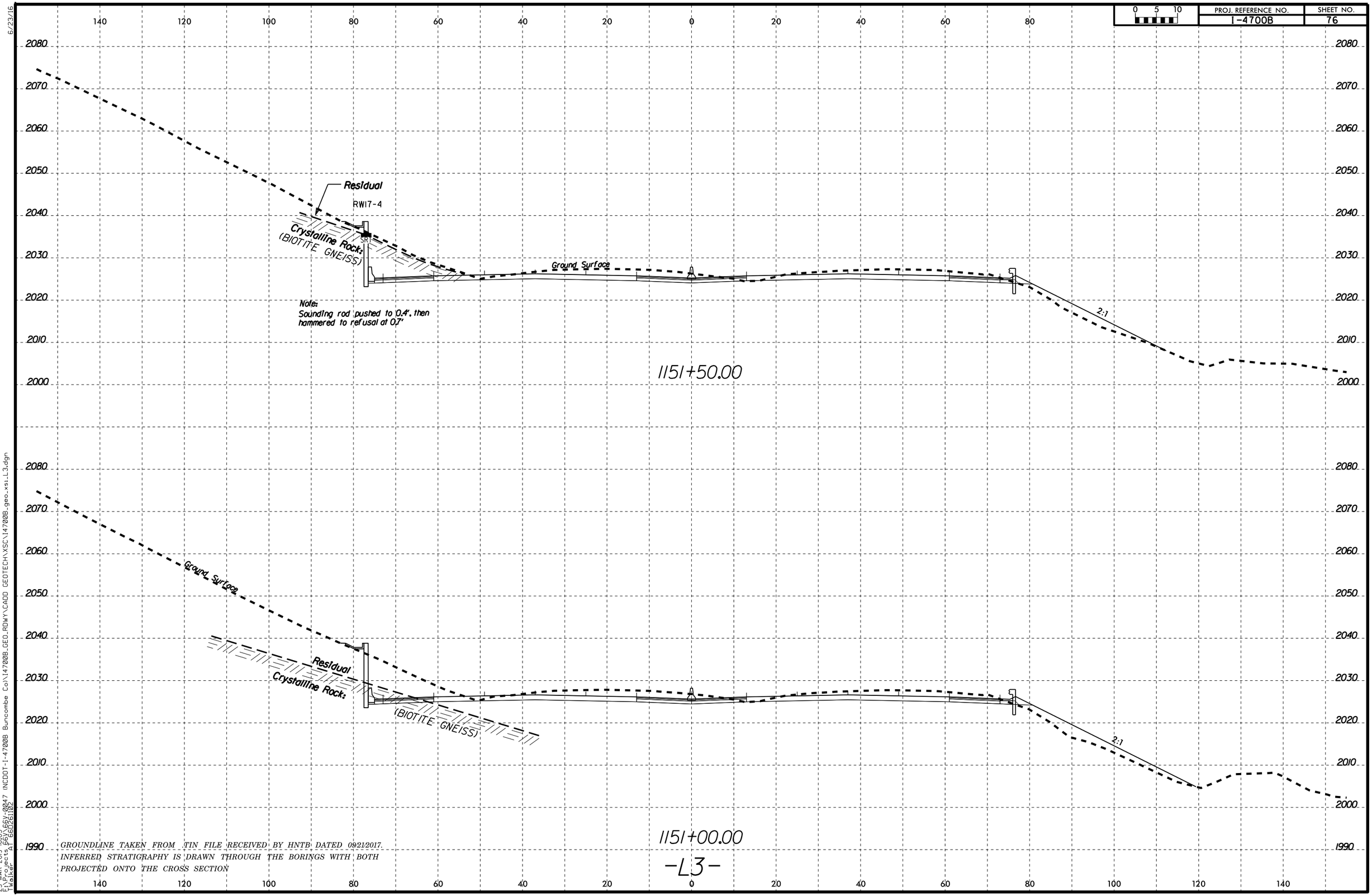
AT 66026102



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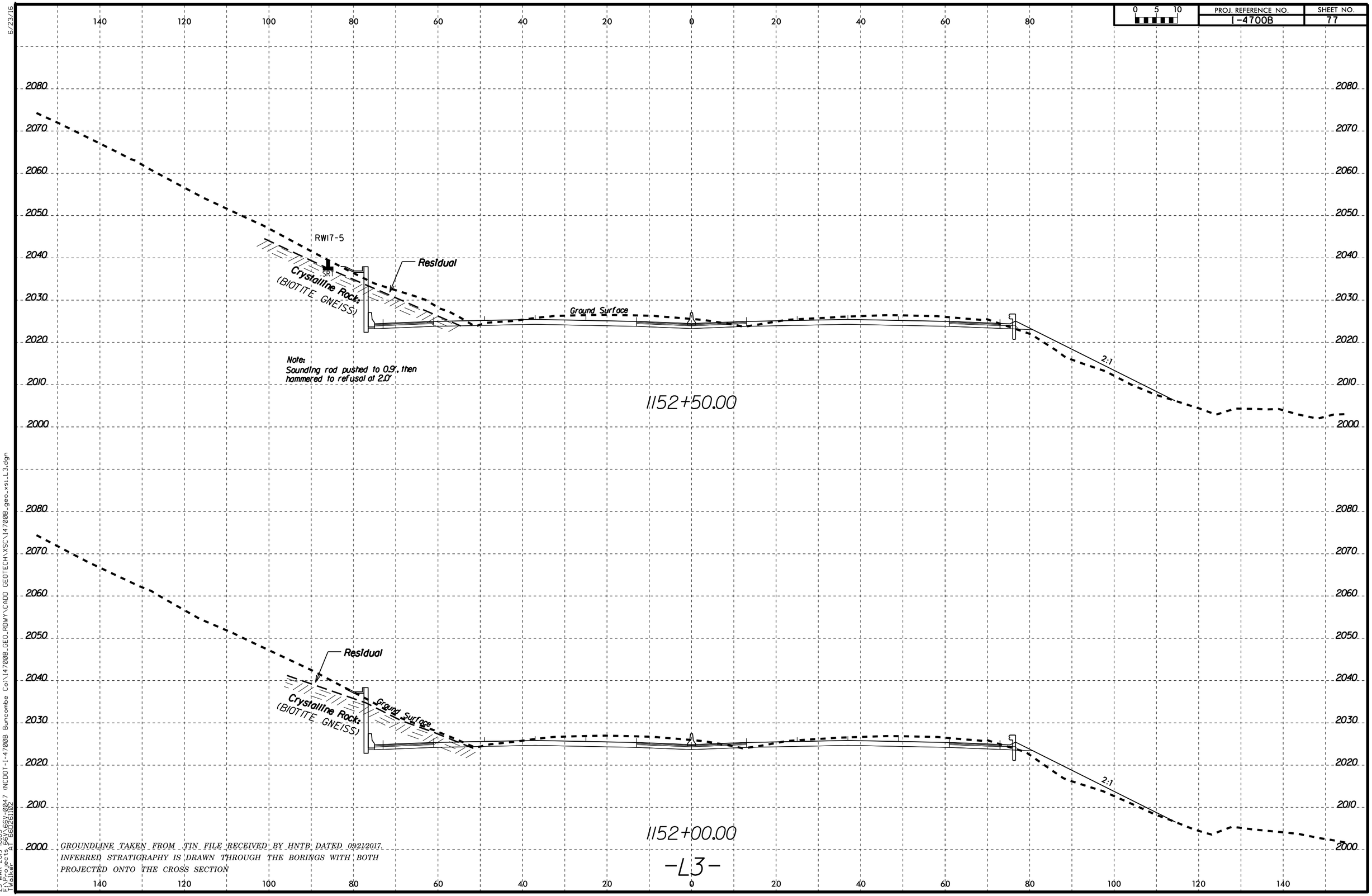
PROJ. REFERENCE NO.	SHEET NO.
I-4700B	77



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6/23/16

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AT 66026102

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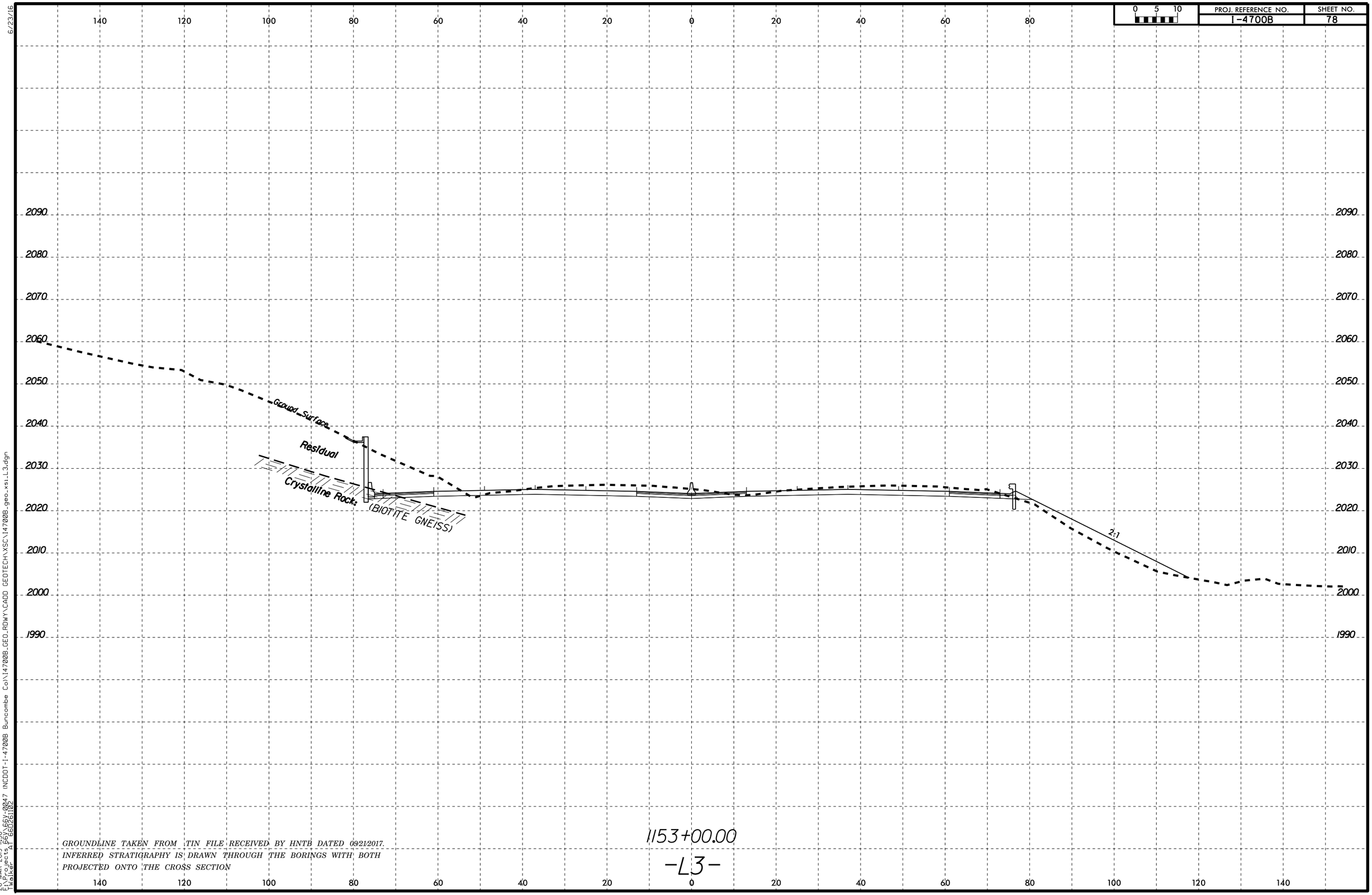

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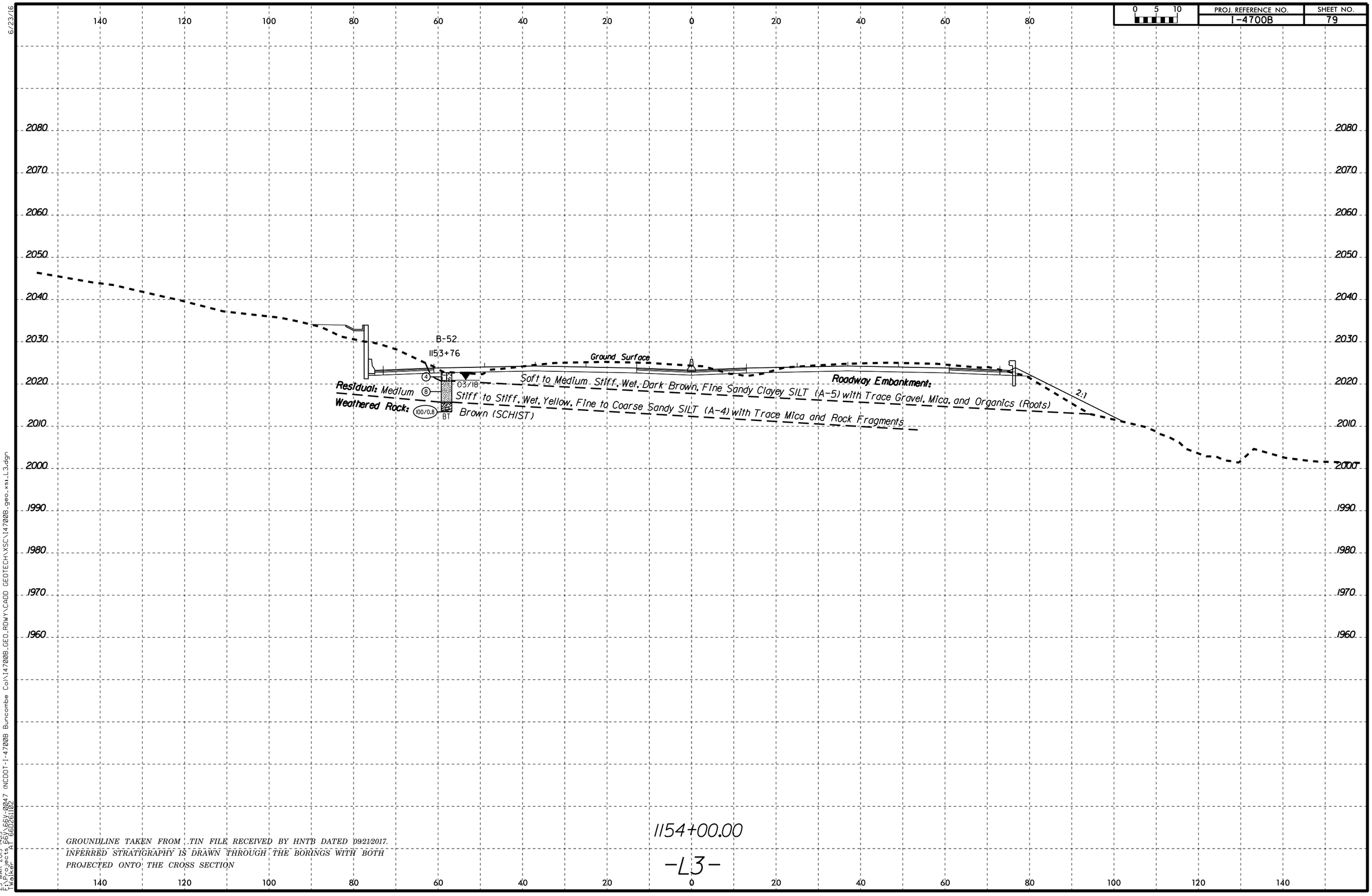

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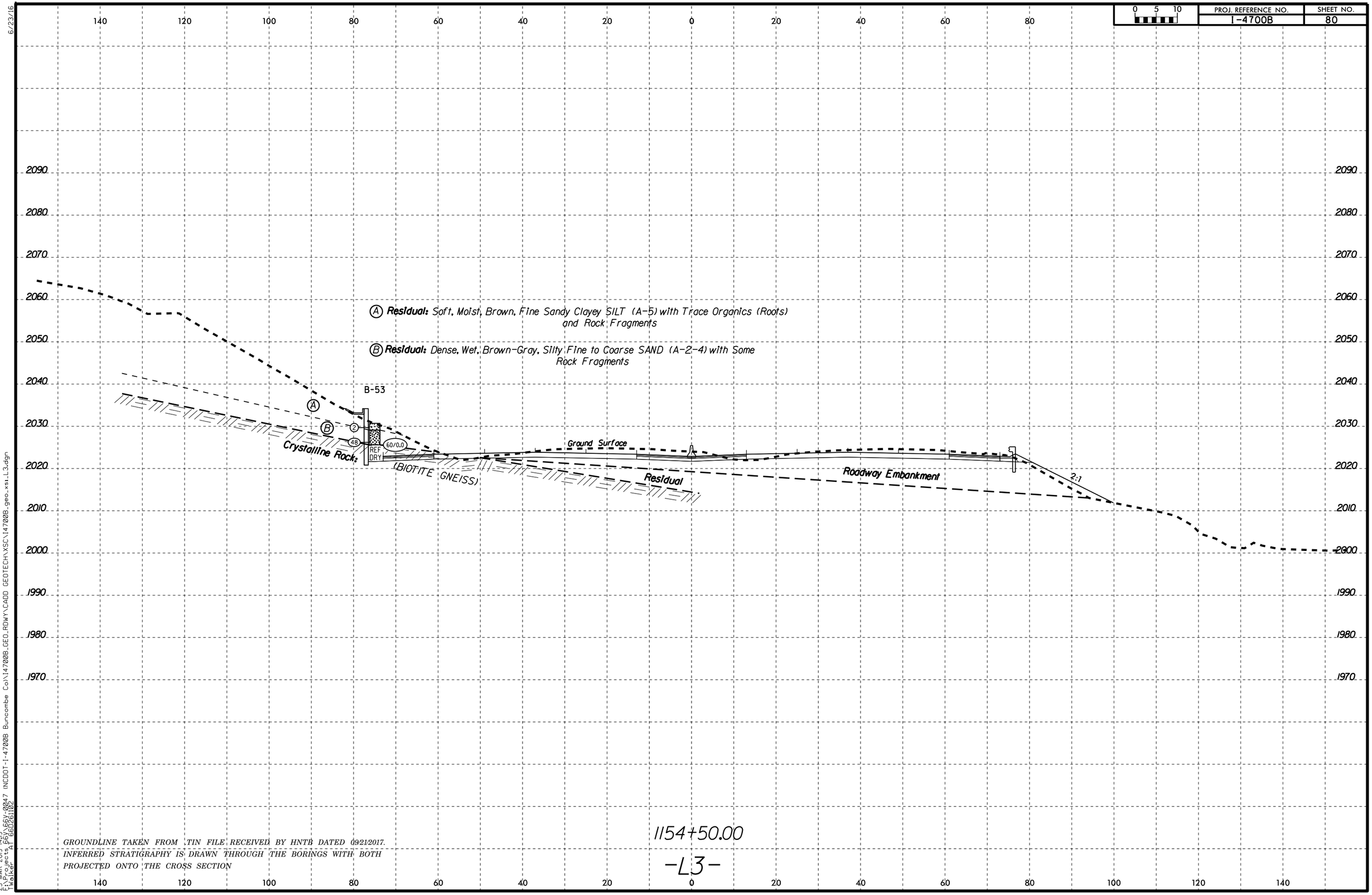

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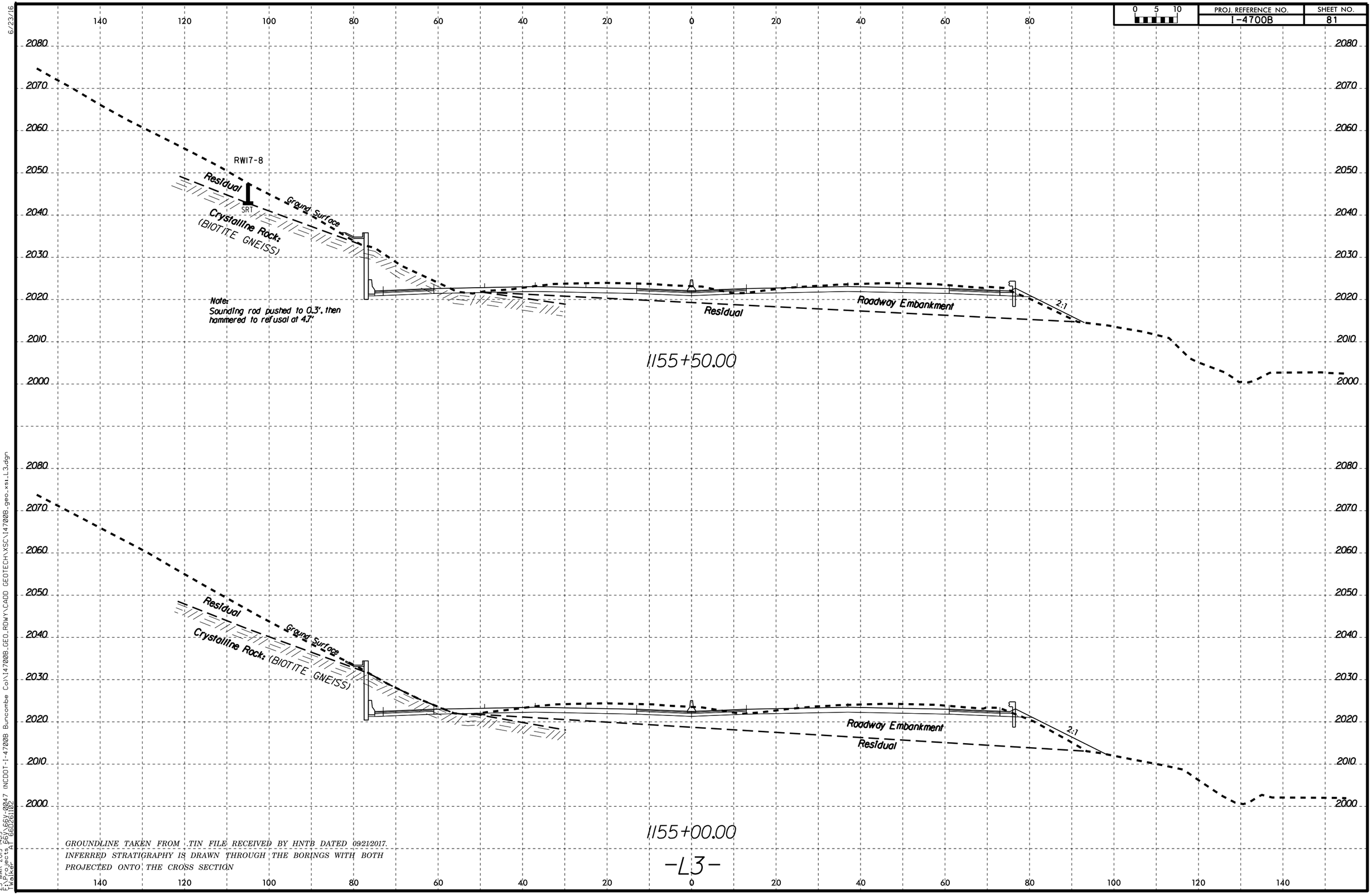

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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16

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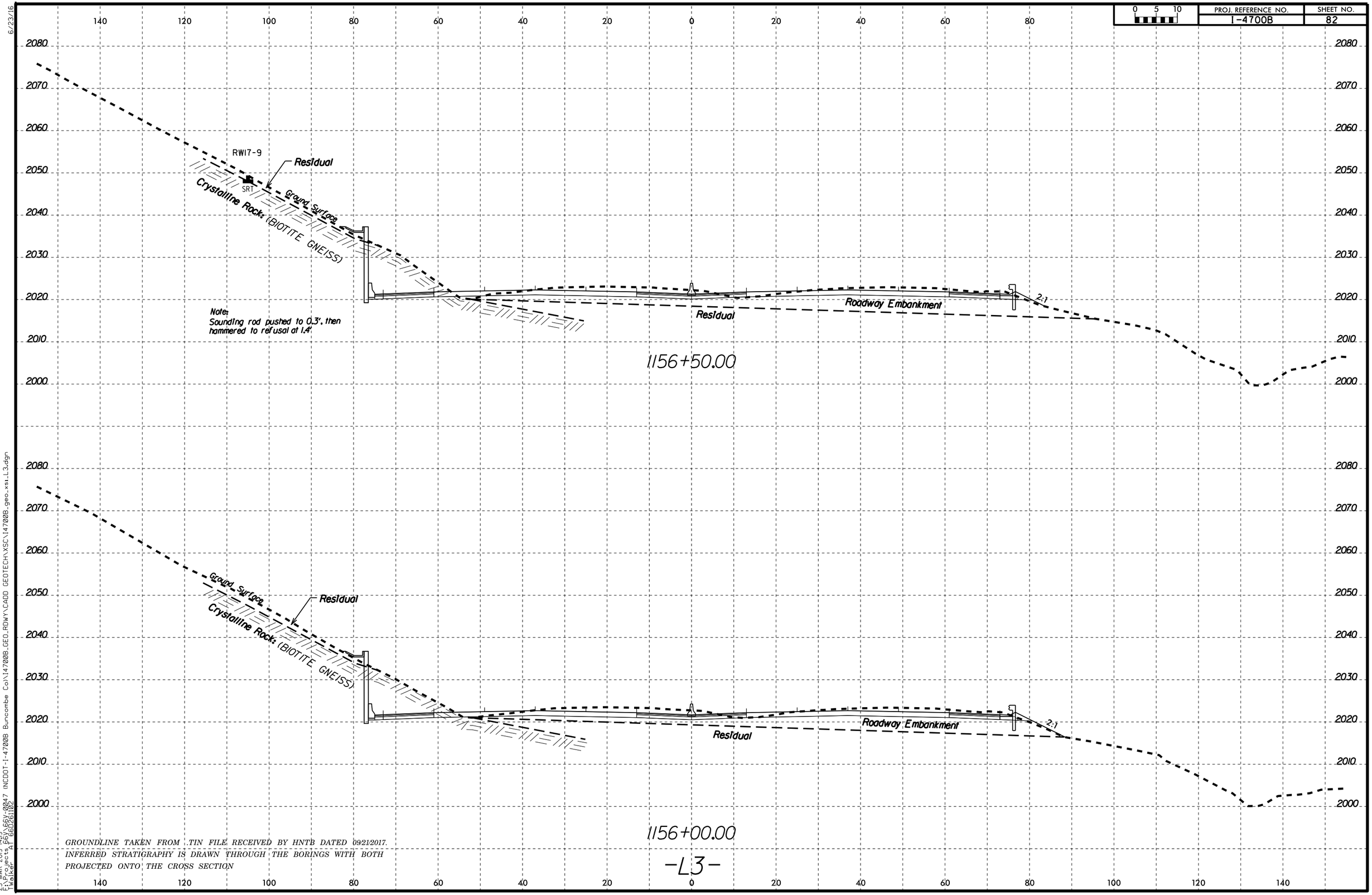
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	82



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6/23/16

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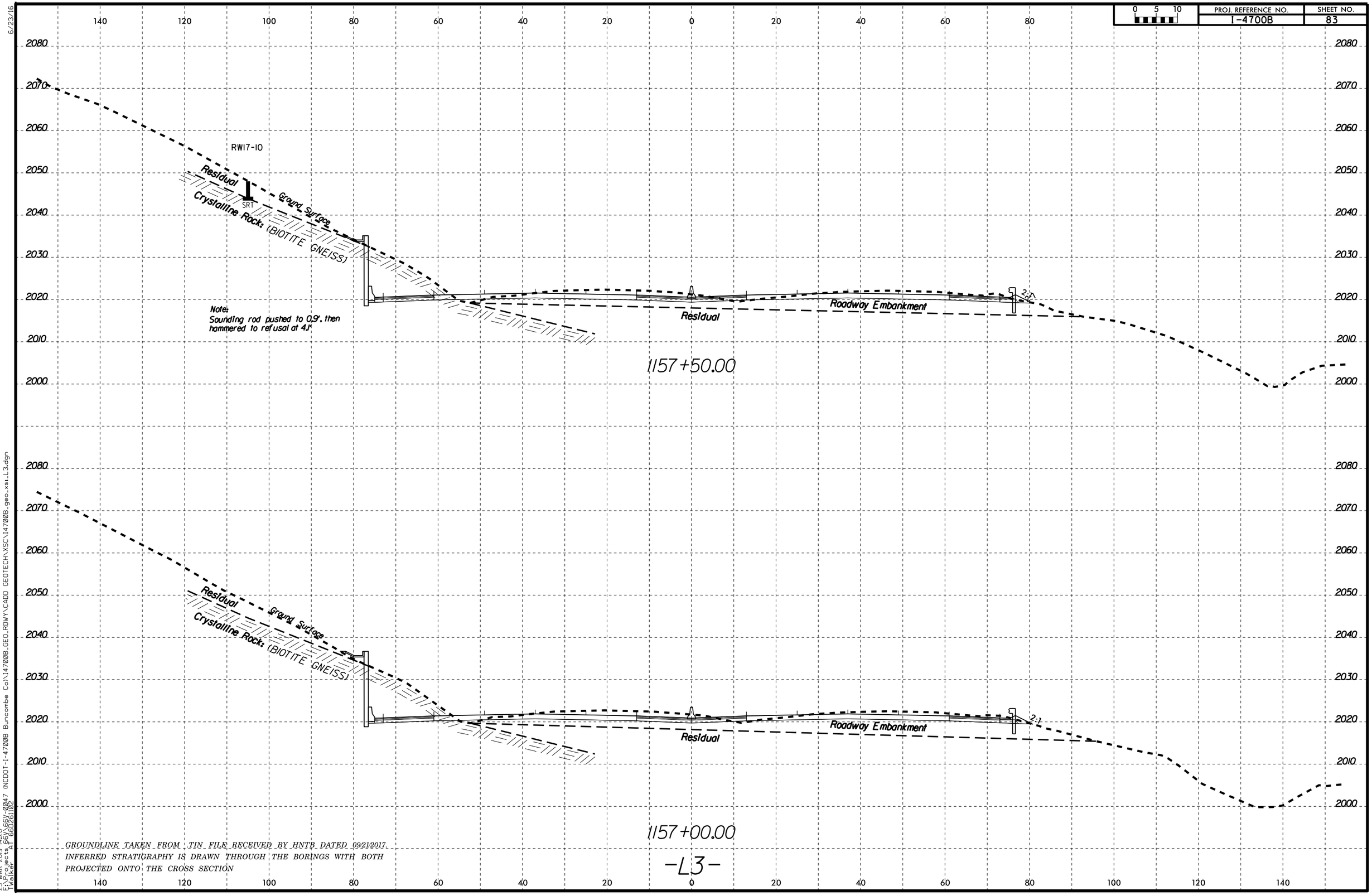

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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

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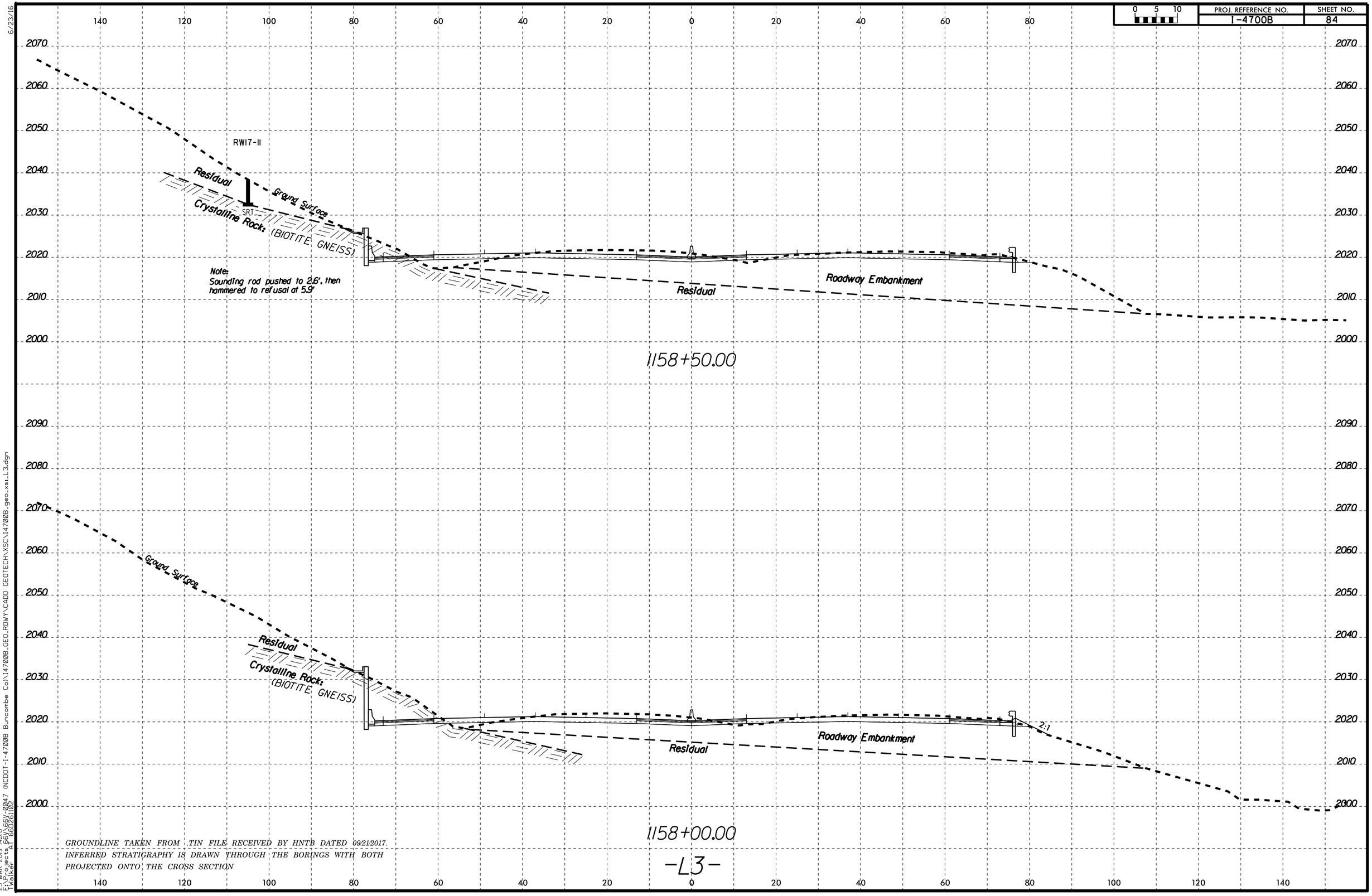

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6/23/16

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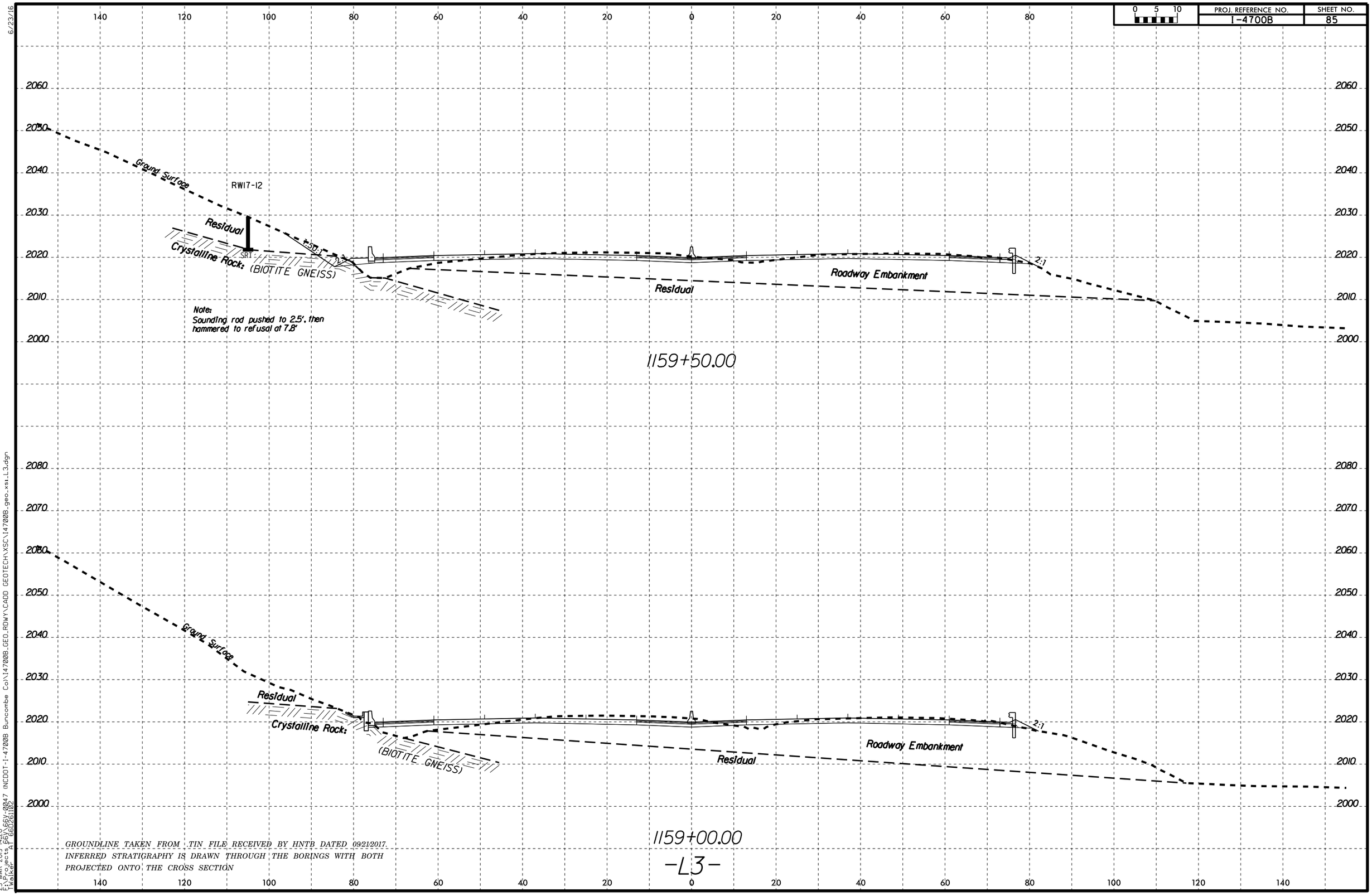

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6/23/16

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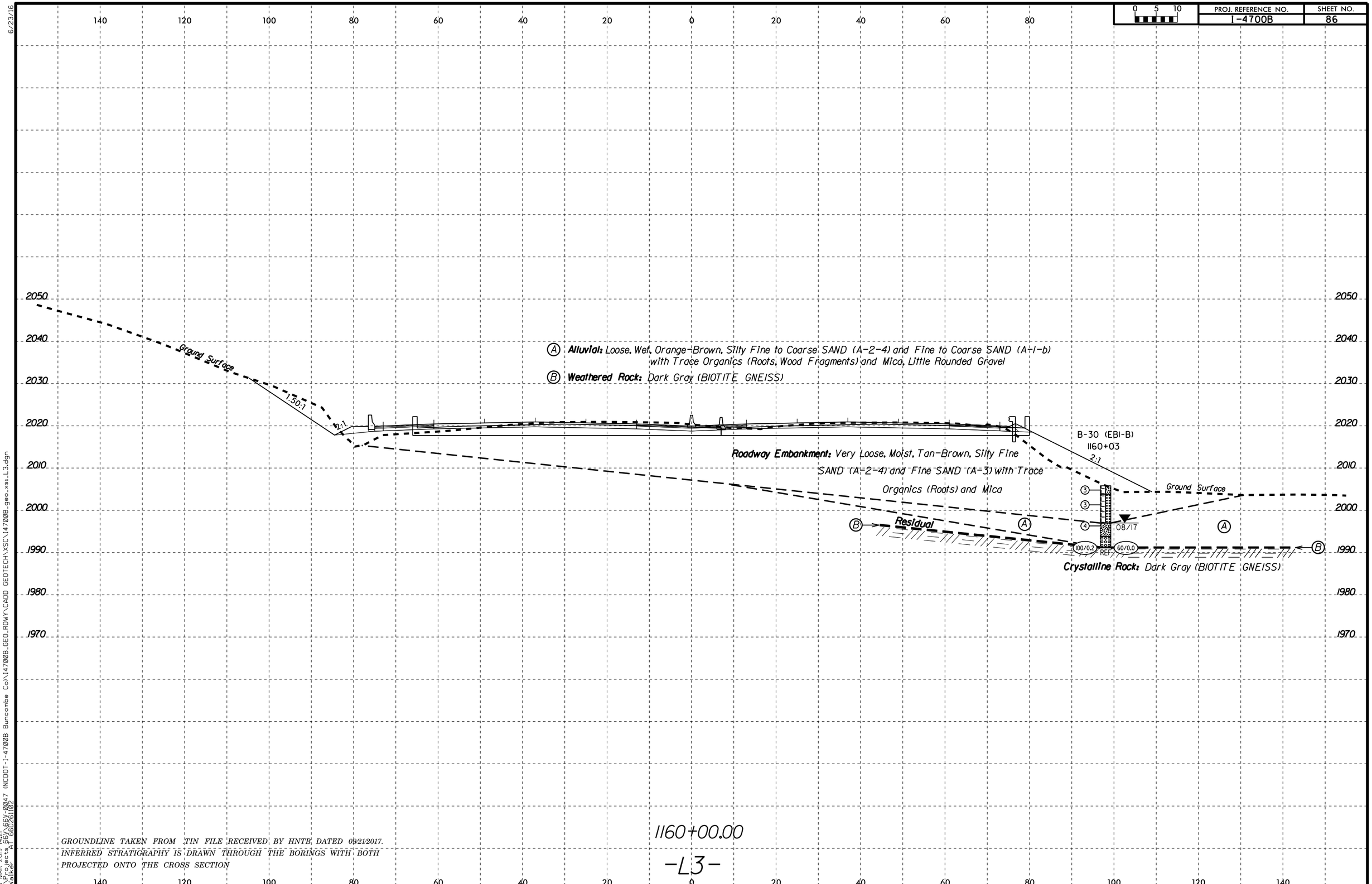

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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

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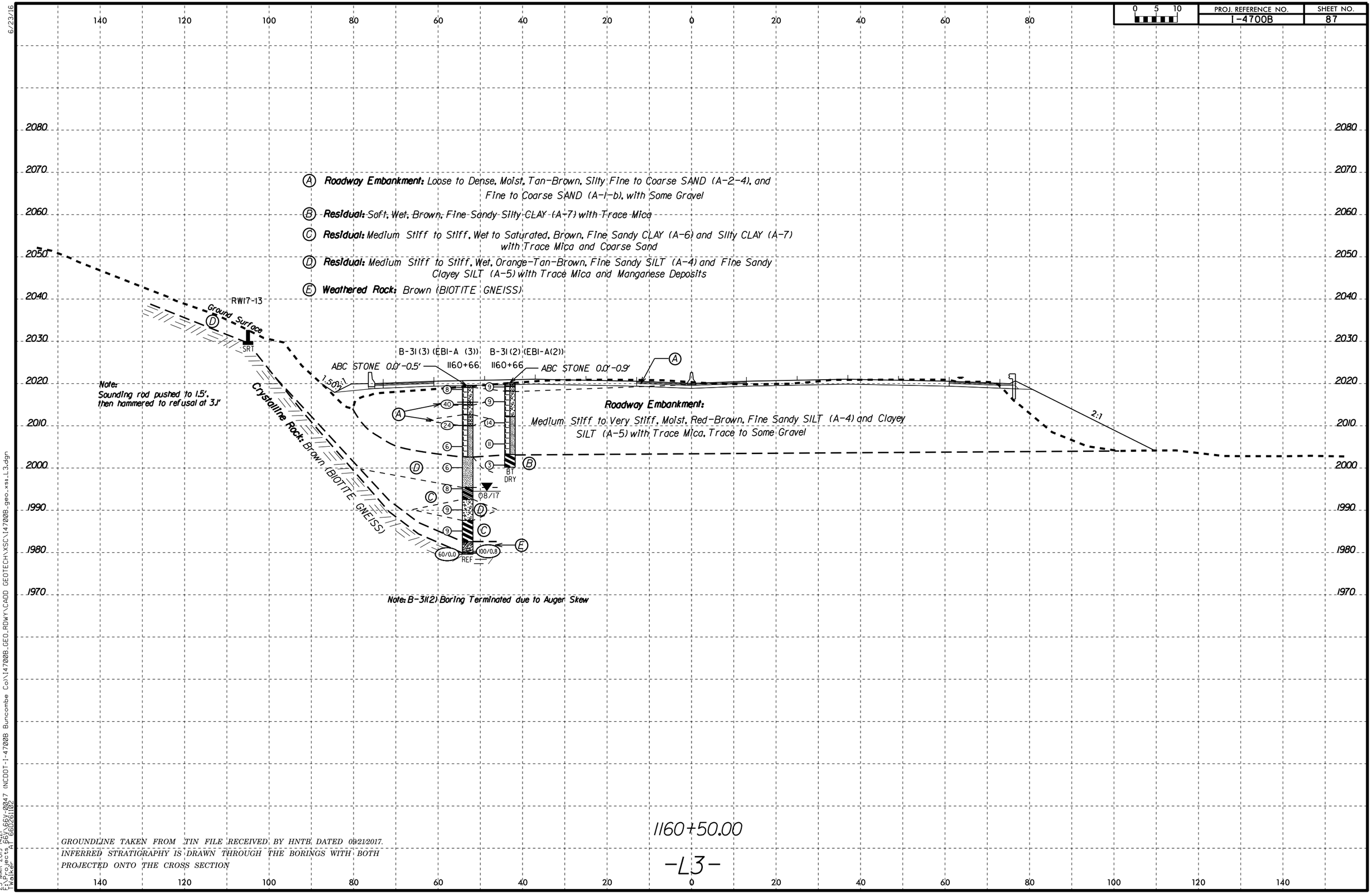

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INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16
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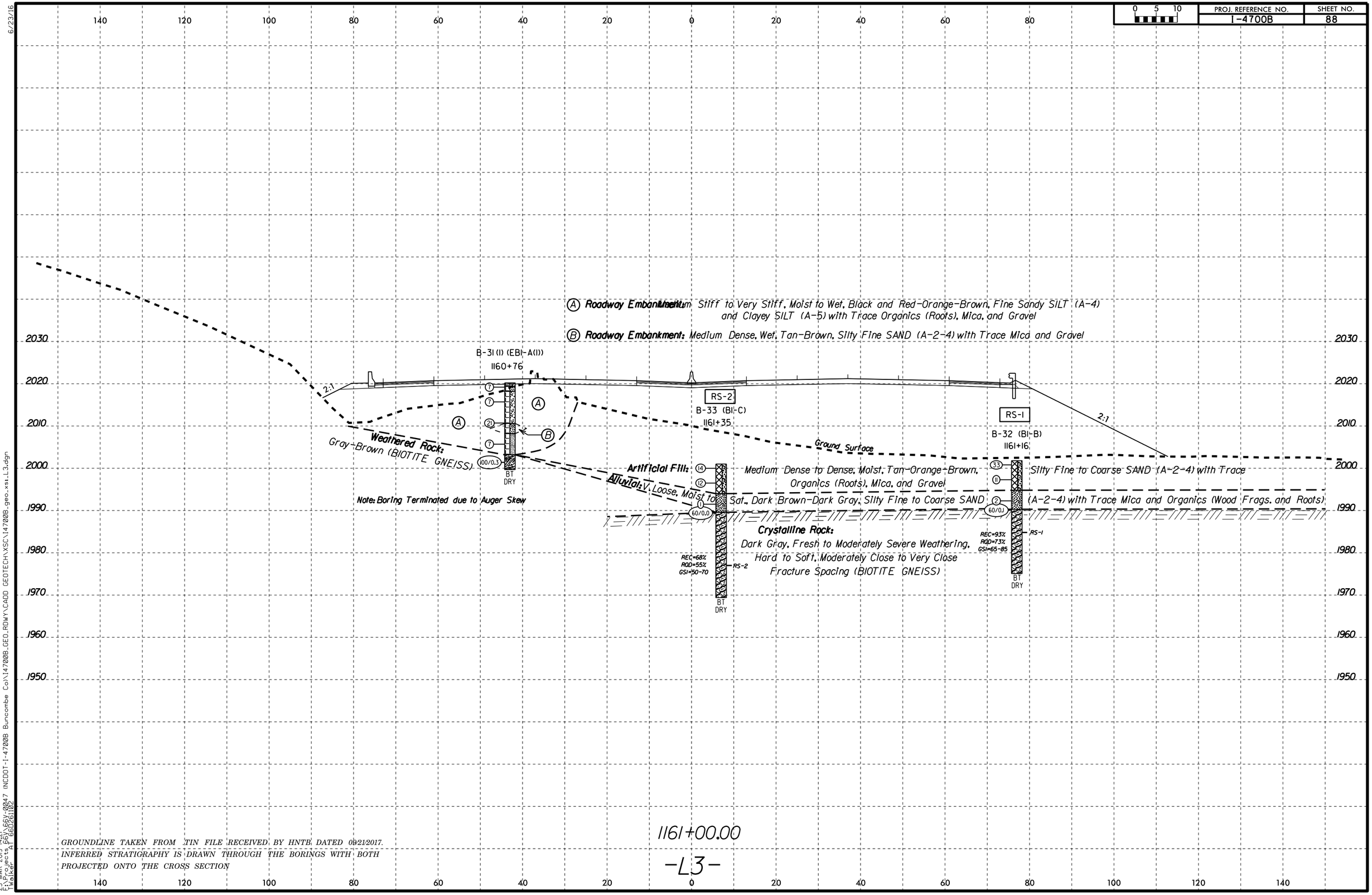
Walker AT 66026102

PROJ. REFERENCE NO. I-4700B | SHEET NO. 88



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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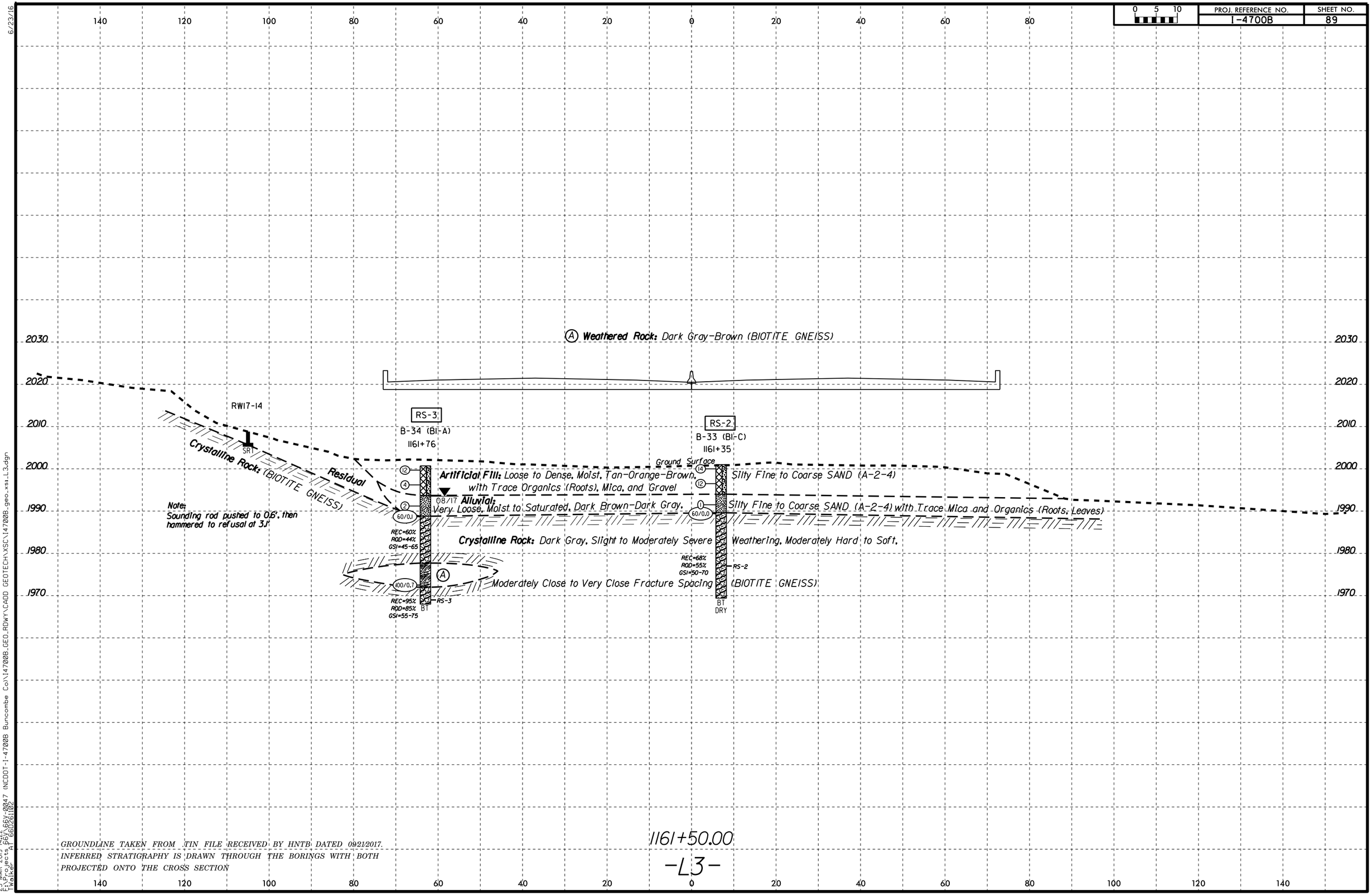
TWalker AT 66D261102



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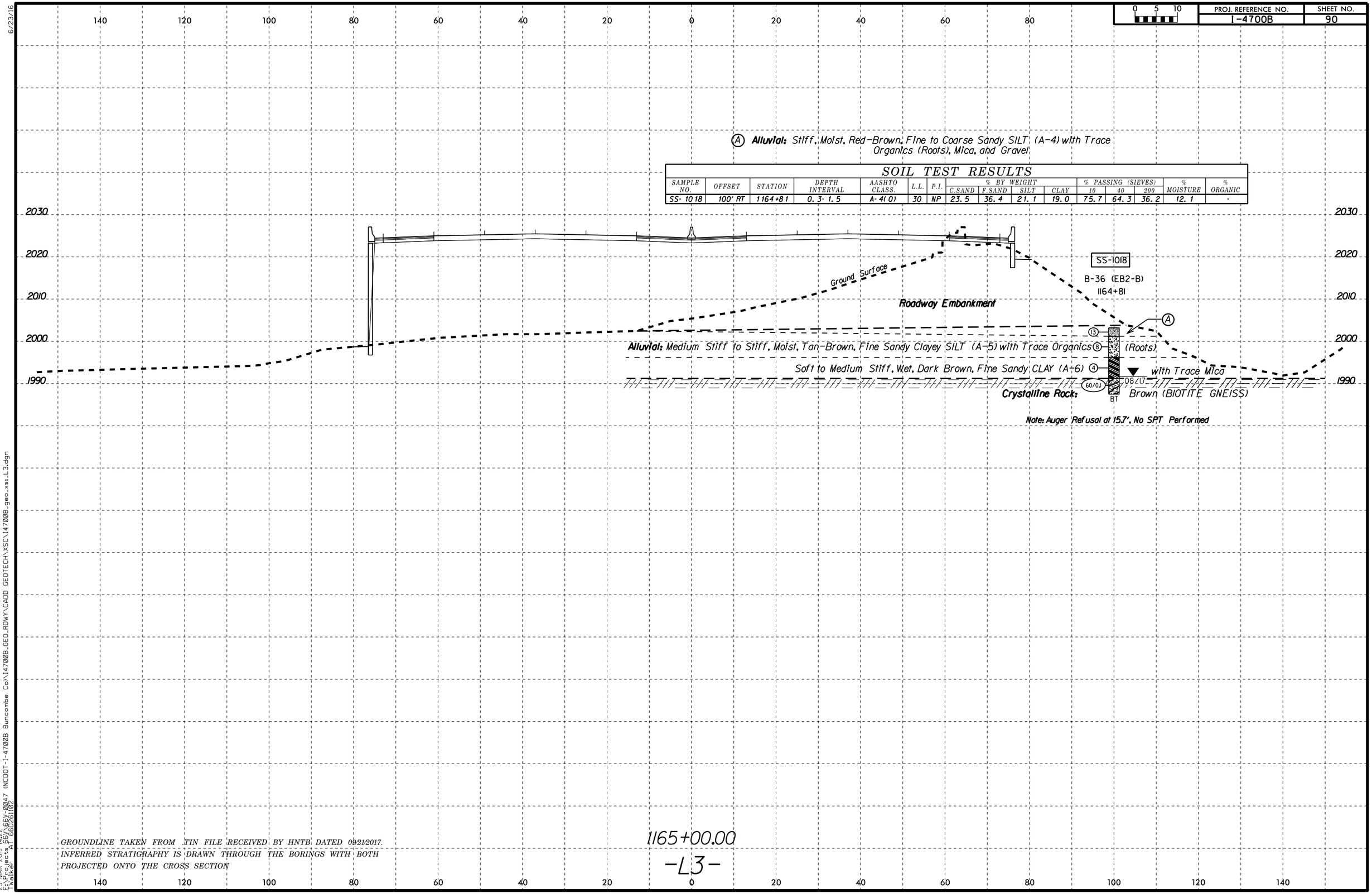
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	90



Ⓐ **Alluvial:** Stiff, Moist, Red-Brown, Fine to Coarse Sandy SILT (A-4) with Trace Organics (Roots), Mica, and Gravel

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-1018	100' RT	1164+81	0.3-1.5	A-4(0)	30	NP	23.5	36.4	21.1	19.0	75.7	64.3	36.2	12.1	-

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

25-MAR-2019 14:22
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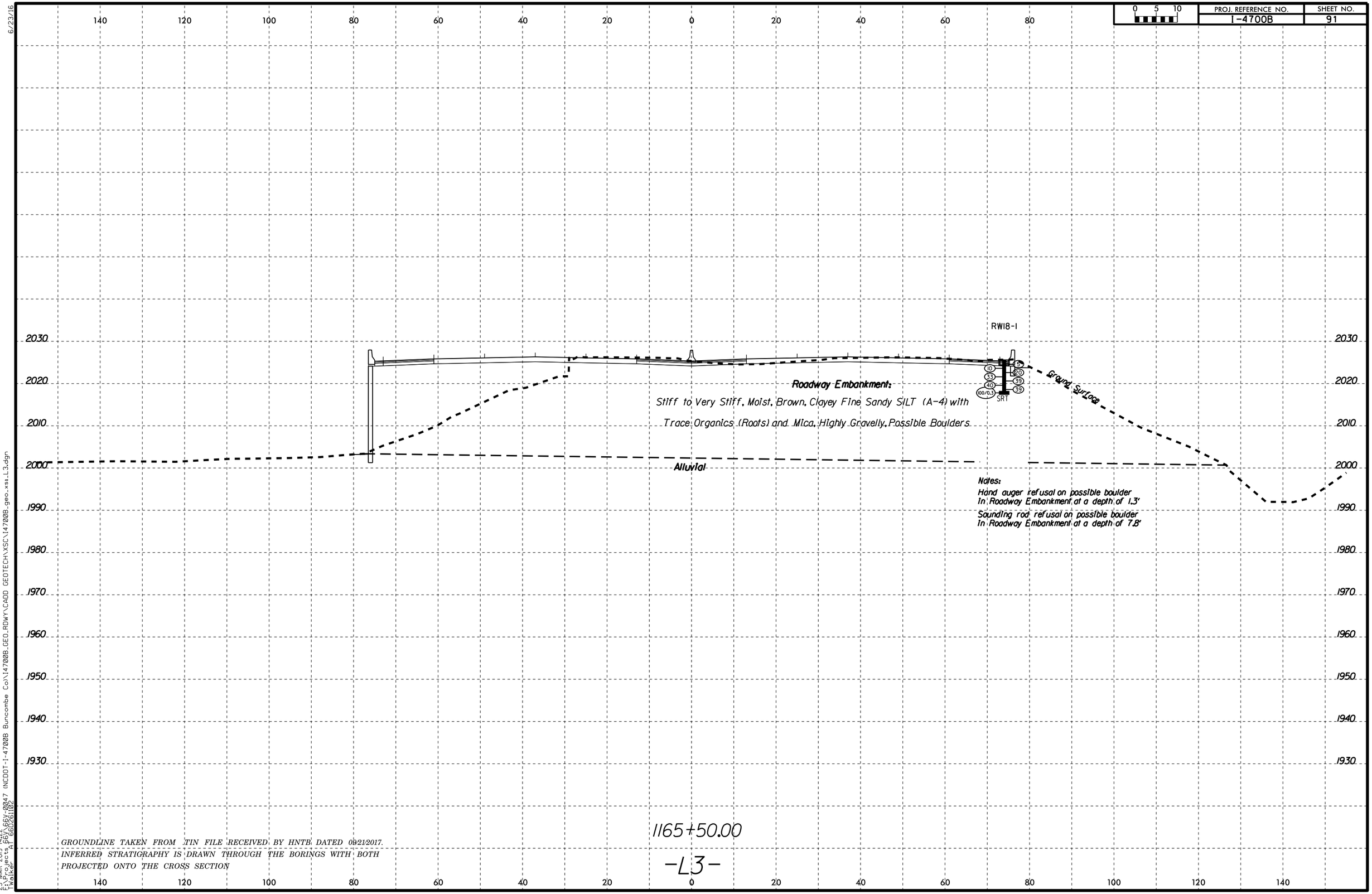
TWalker AT 66D261102



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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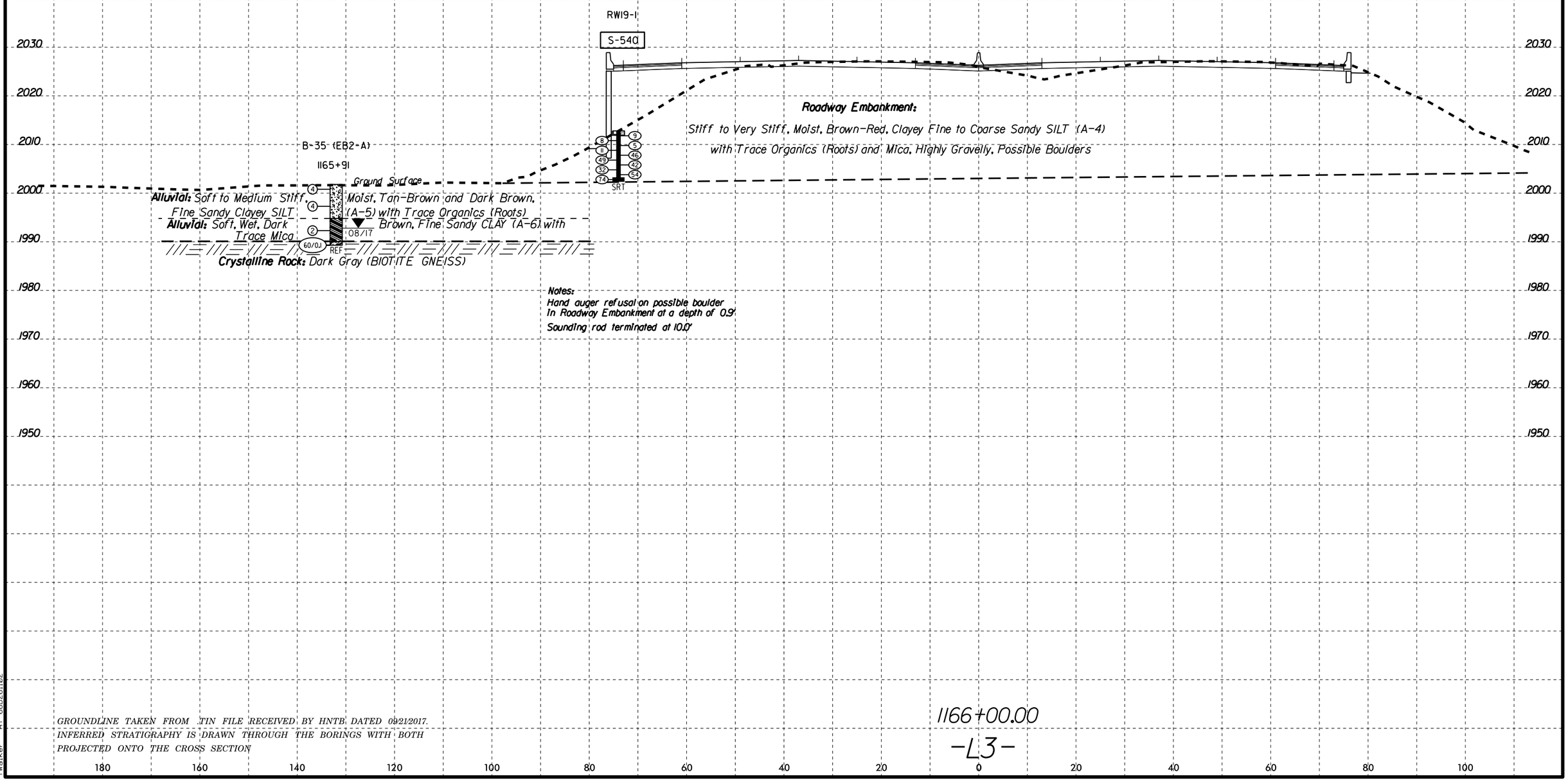
Walker AT 6602611102

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

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-540	74' LT	1166+00	0.4-0.9	A-1-b(0)	37	2	35.4	35.3	14.1	15.2	56.6	44.0	20.3	16.5	-



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

1166+00.00

-L3-

6/23/16
25-MAR-2019 14:22
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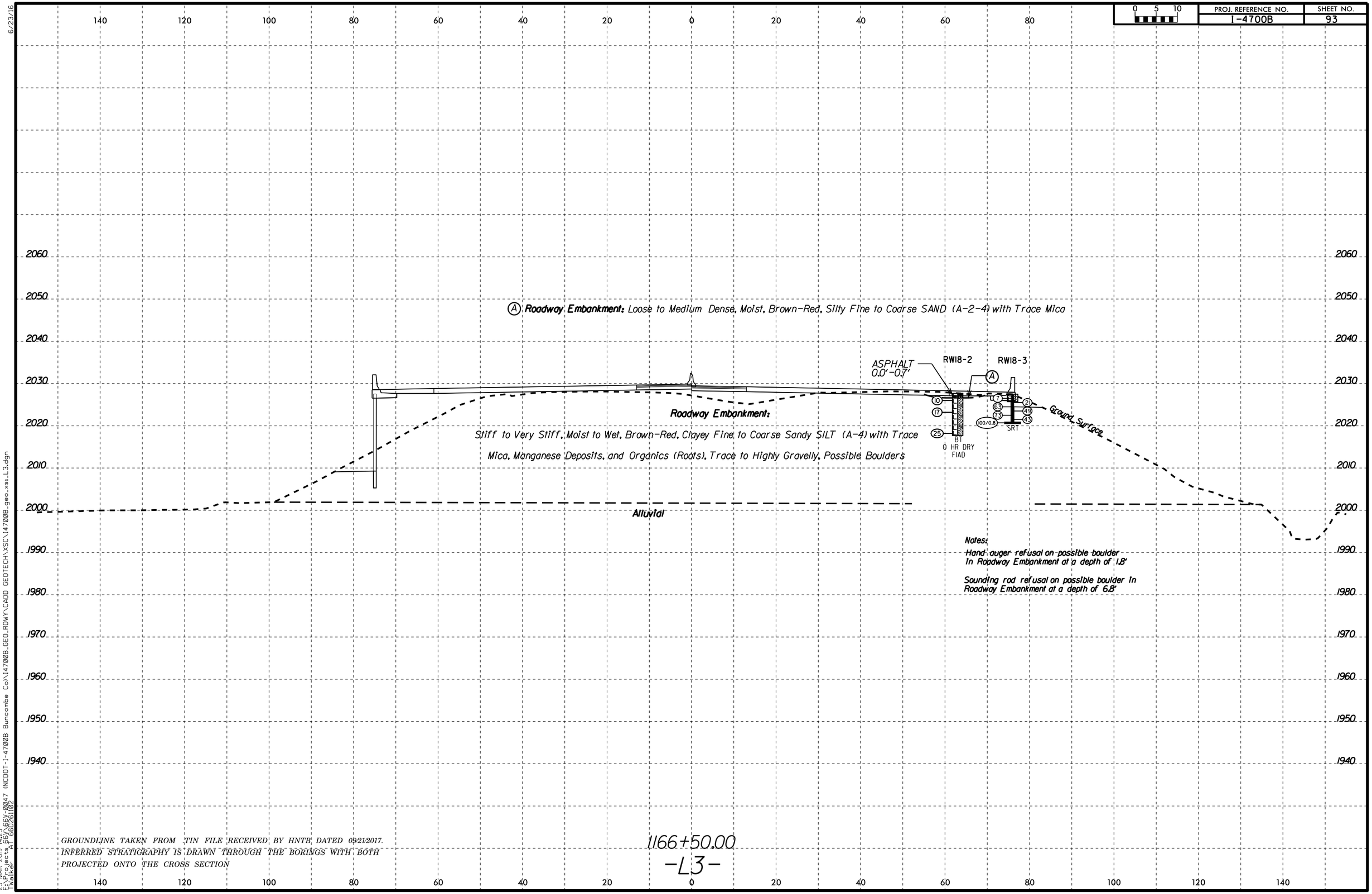
TWalker AT 66D261102



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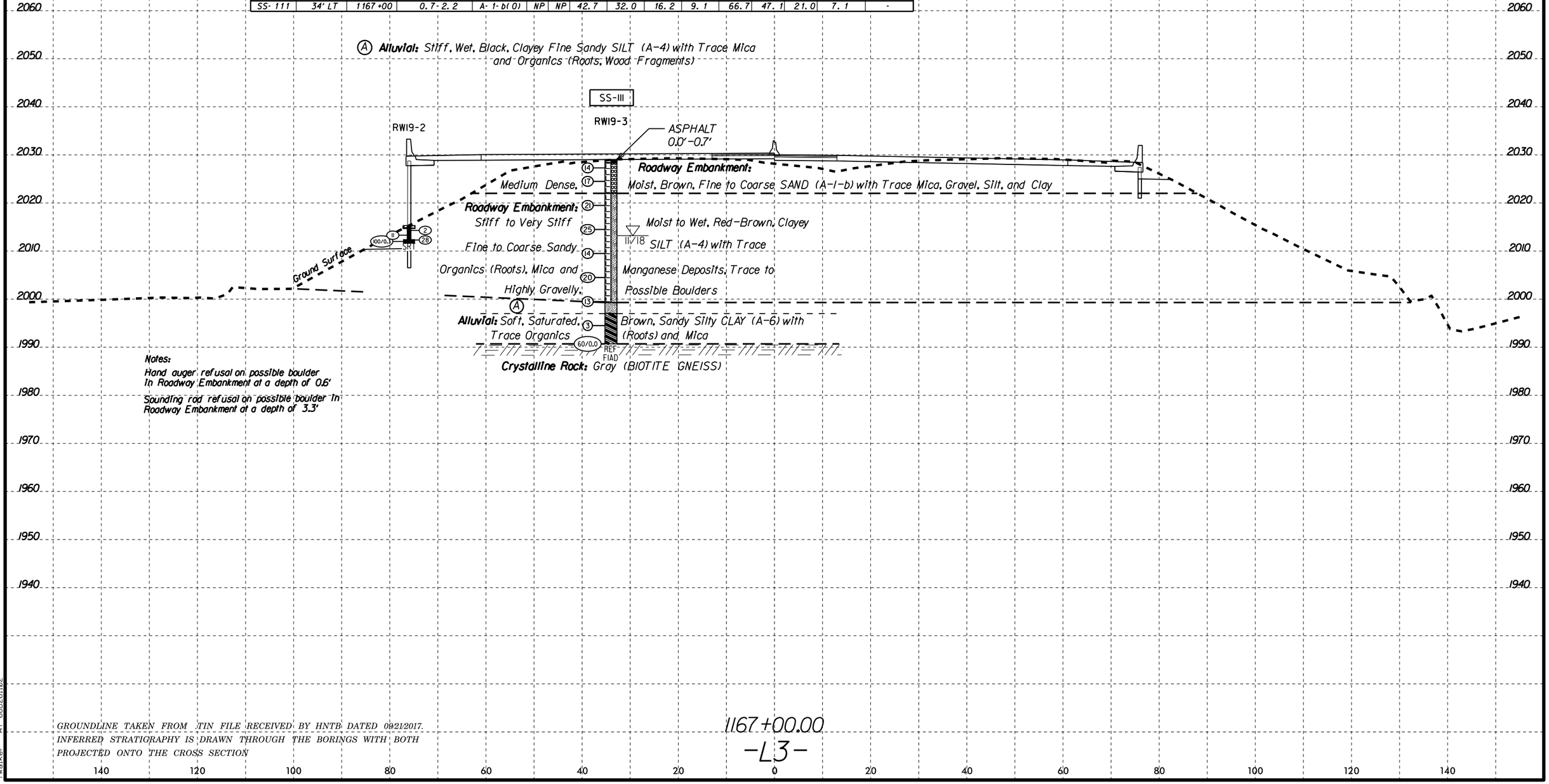
TWalker AT 66D261102

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

0 5 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-111	34' LT	1167+00	0.7-2.2	A-1-b(0)	NP	NP	42.7	32.0	16.2	9.1	66.7	47.1	21.0	7.1	-



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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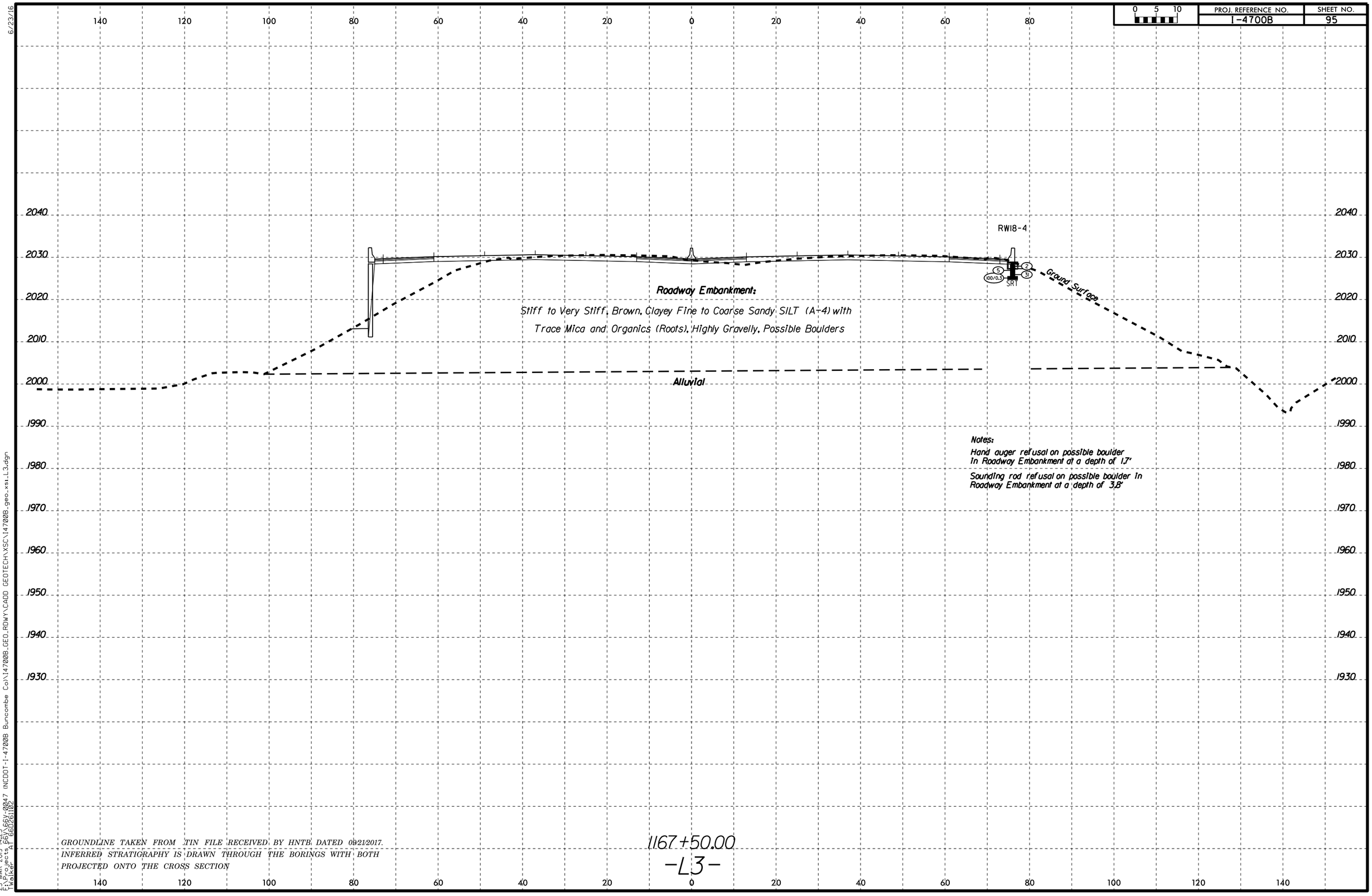
TWalker AT 66026102



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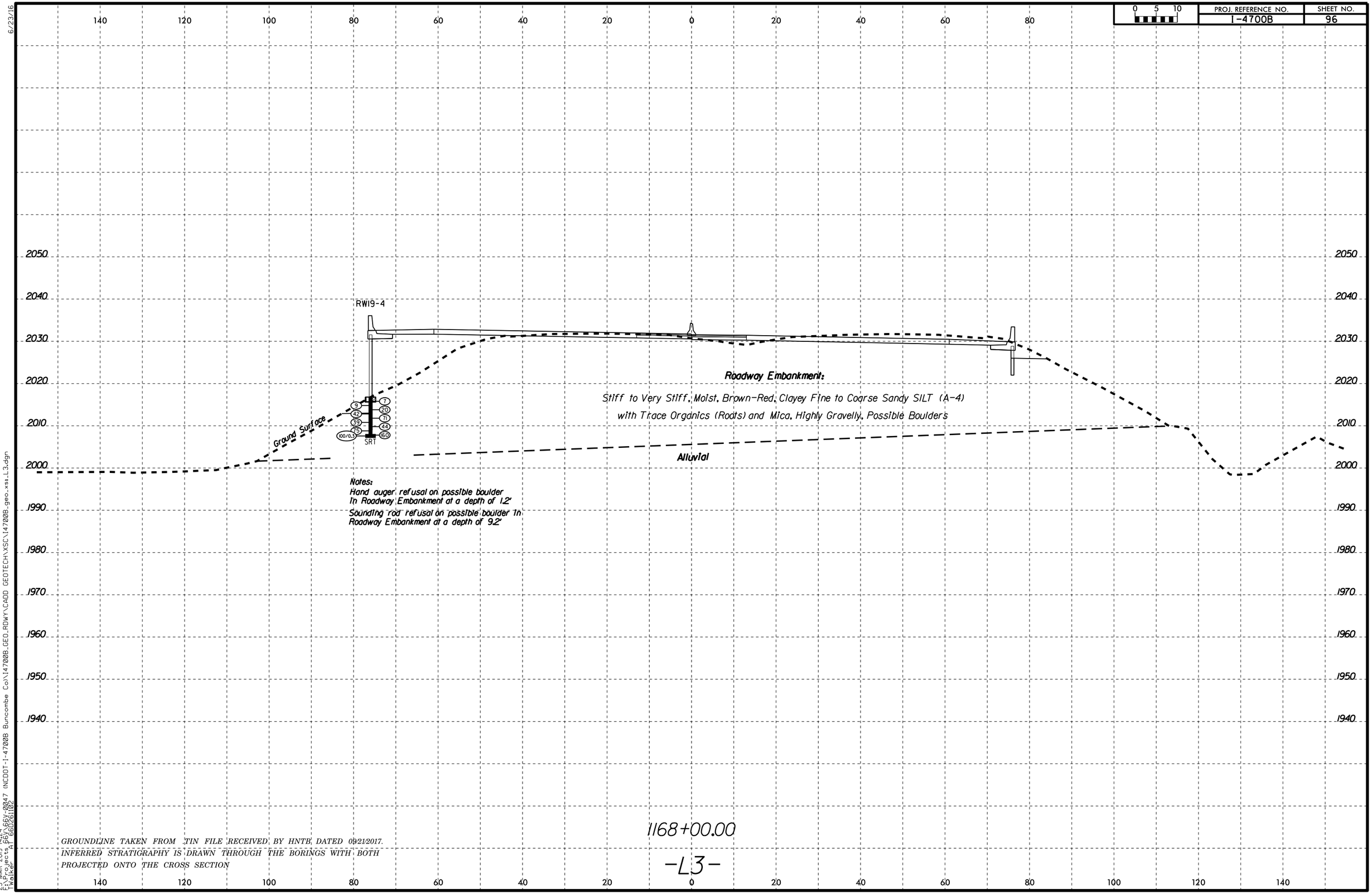
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	96



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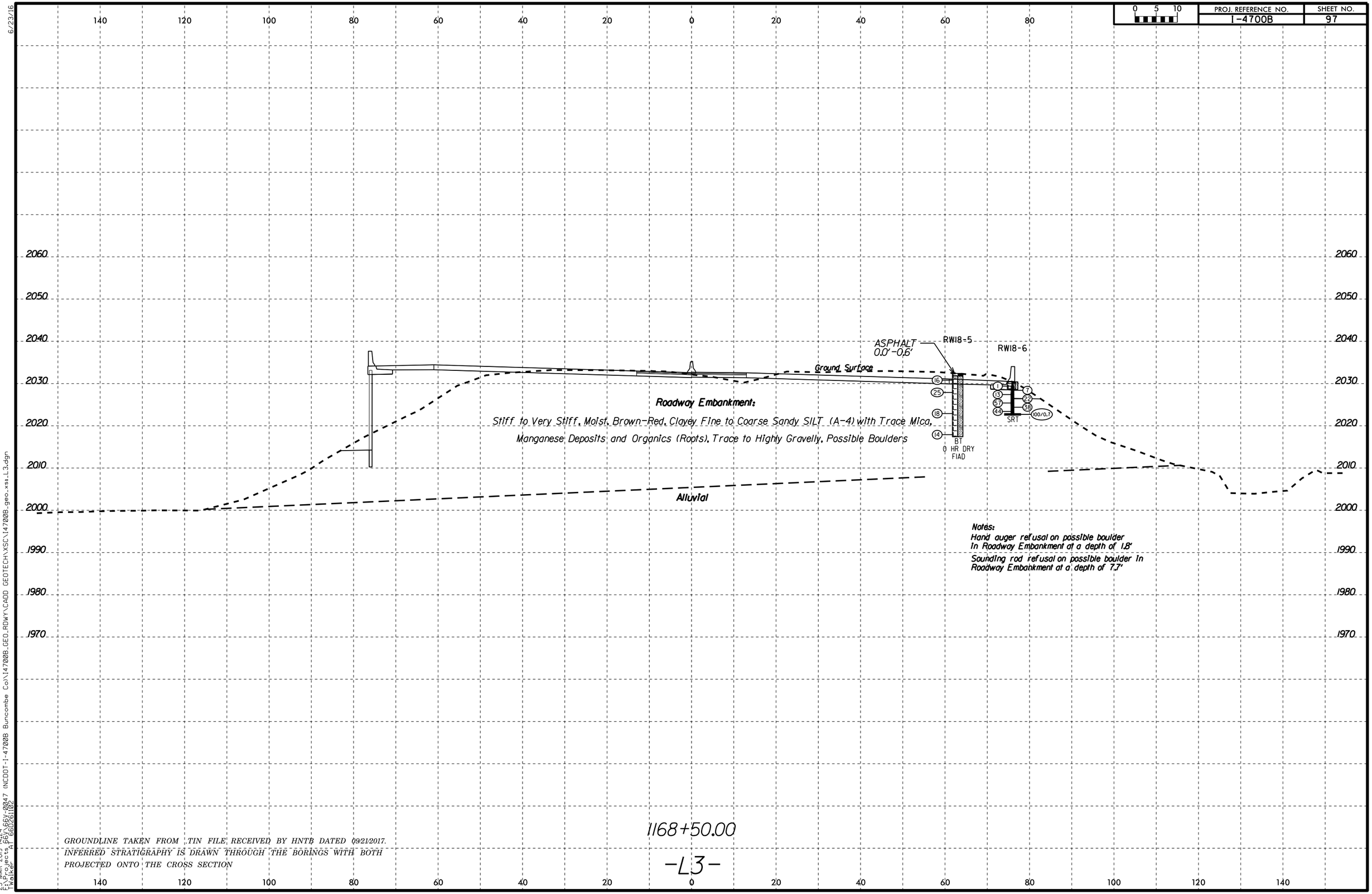
Walker at 66026102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	97



GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
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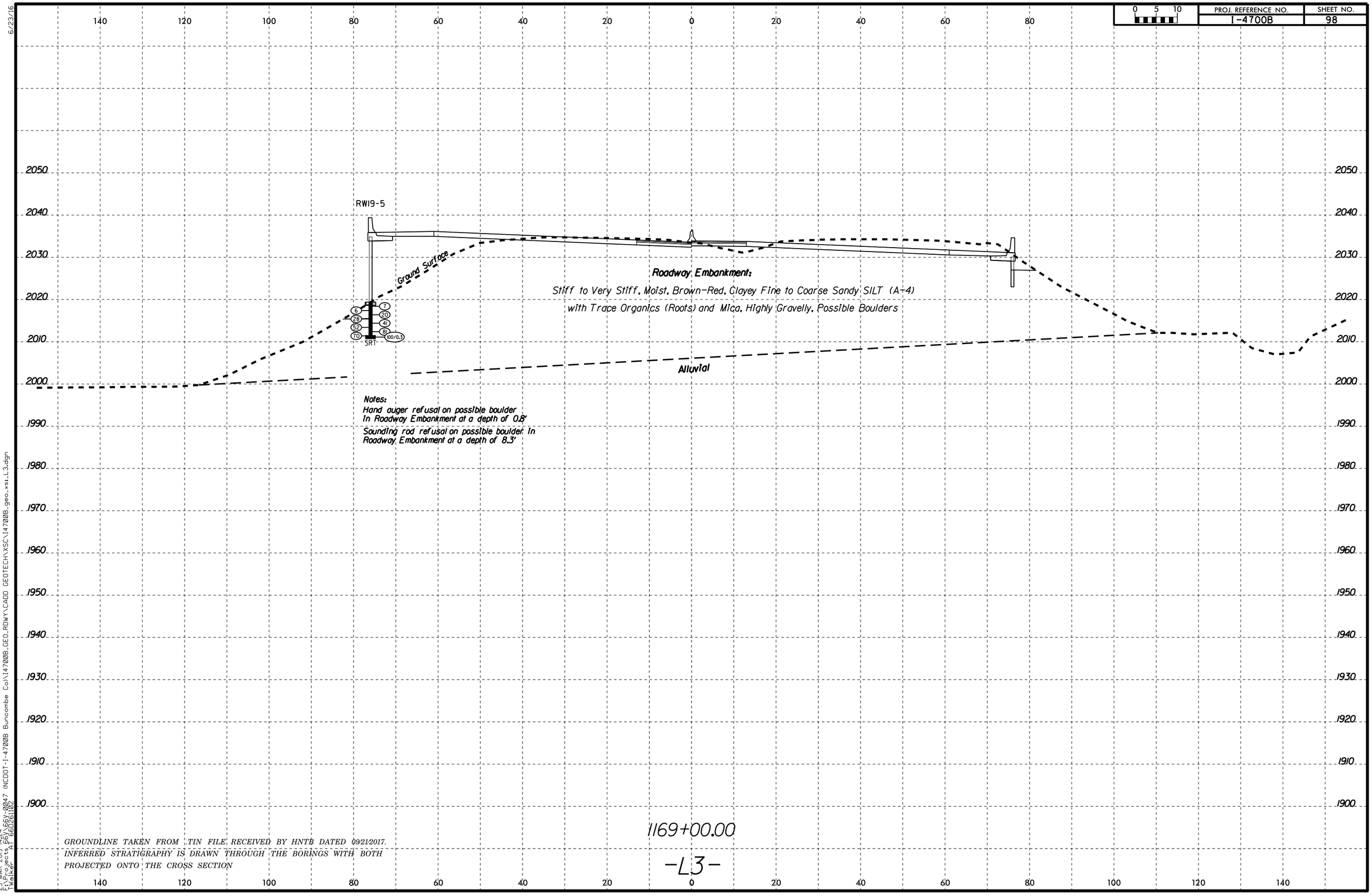
Walker AT 66026102



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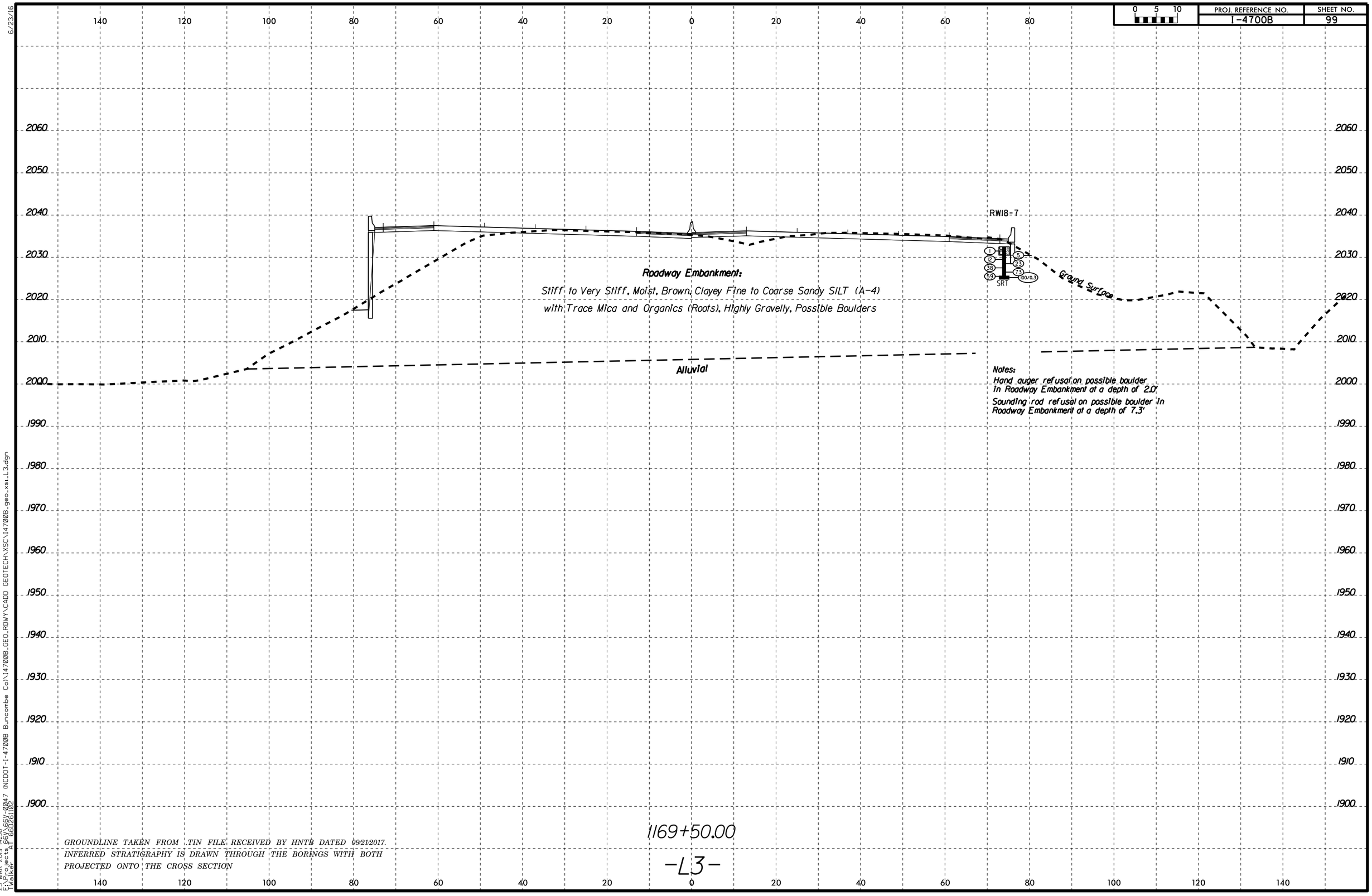

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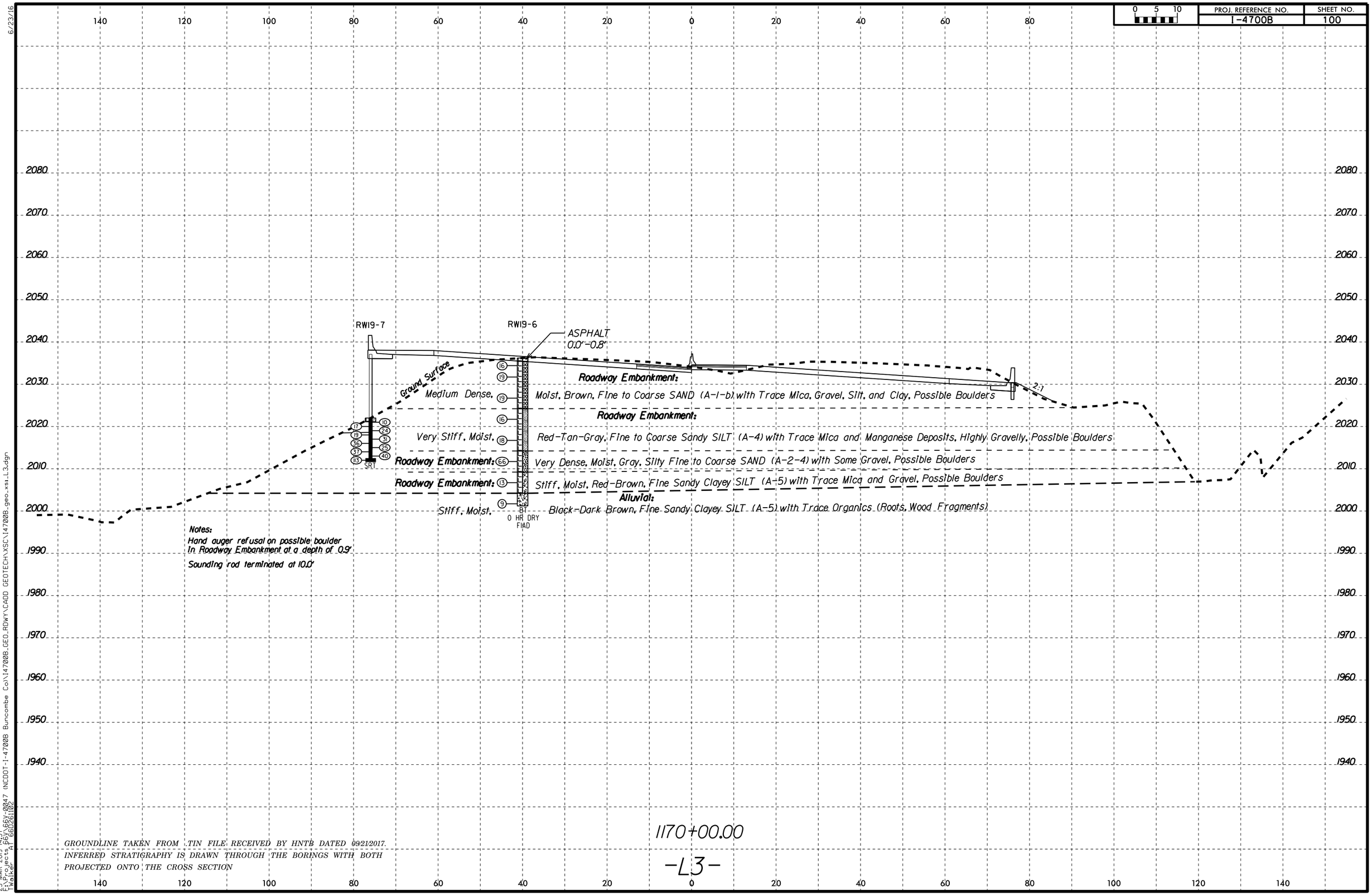
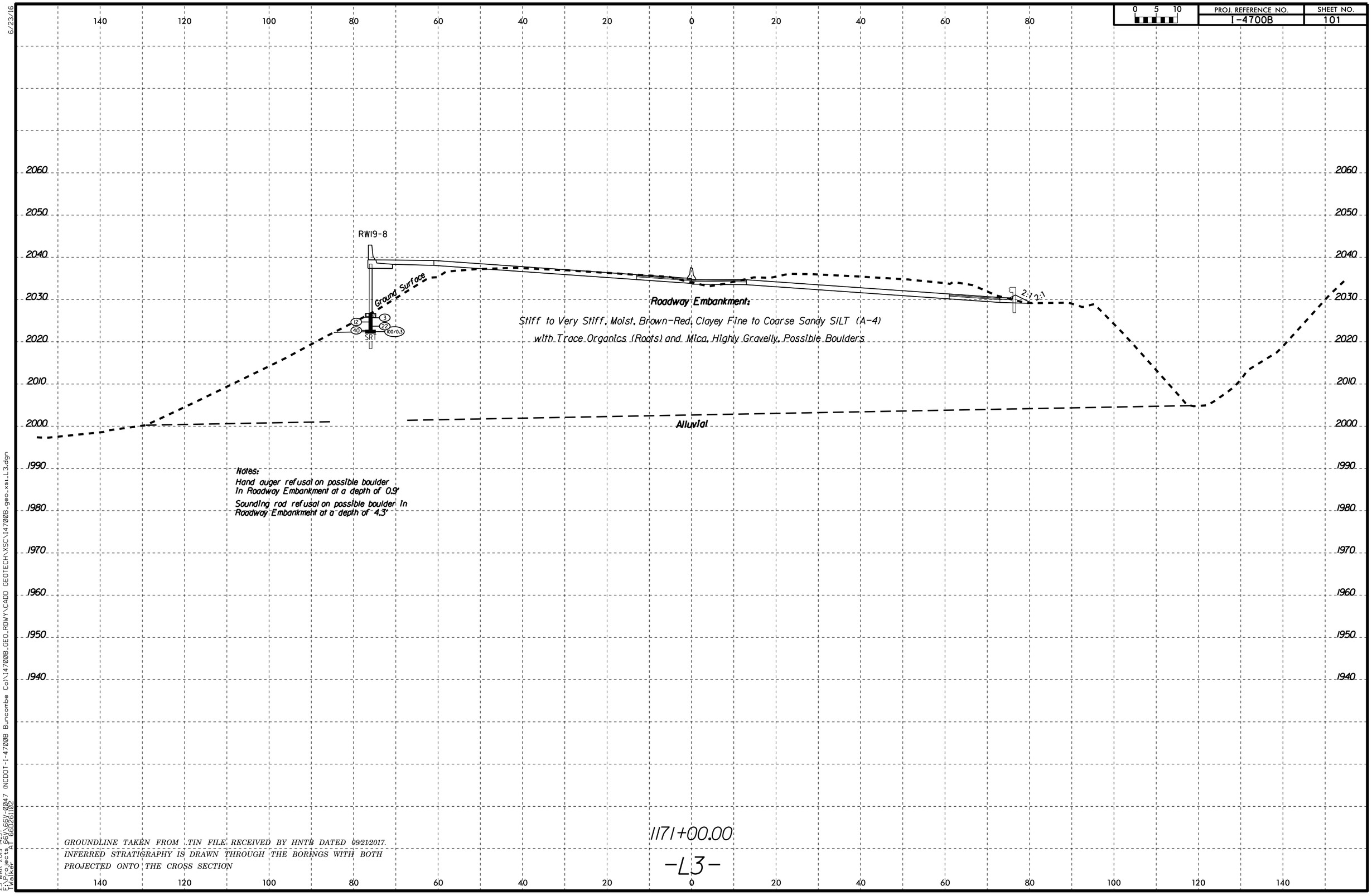


GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY HNTB DATED 09/21/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

6/23/16

25-MAR-2019 14:57
F:\Projects 66V\66V-0047 (NCDOT-I-4700B Buncombe Co)\I4700B_GEO_RDWY\CADD GEOTECH\XSC\I4700B_geo_xs1_L3.dgn
TWalker AT 66D261102



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

25-MAR-2019 14:57
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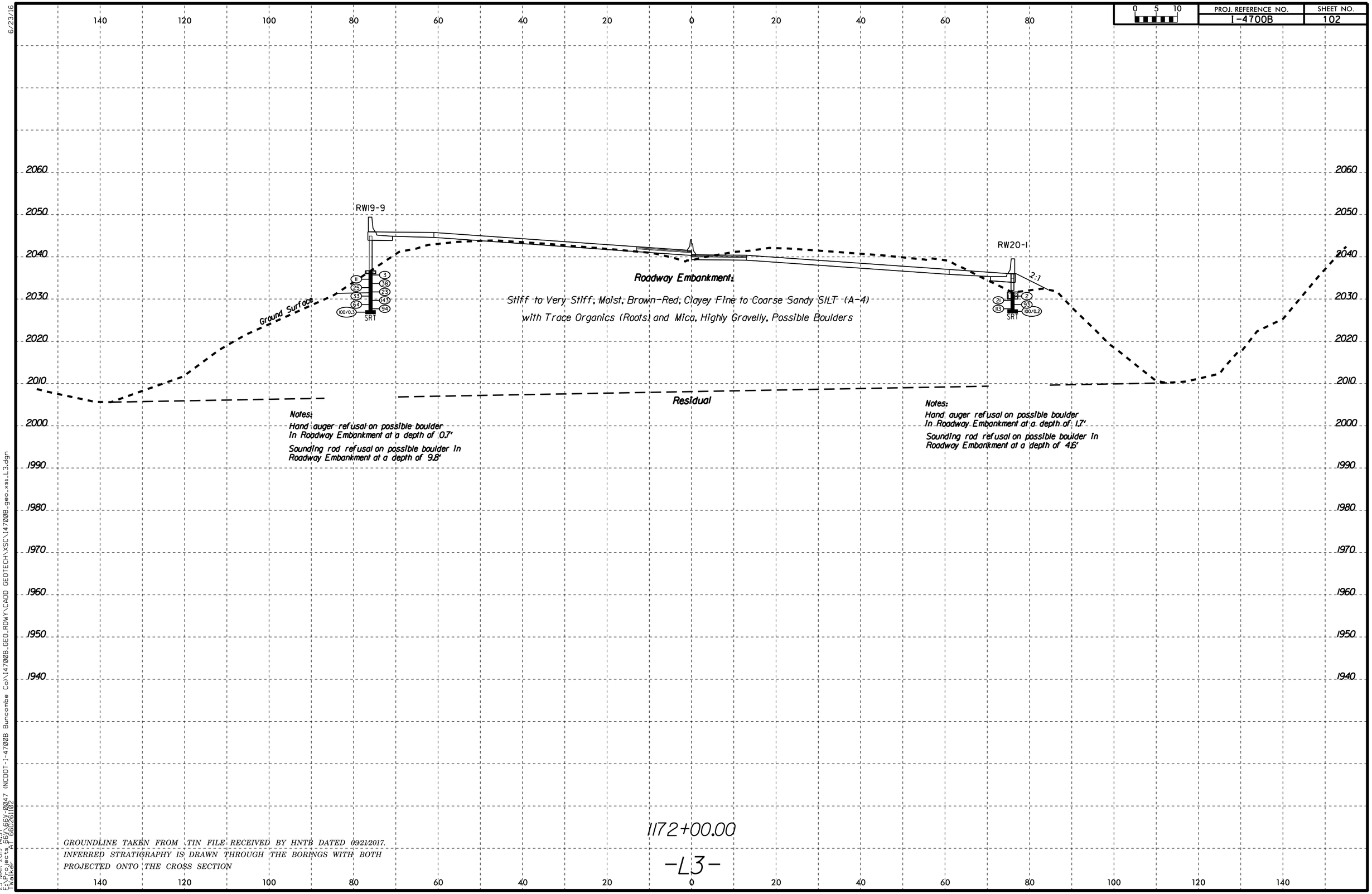
TWalker AT 66D261102



6/23/16

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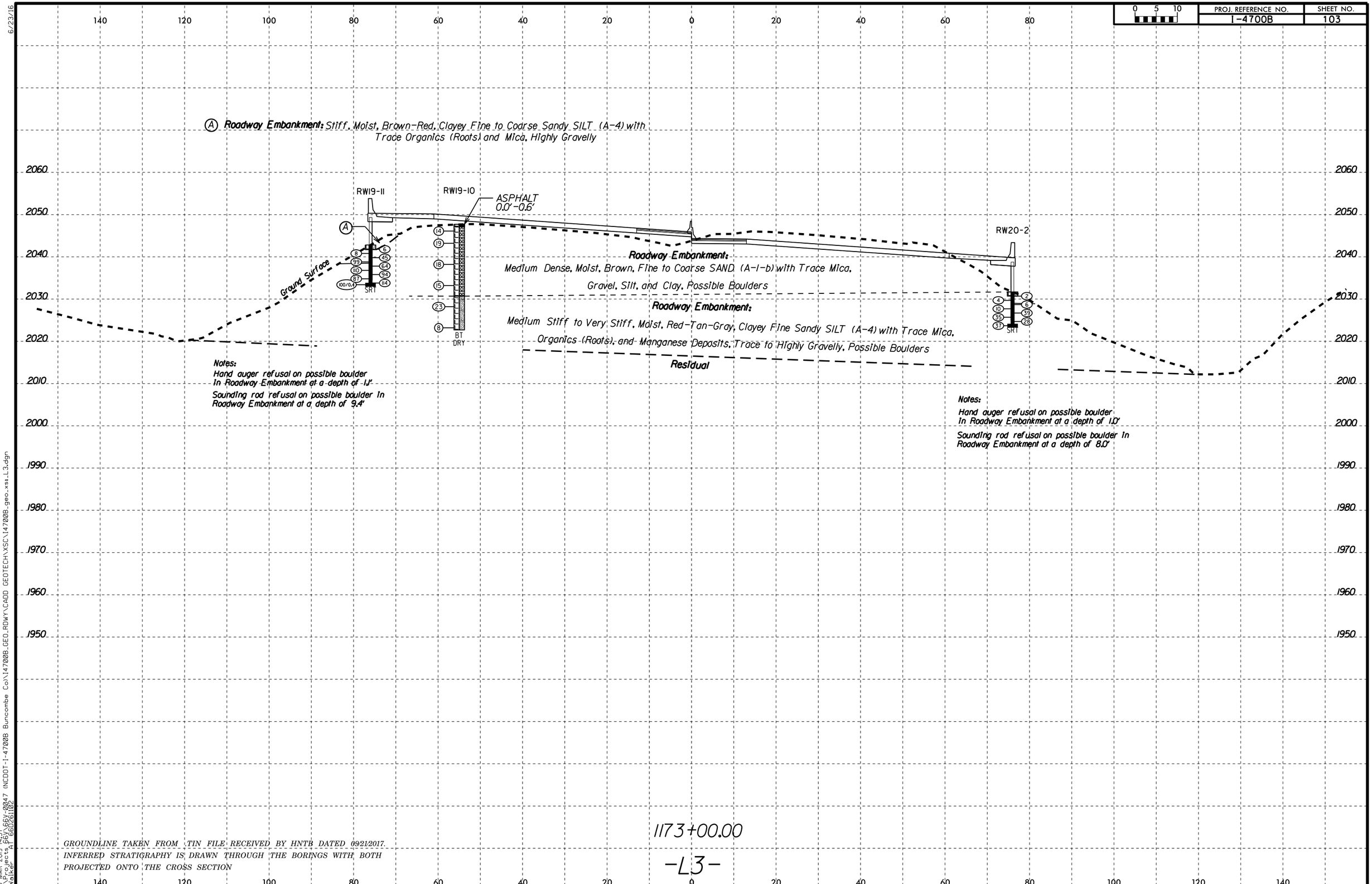
TWalker AT 66D261102



6/23/16

25-MAR-2019 14:57
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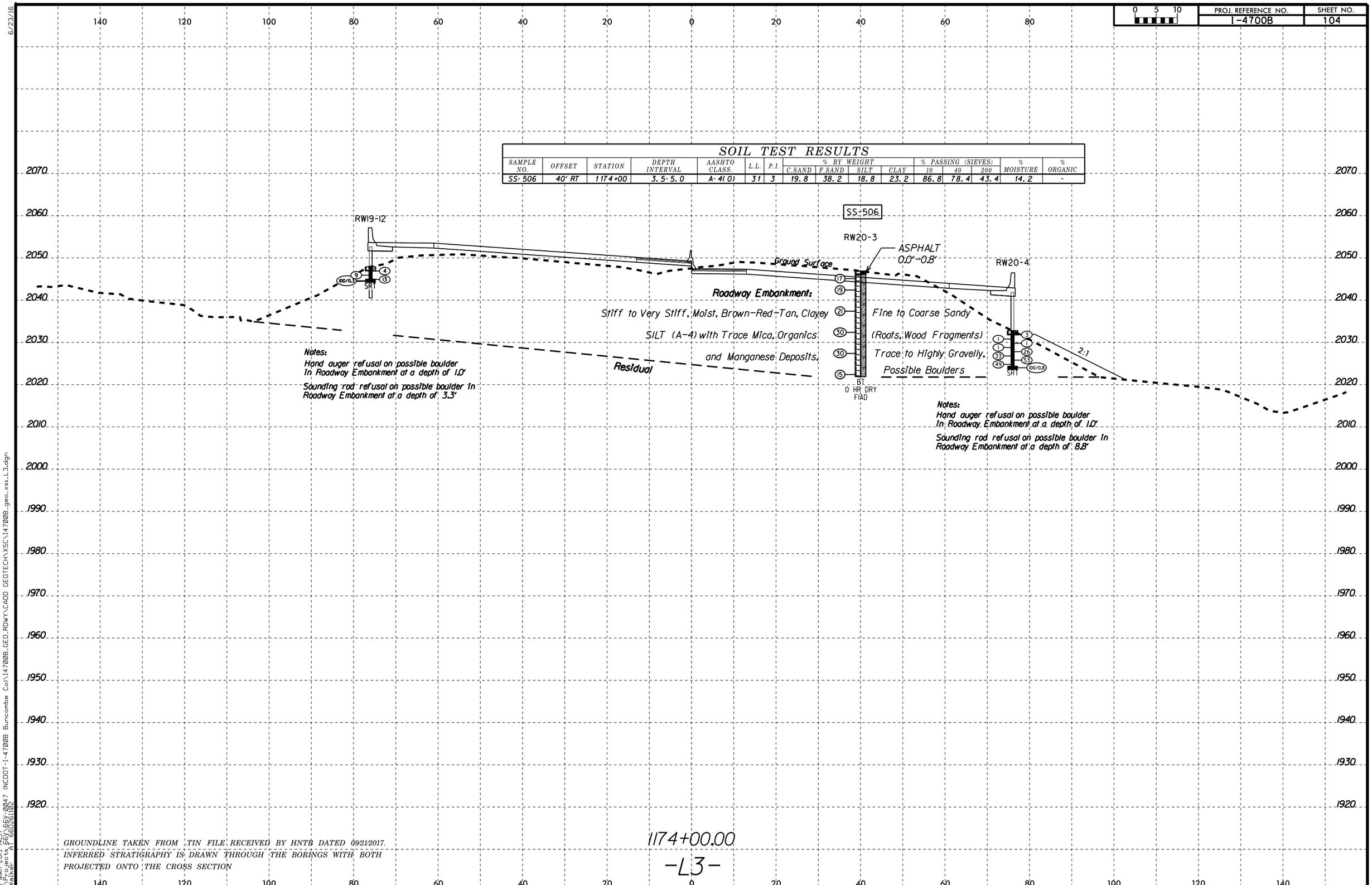
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	104

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-506	40' RT	1174+00	3.5-5.0	A-4(0)	31	3	19.8	38.2	18.8	23.2	86.8	78.4	43.4	14.2	-



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

1174+00.00

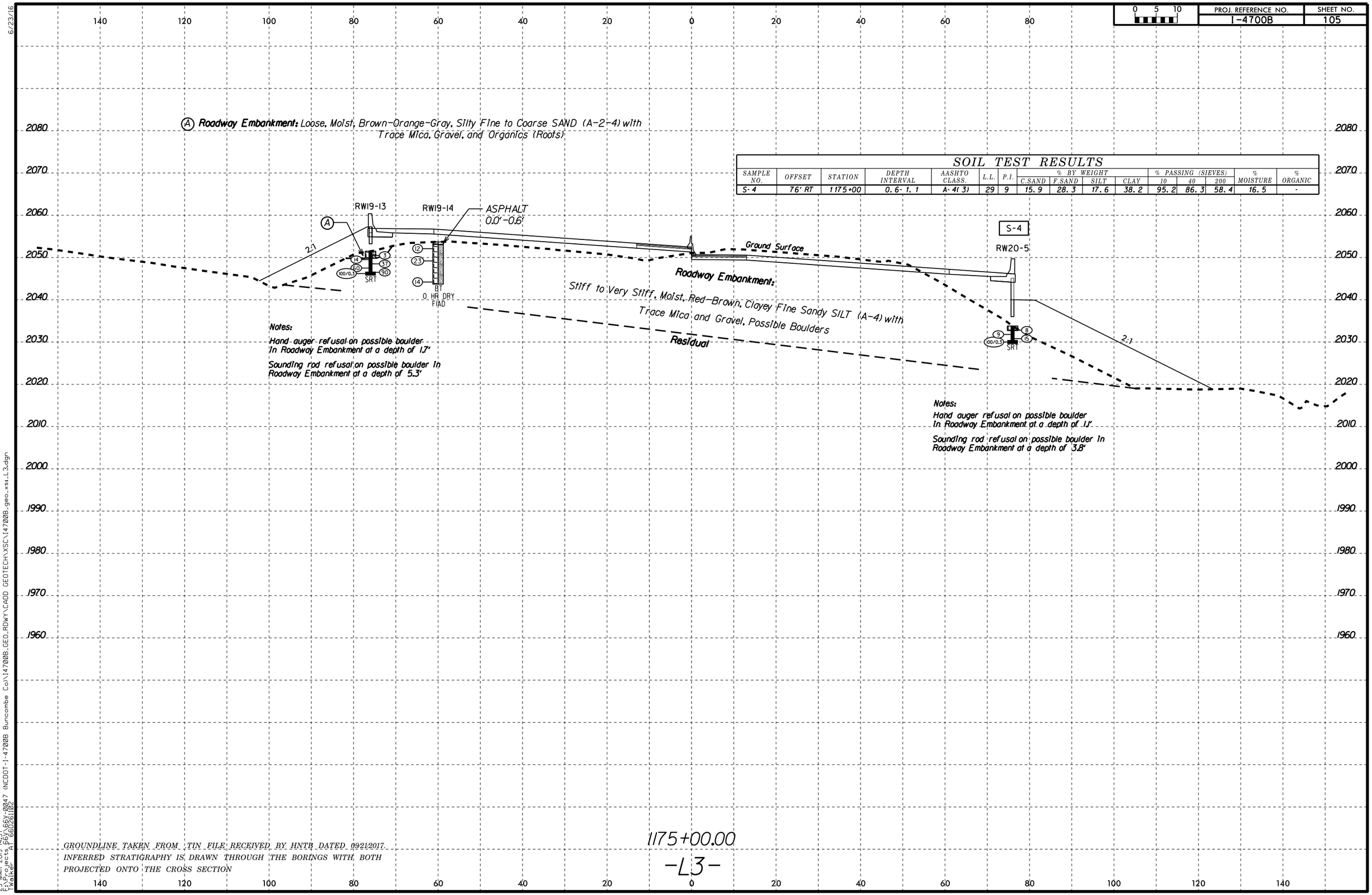
-L3-

6/23/16

25-MAR-2019 14:57
F:\Projects_66V\66V-0047 (NCDOT-I-4700B Buncombe Co)\I4700B_GEO_RDWY\CADD GEOTECH\XSC\I4700B_geo_xsi_L3.dgn
TWalker AT 66D261102

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

0 5 10



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-4	76' RT	1175+00	0.6-1.1	A-4(3)	29	9	15.9	28.3	17.6	38.2	95.2	86.3	58.4	16.5	-

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
25-MAR-2019 14:57
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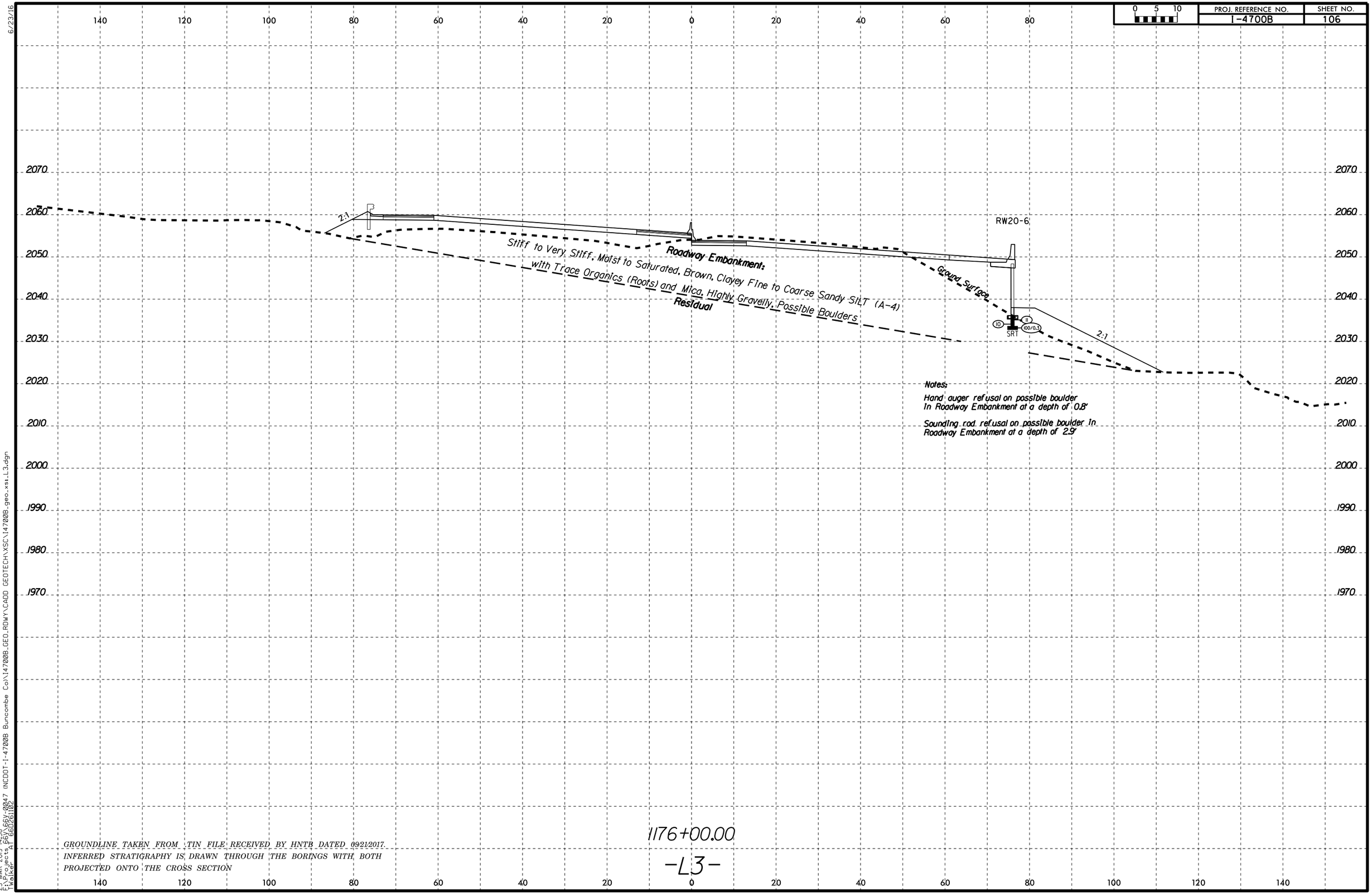
TWalker AT 66026102



6/23/16

25-MAR-2019 14:58
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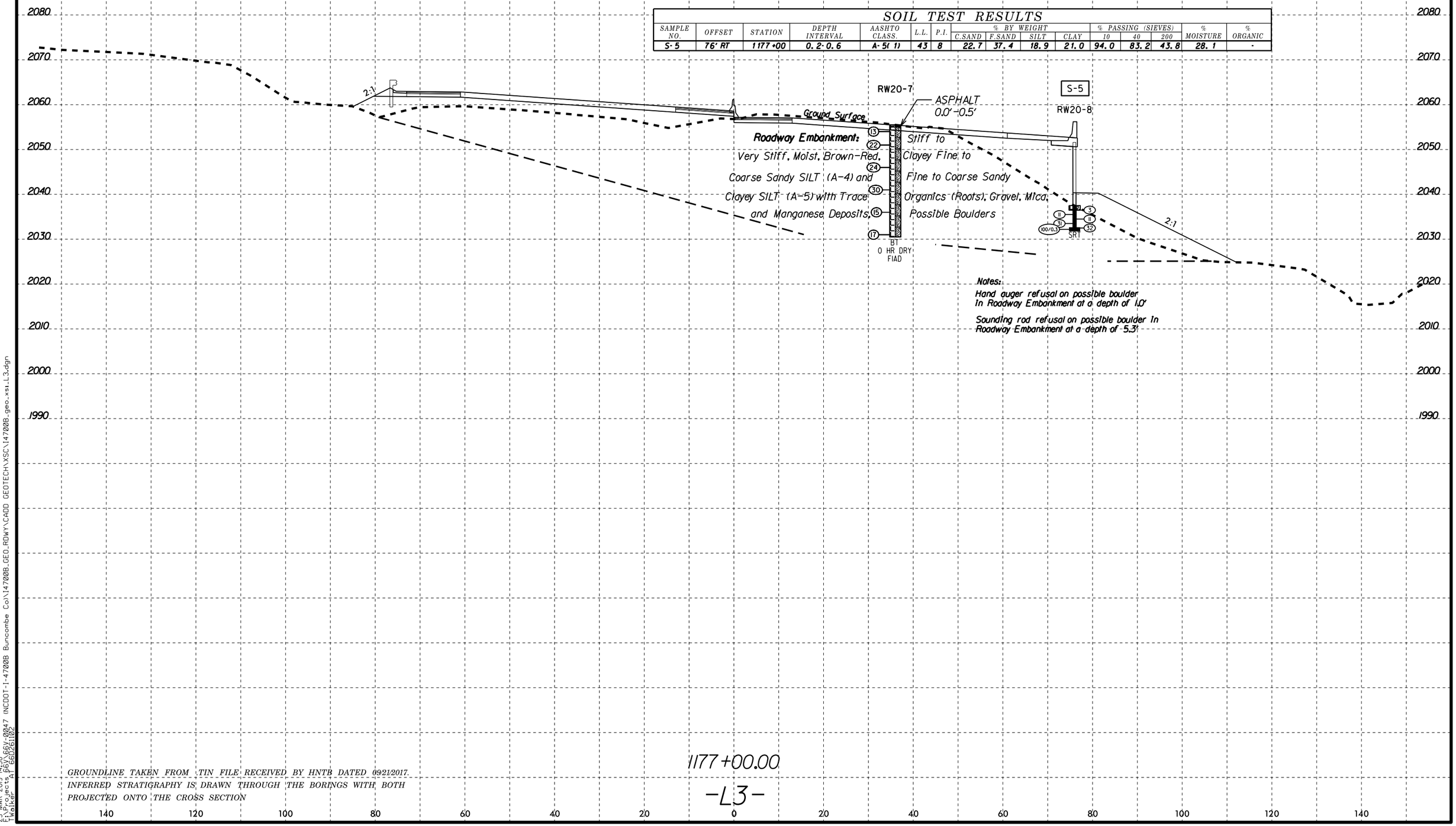
TWalker AT 66D261102

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

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-5	76' RT	1177+00	0.2-0.6	A-5(1)	43	8	22.7	37.4	18.9	21.0	94.0	83.2	43.8	28.1	-



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

25-MAR-2019 14:58
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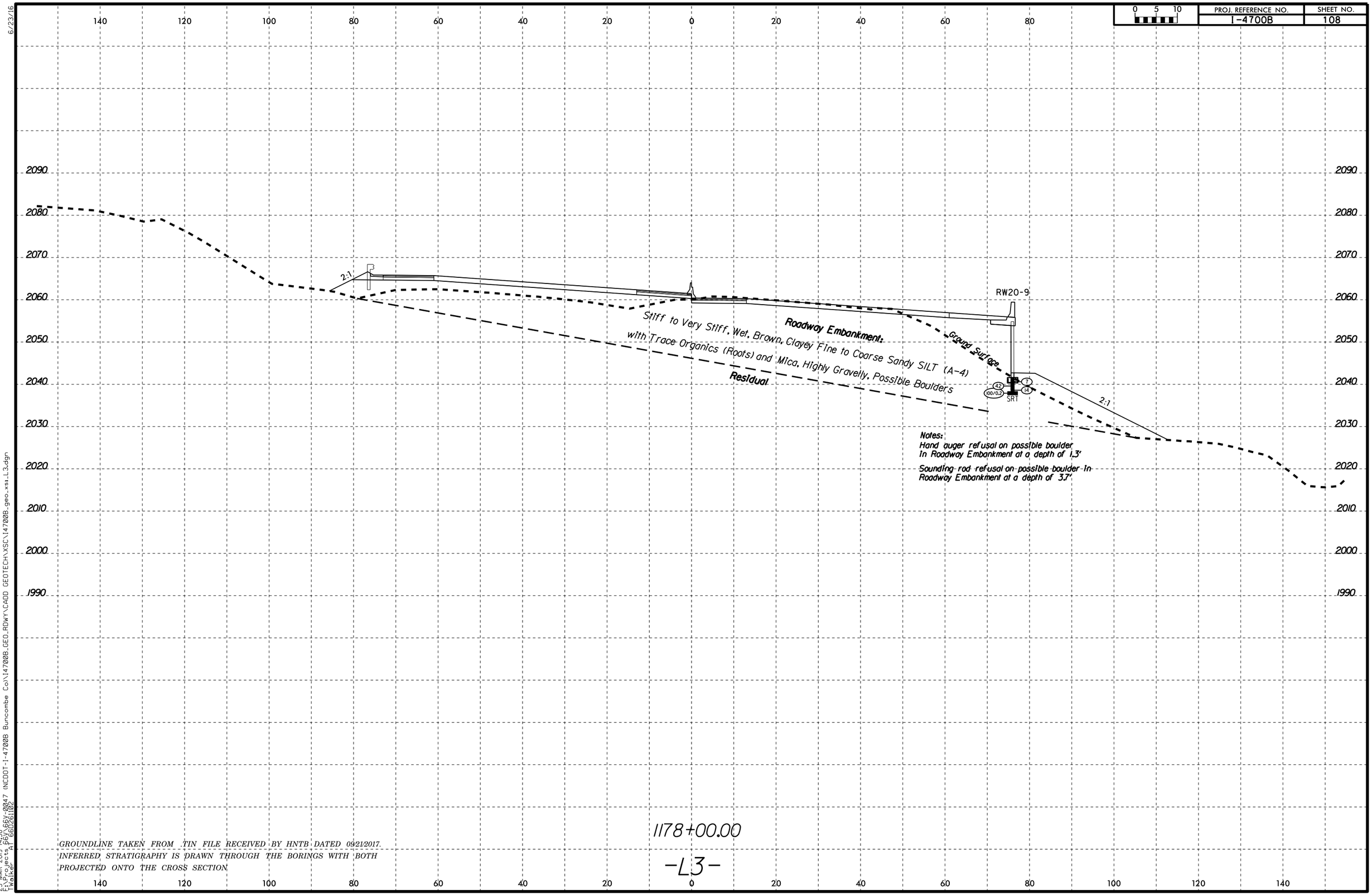
TWalker AT 66D261102



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
25-MAR-2019 14:58
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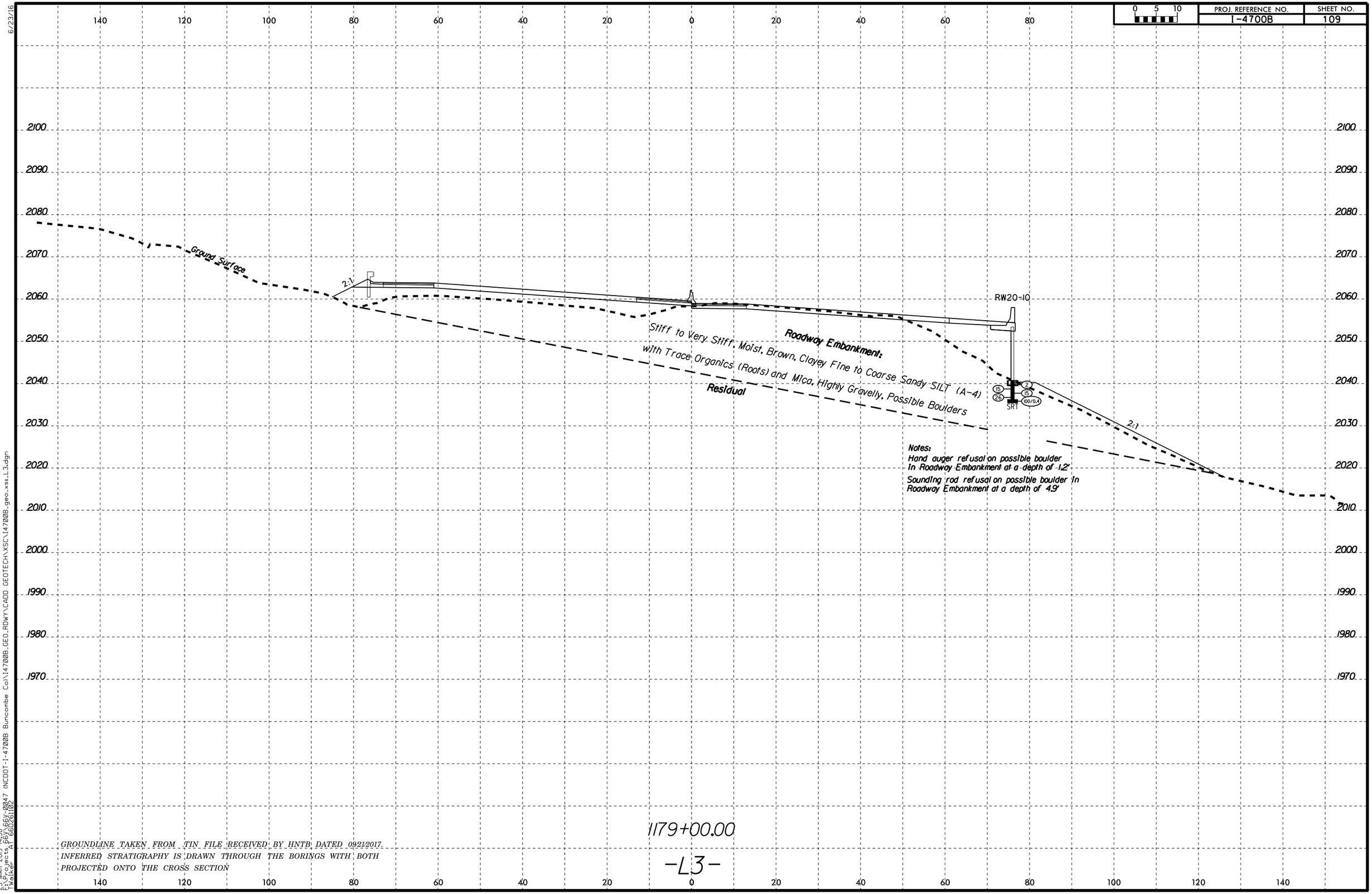
Walker AT 66026102



6/23/16

25-MAR-2019 14:58
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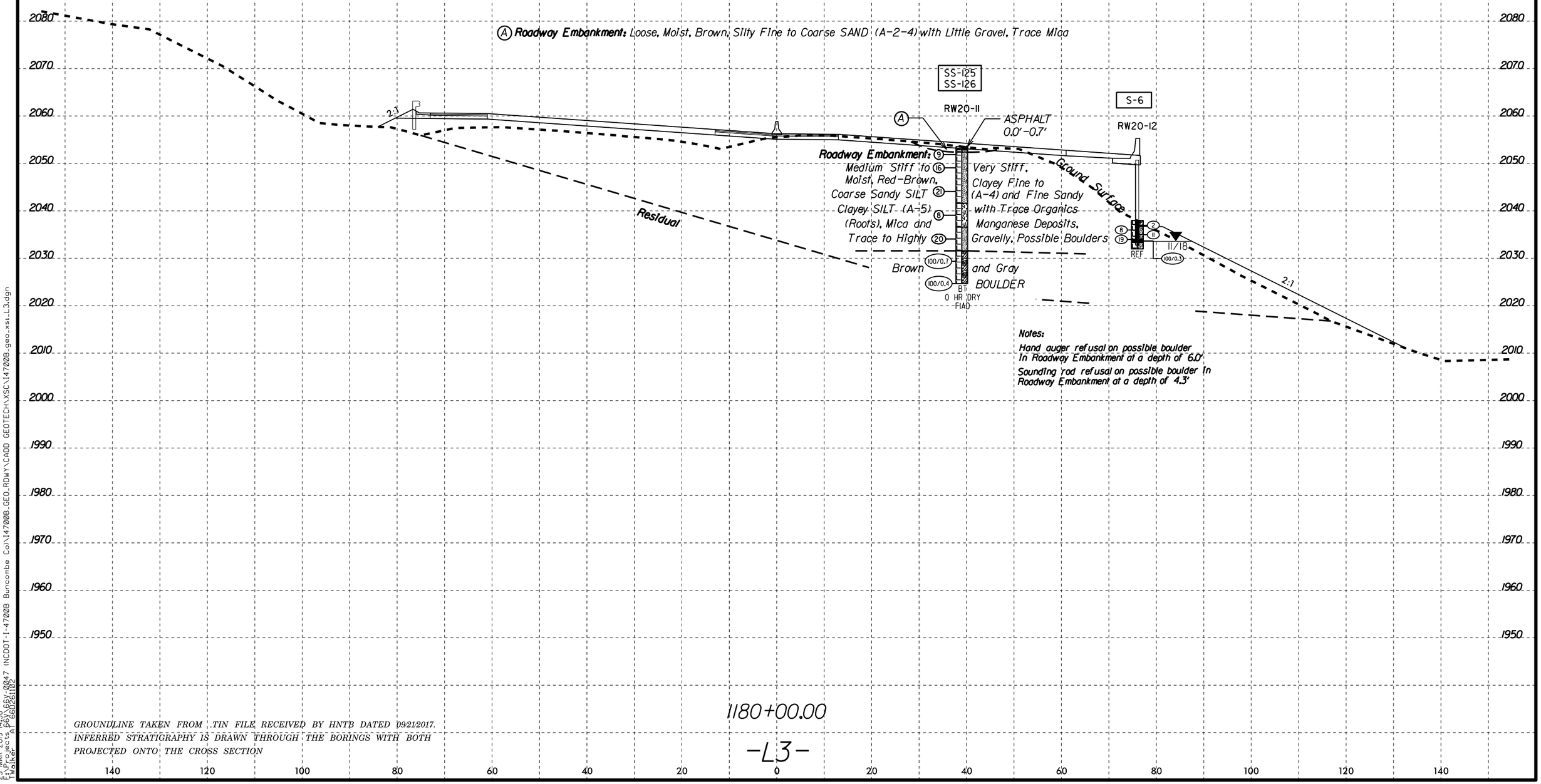
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	110

SOIL TEST RESULTS

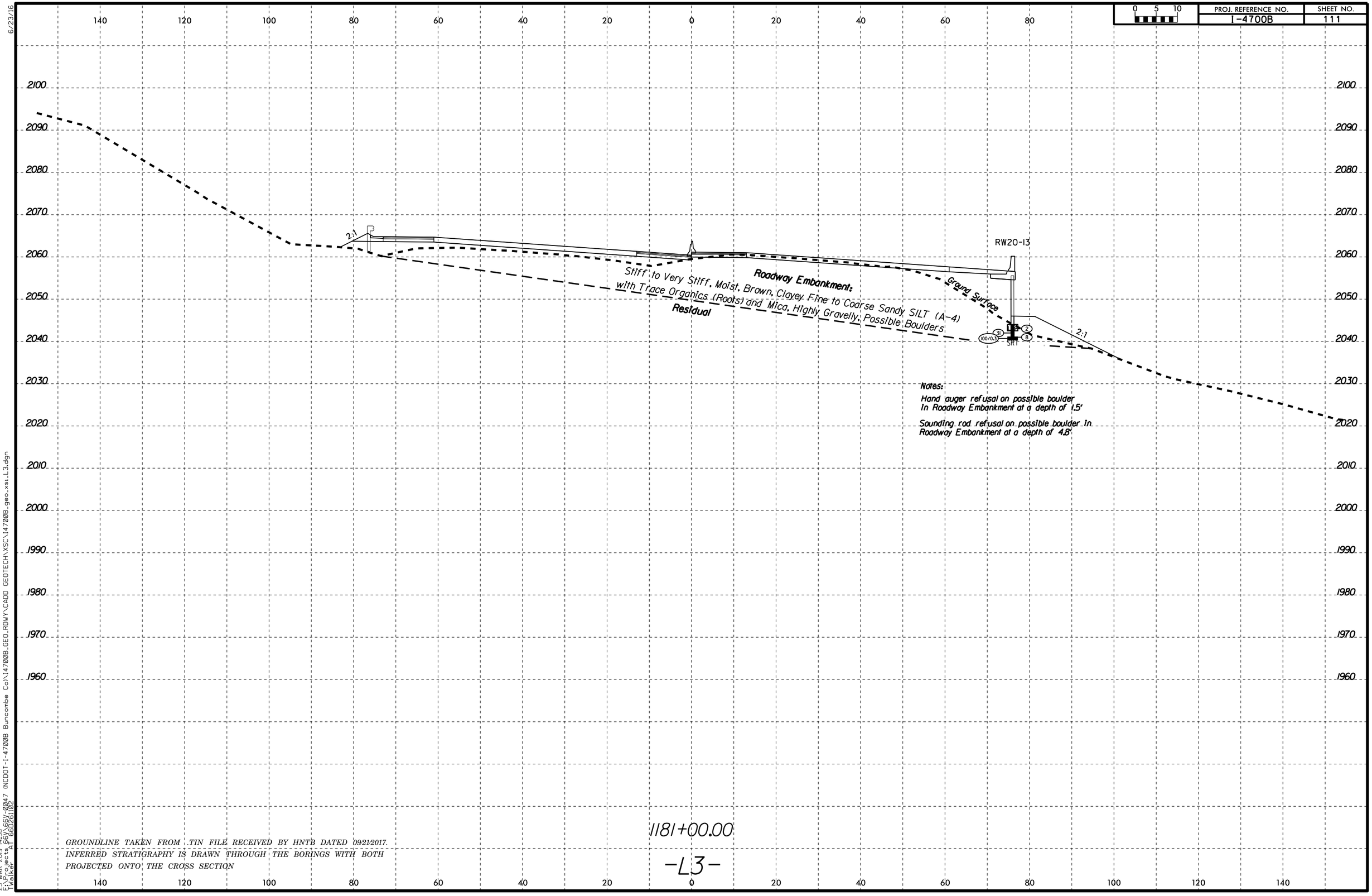
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-125	39' RT	1180+00	1.2-2.2	A-4(1)	34	6	18.9	39.8	14.3	27.0	97.0	89.3	47.5	20.2	-
SS-126	39' RT	1180+00	3.5-5.0	A-4(0)	33	1	23.5	37.6	21.5	17.4	77.9	66.5	37.3	12.7	-
S-6	76' RT	1180+00	5.6-6.0	A-4(0)	31	3	20.8	39.1	17.7	22.4	82.2	74.6	39.0	26.7	-



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

25-MAR-2019 14:58
E:\Projects_66V\66V-0047 INCDOT-I-4700B Buncombe Co\I4700B_GEO_RDWY\CADD GEOTECH\XSC\I4700B_geo_xs1_L3.dgn
TWalker AT 66D261102



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

25-MAR-2019 14:58
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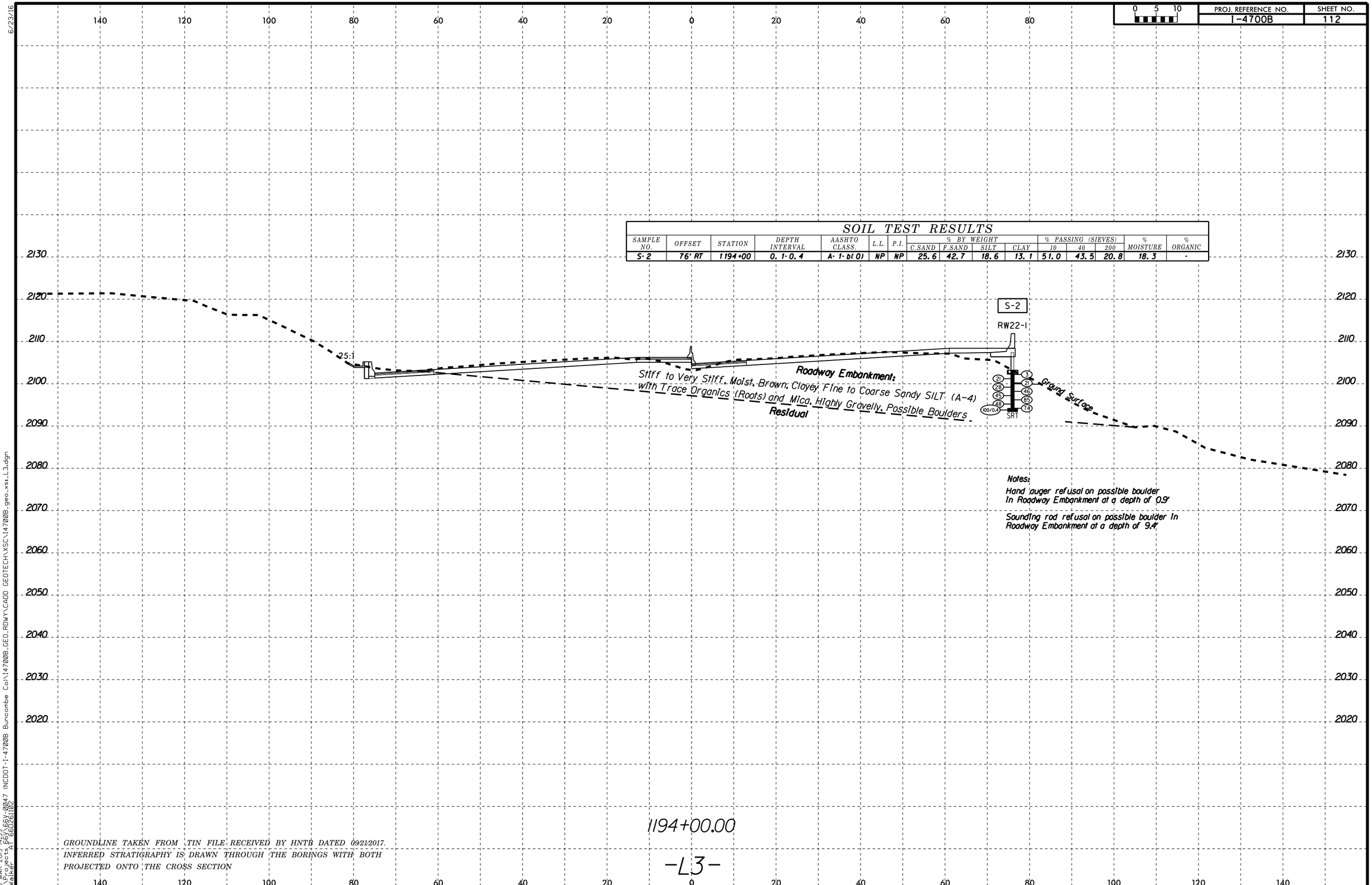
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	112

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-2	76' RT	1194+00	0.1-0.4	A-1-b(0)	NP	NP	25.6	42.7	18.6	13.1	51.0	43.5	20.8	18.3	-



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
25-MAR-2019 14:59
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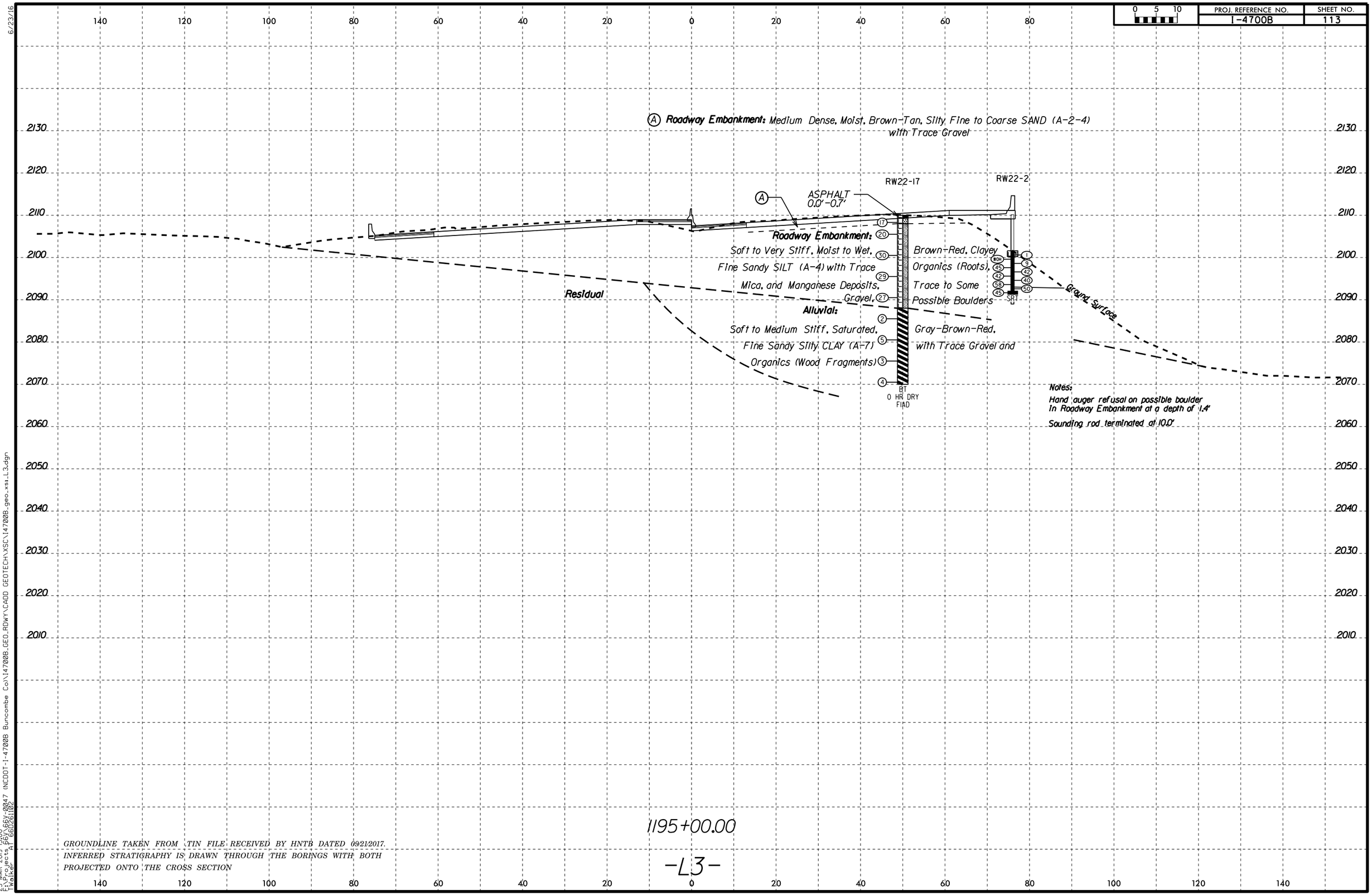
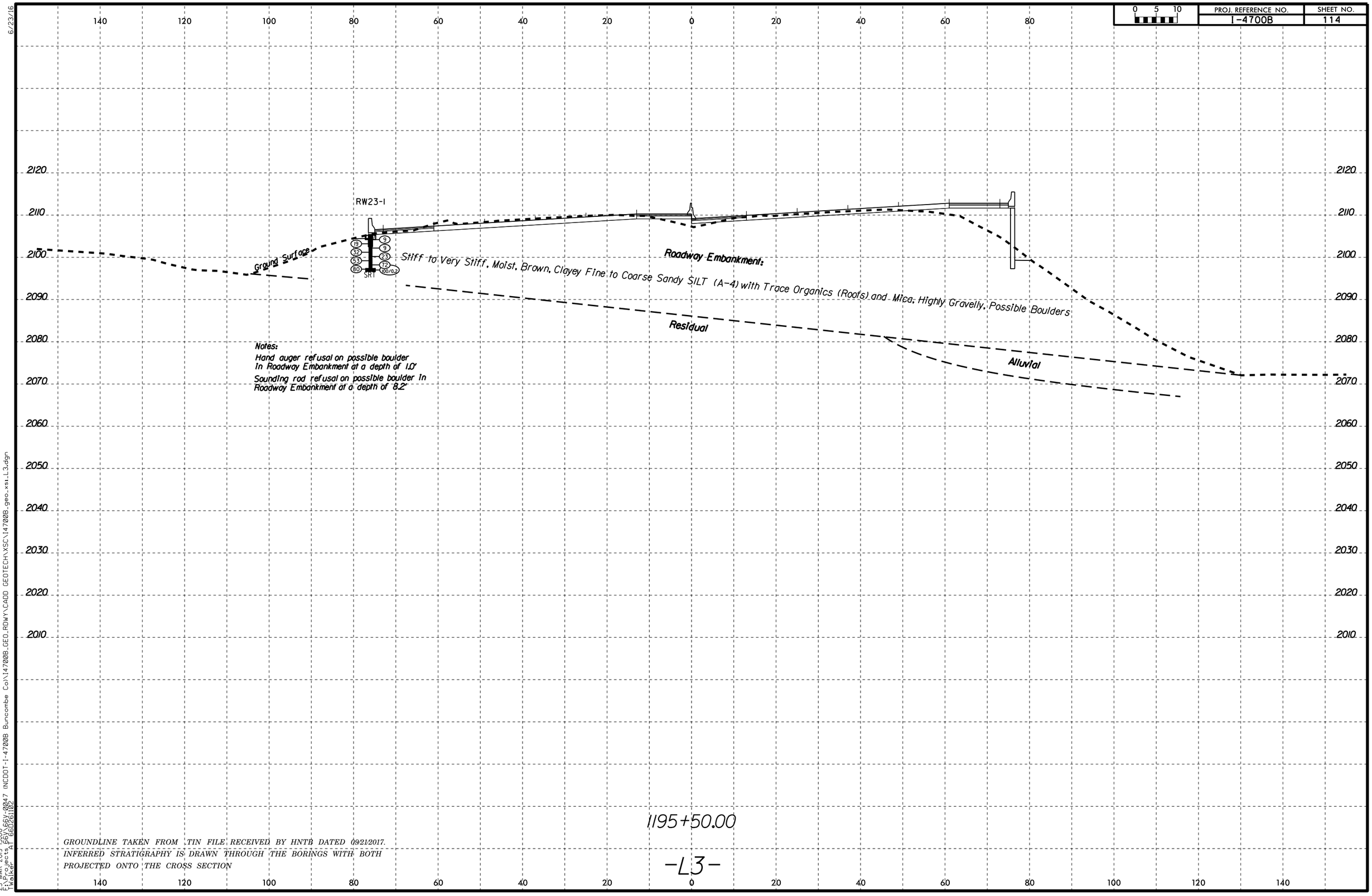
TWalker AT 66D261102



PROJ. REFERENCE NO.
I-4700B
SHEET NO.
113
0 5 10
Ⓐ Roadway Embankment: Medium Dense, Moist, Brown-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel
RW22-17
RW22-2
ASPHALT 0.0'-0.7'
Roadway Embankment:
Soft to Very Stiff, Moist to Wet, Fine Sandy SILT (A-4) with Trace Mica, and Manganese Deposits, Gravel,
Brown-Red, Clayey Organics (Roots), Trace to Some Possible Boulders
Alluvial:
Soft to Medium Stiff, Saturated, Fine Sandy Silty CLAY (A-7) Organics (Wood Fragments)
Gray-Brown-Red, with Trace Gravel and
Residual
Ground Surface
BT
0 HR DRY
FIAD
SRT
Notes:
Hand auger refusal on possible boulder in Roadway Embankment at a depth of 1.4'
Sounding rod terminated at 10.0'
1195+00.00
-L3-
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

25-MAR-2019 15:00
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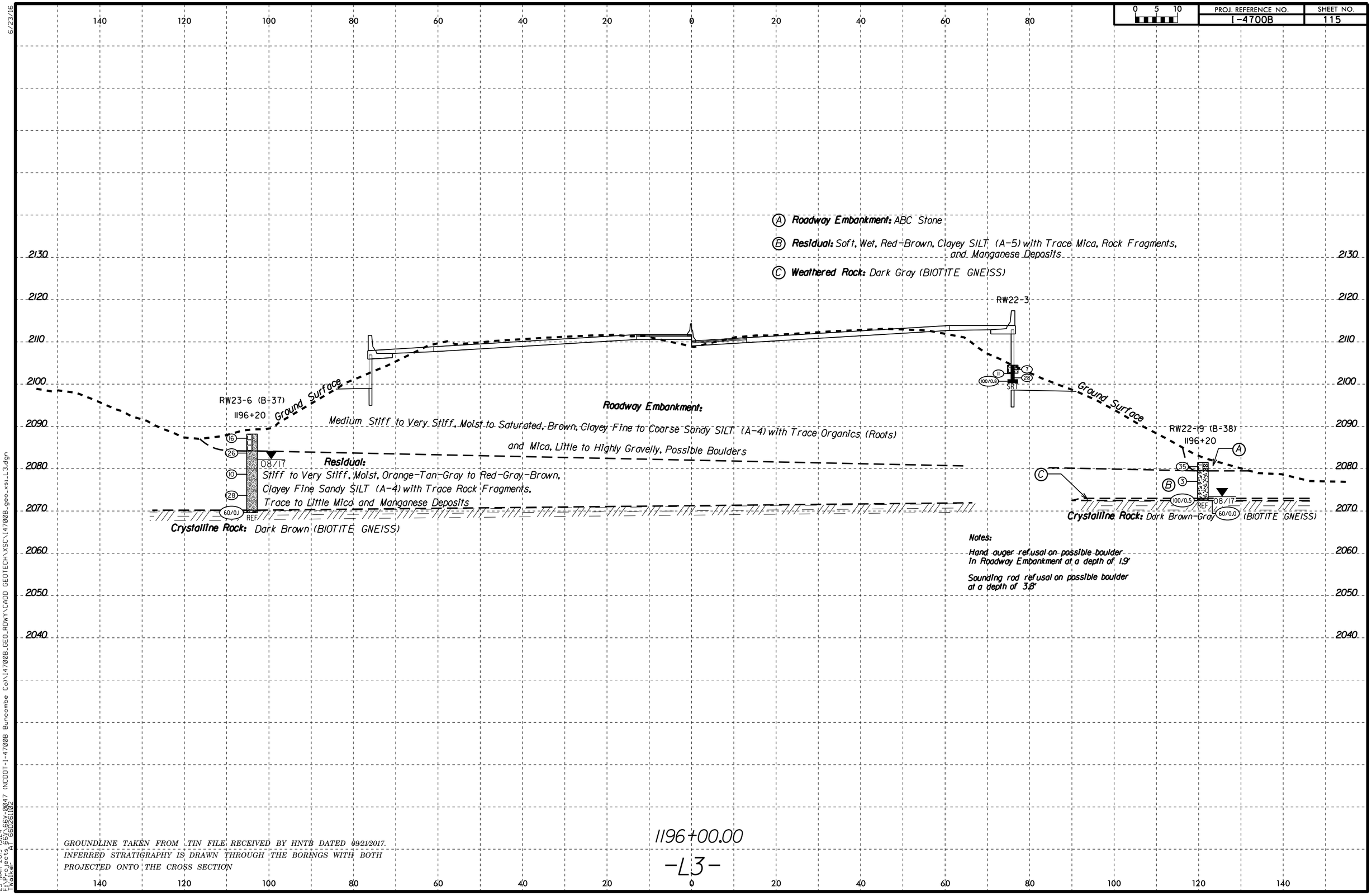
TWalker AT 66D261102

PROJ. REFERENCE NO. I-4700B | SHEET NO. 115



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
25-MAR-2019 15:24
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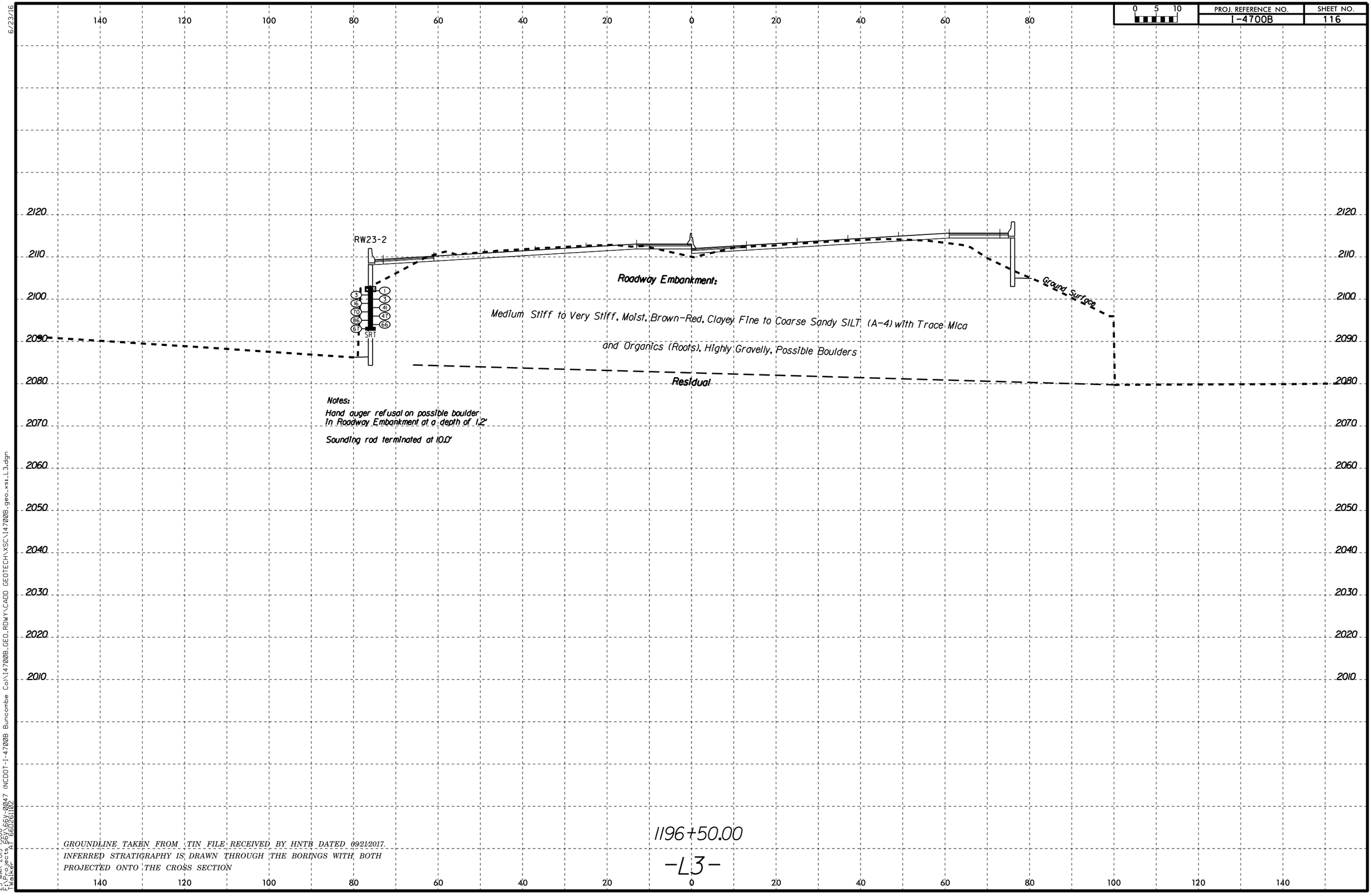
TWalker AT 66D261102



6/23/16

25-MAR-2019 15:00
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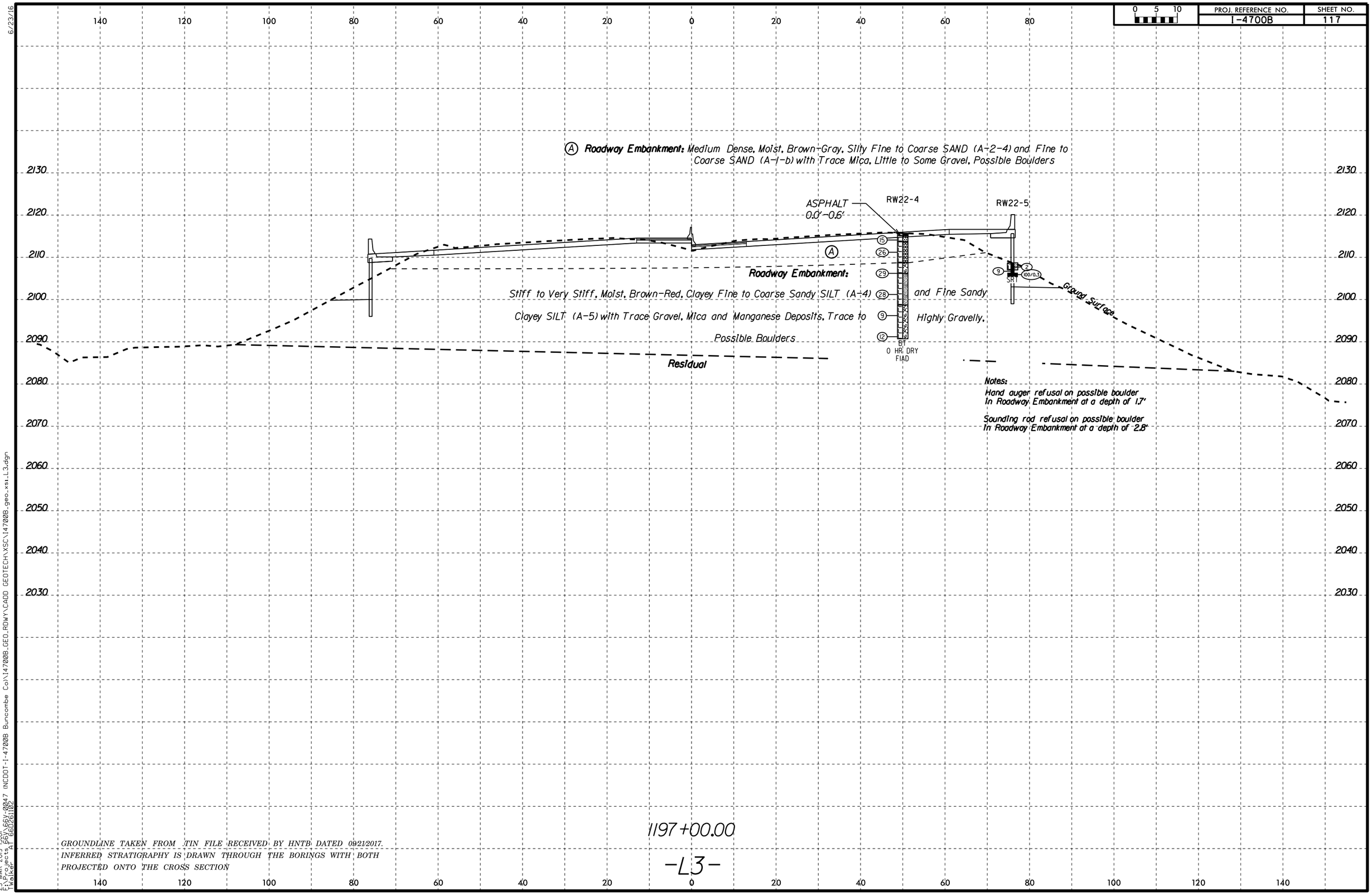
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	117



6/23/16

25-MAR-2019 15:01
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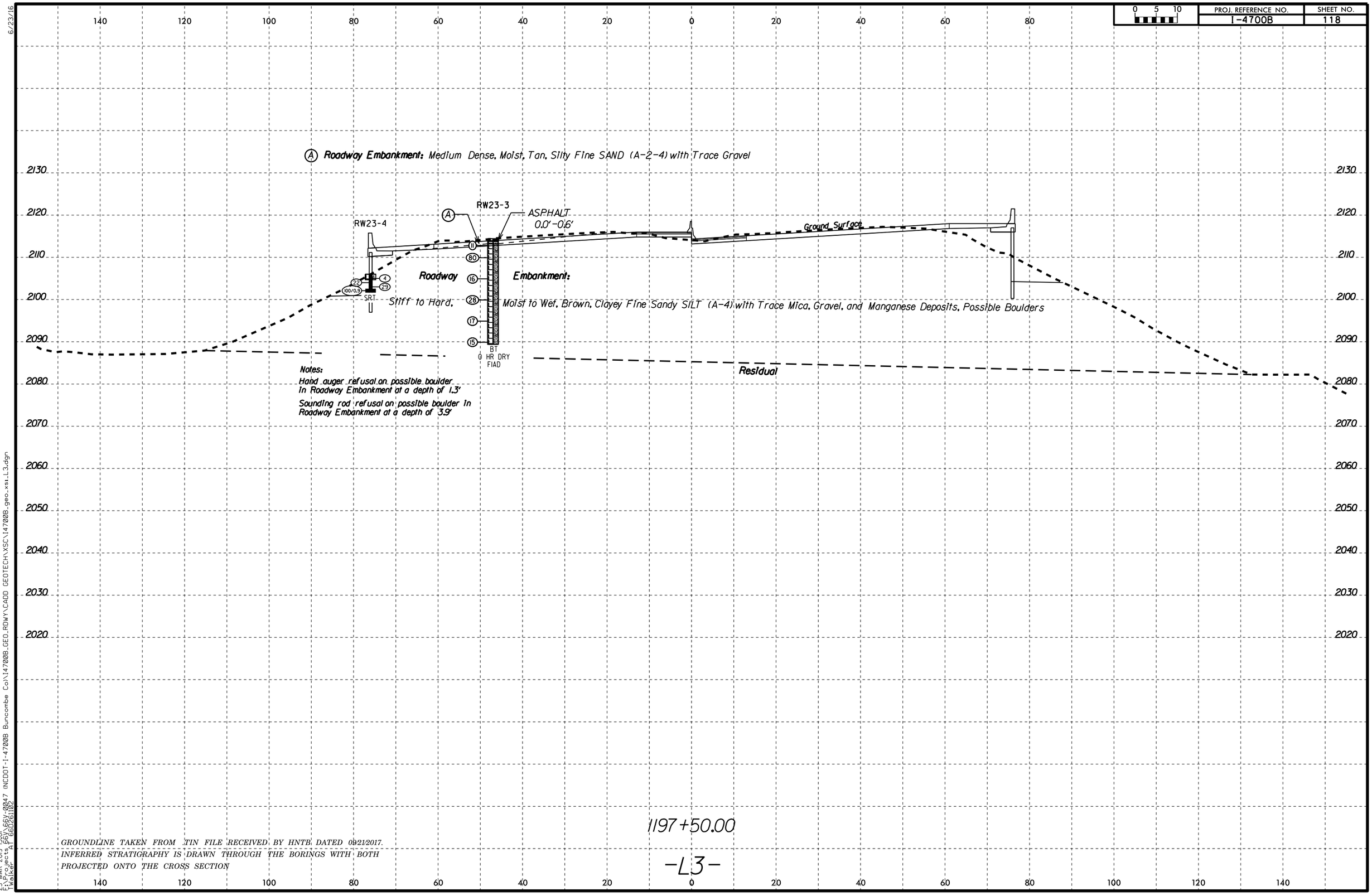
T Walker A1 660261102



6/23/16

25-MAR-2019 15:01
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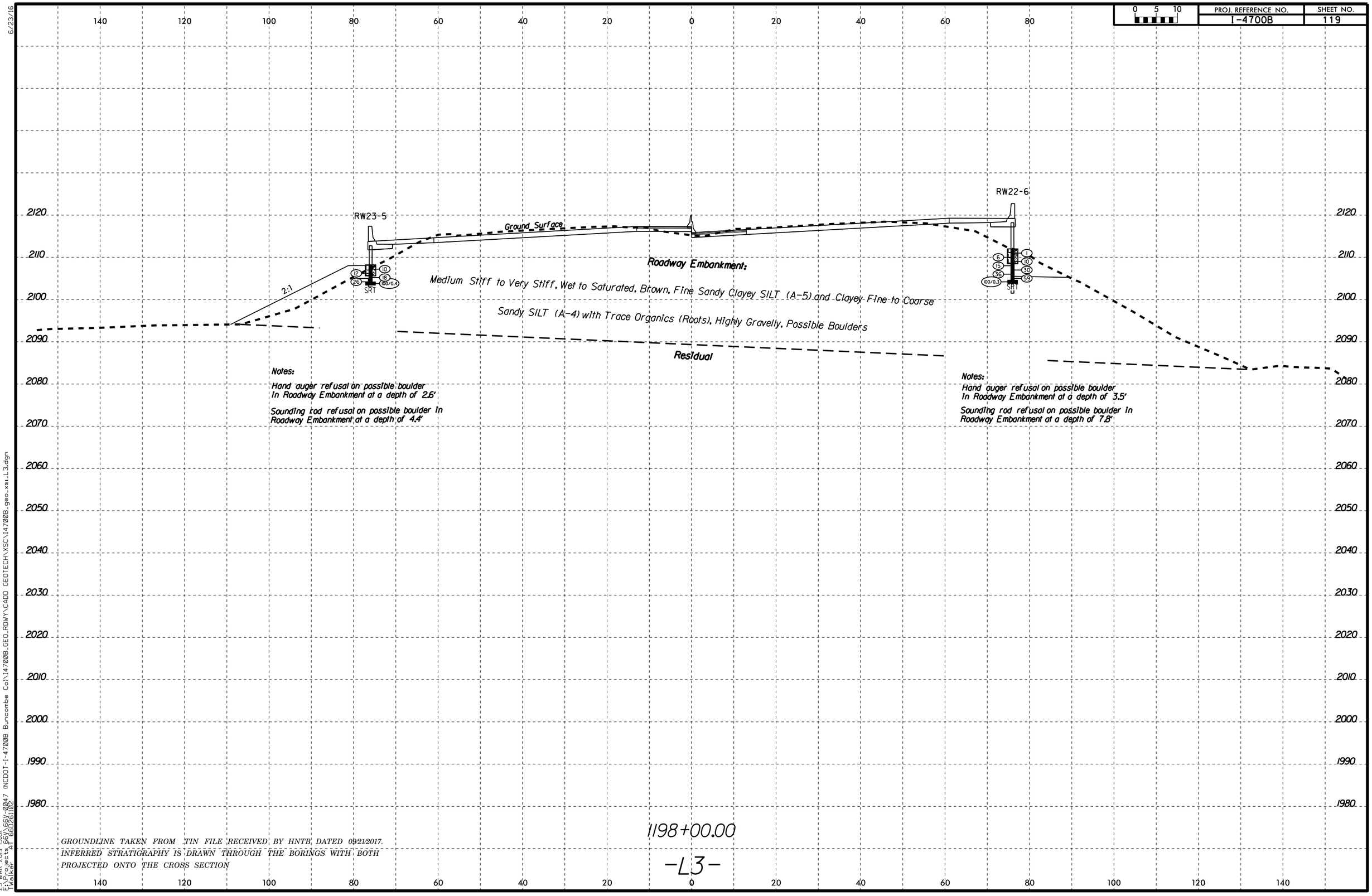
TWalker AT 66D261102



6/23/16

25-MAR-2019 15:01
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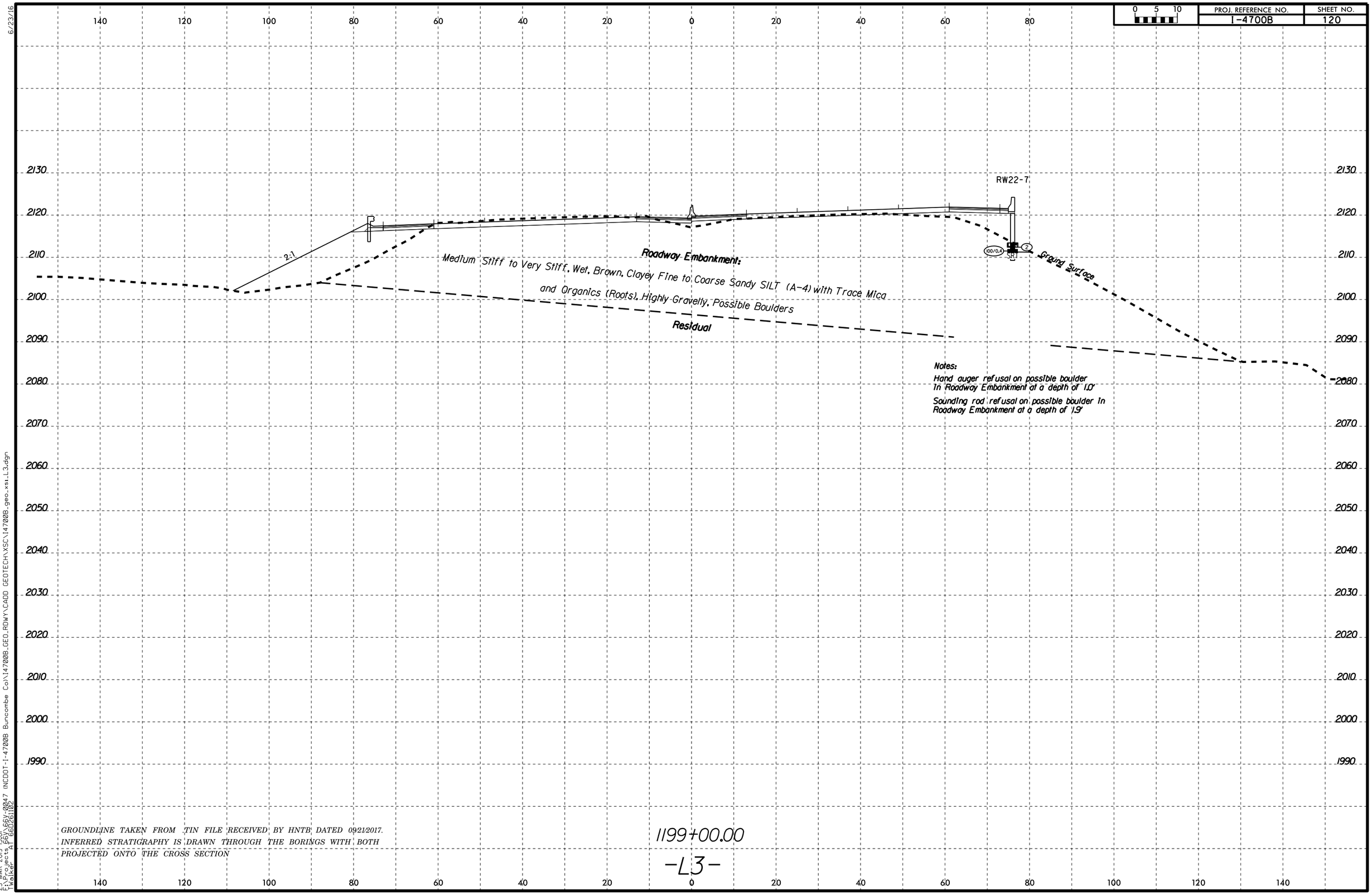
TWalker AT 66D261102



6/23/16

25-MAR-2019 15:01
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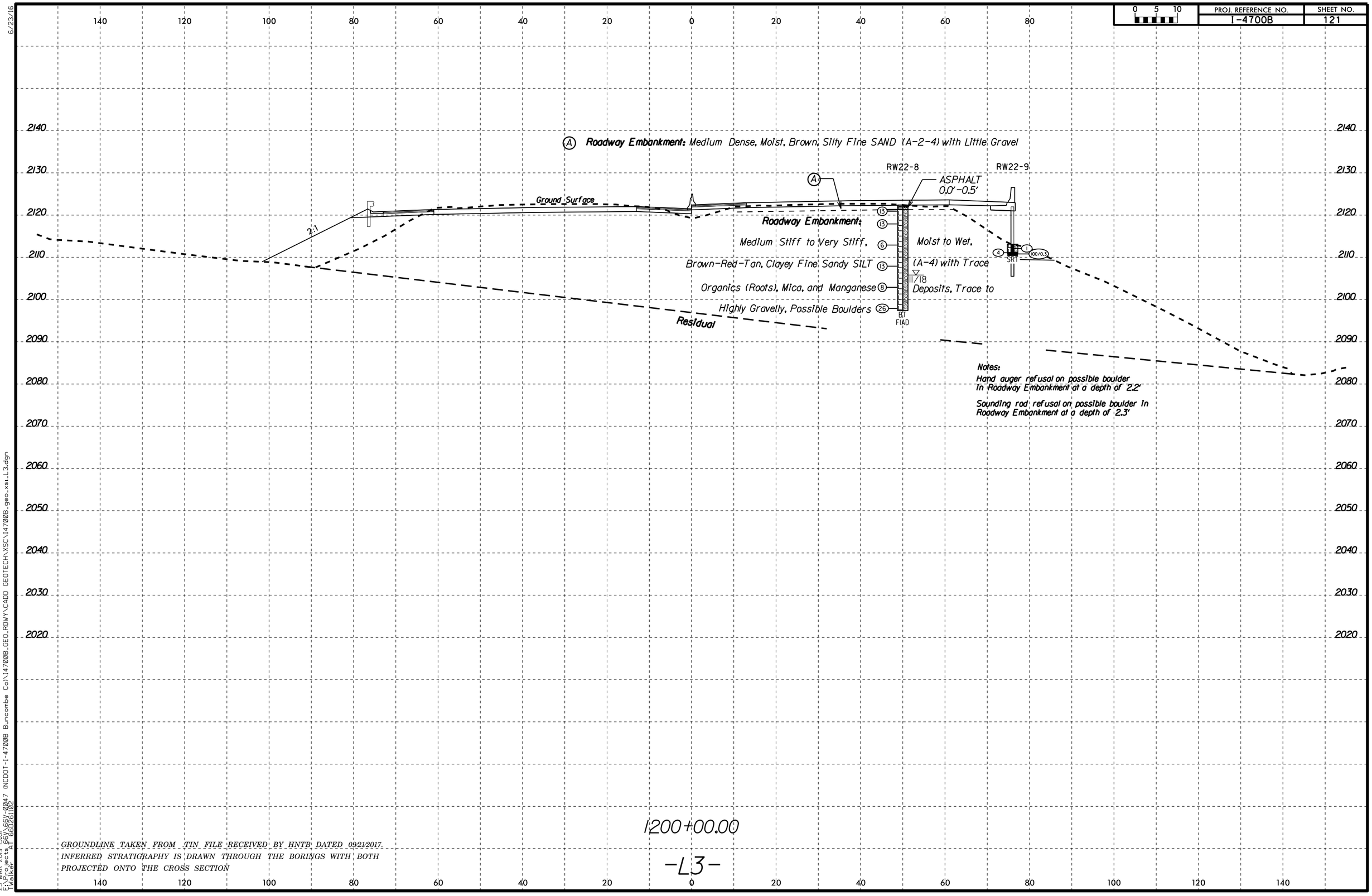
TWalker AT 66D261102



6/23/16

25-MAR-2019 15:01
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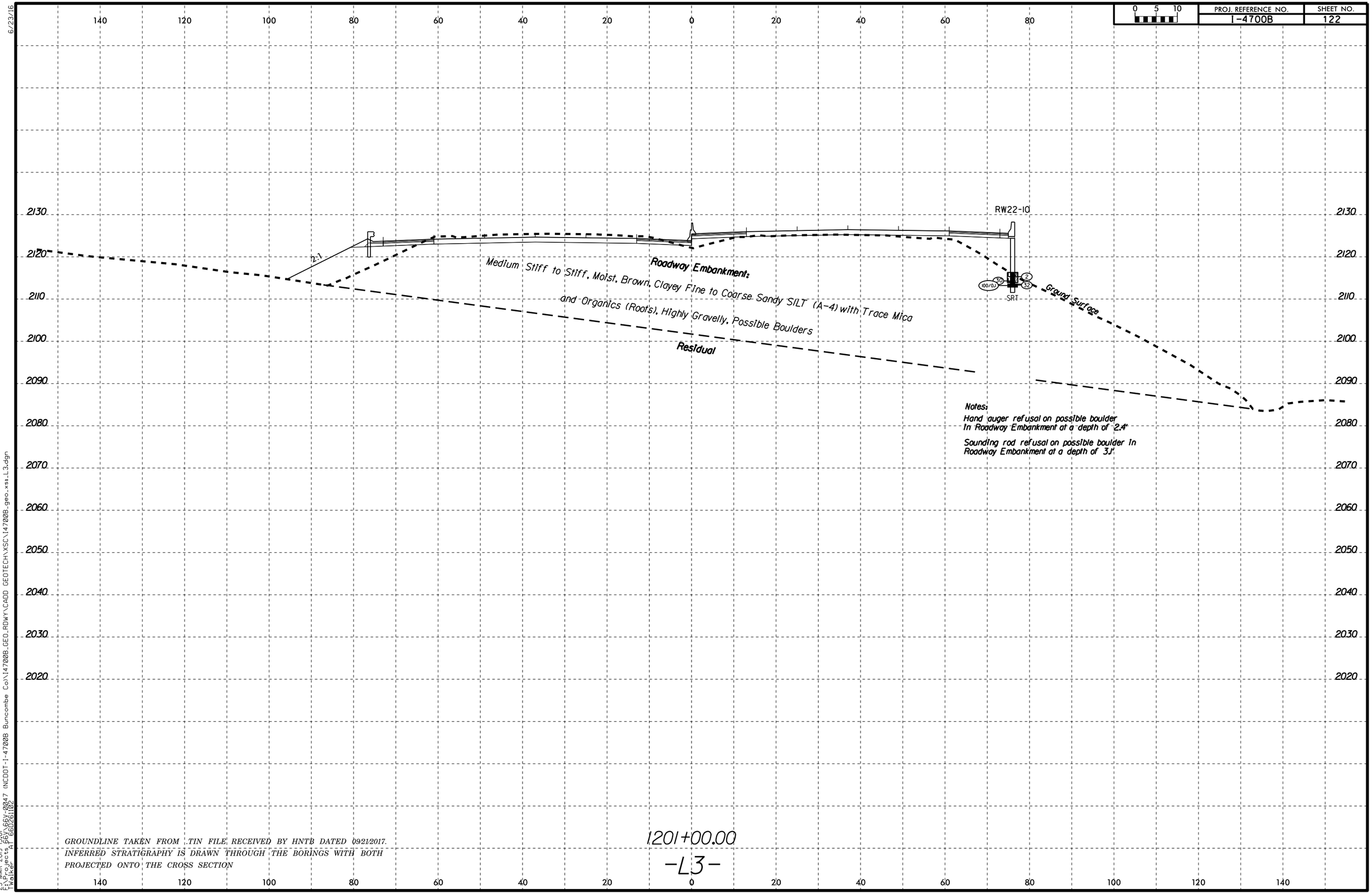
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	122



6/23/16

25-MAR-2019 15:01
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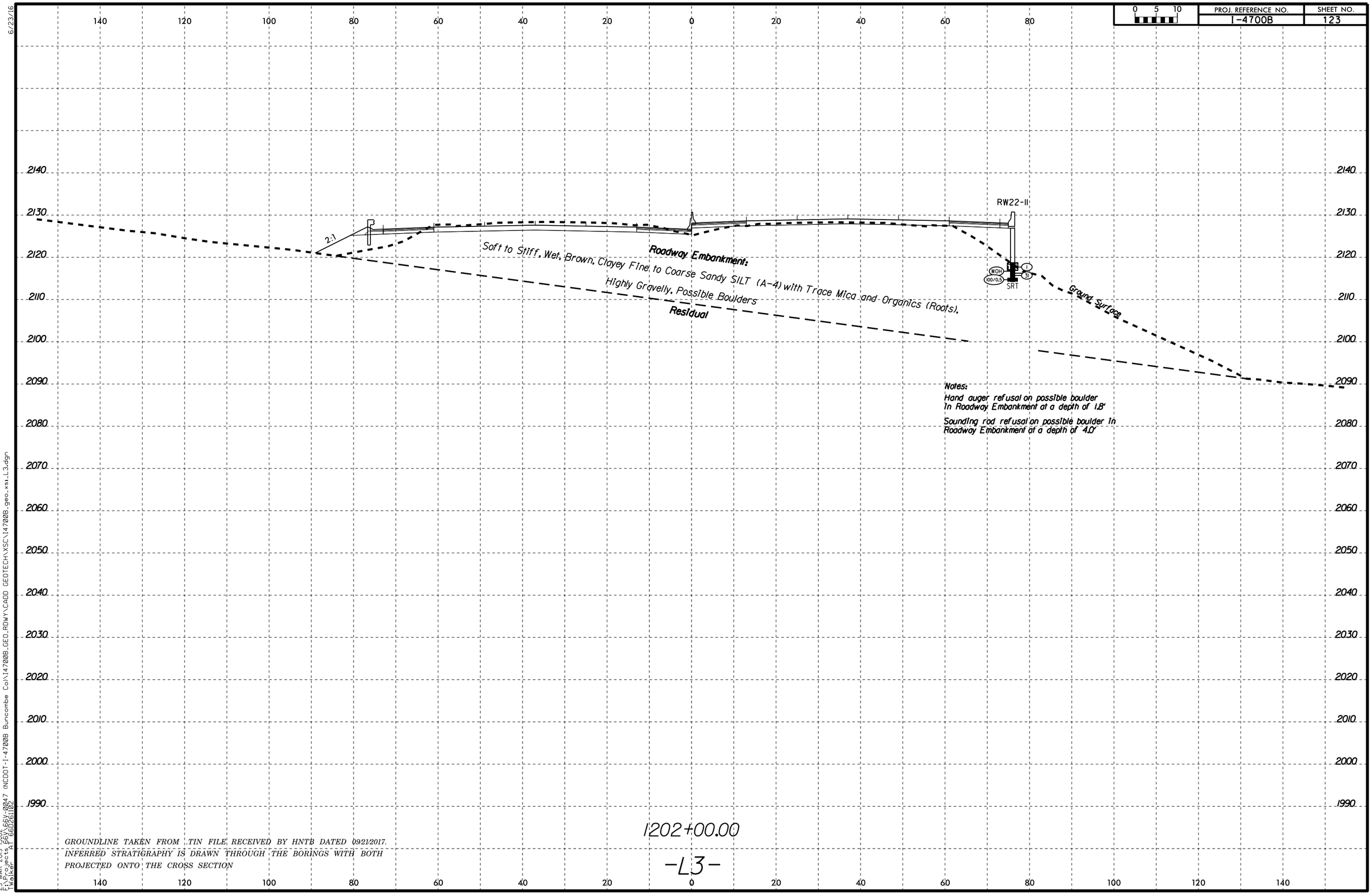
Walker, A.T. 66026102



6/23/16

25-MAR-2019 15:02
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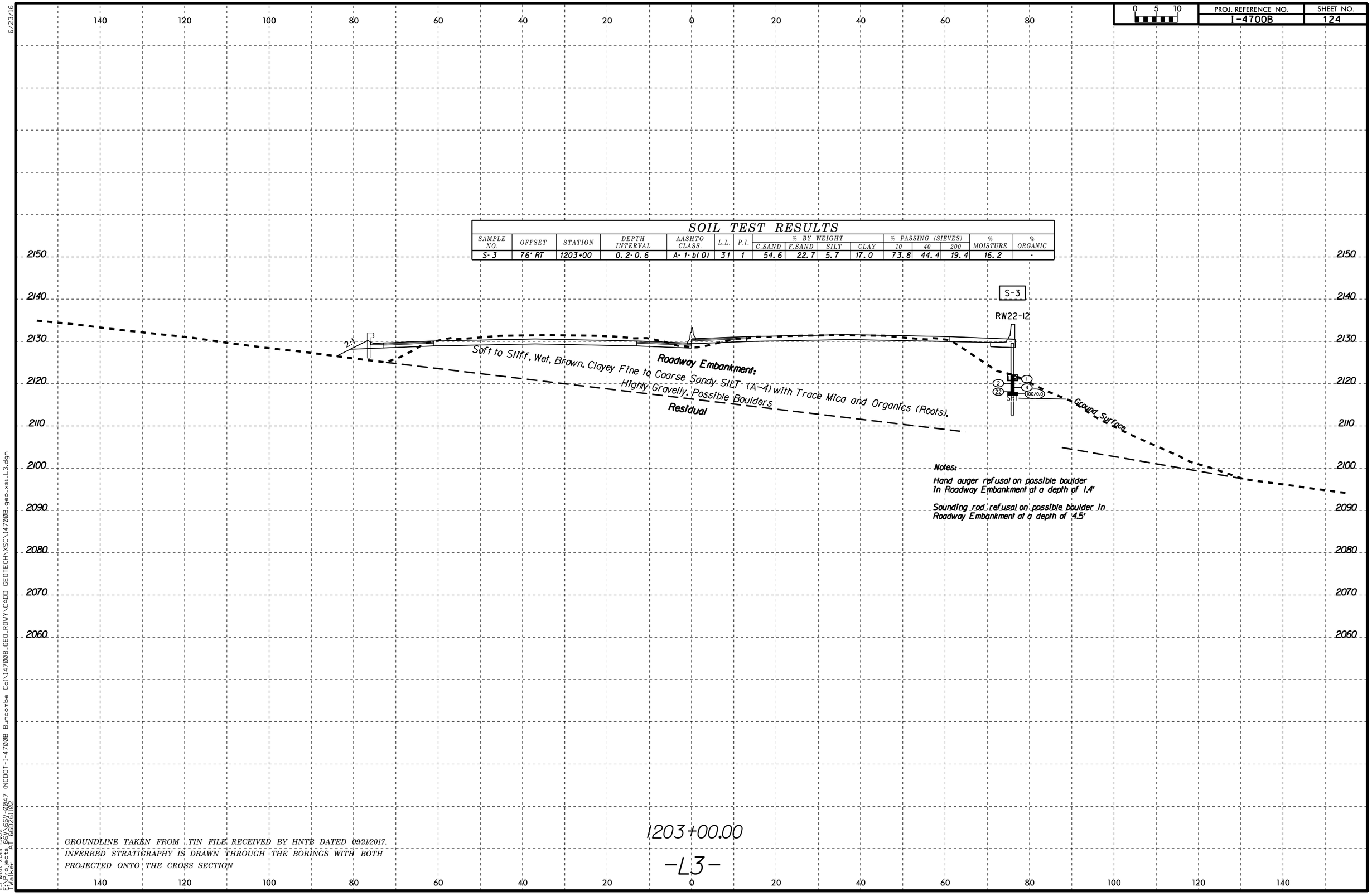
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	124

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-3	76' RT	1203+00	0.2-0.6	A-1-b(0)	31	1	54.6	22.7	5.7	17.0	73.8	44.4	19.4	16.2	-



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

25-MAR-2019 15:02
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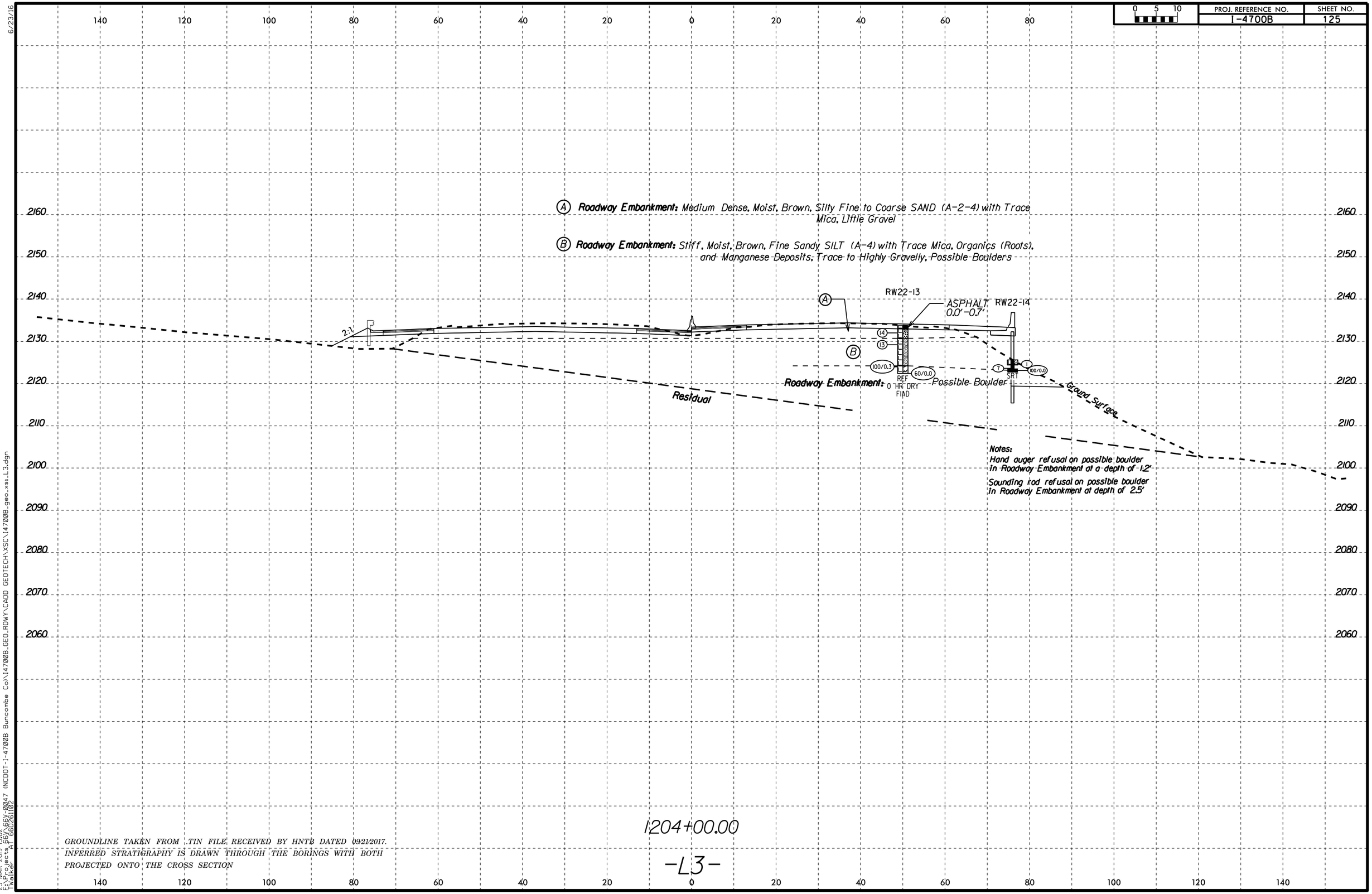
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	125



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
25-MAR-2019 15:02
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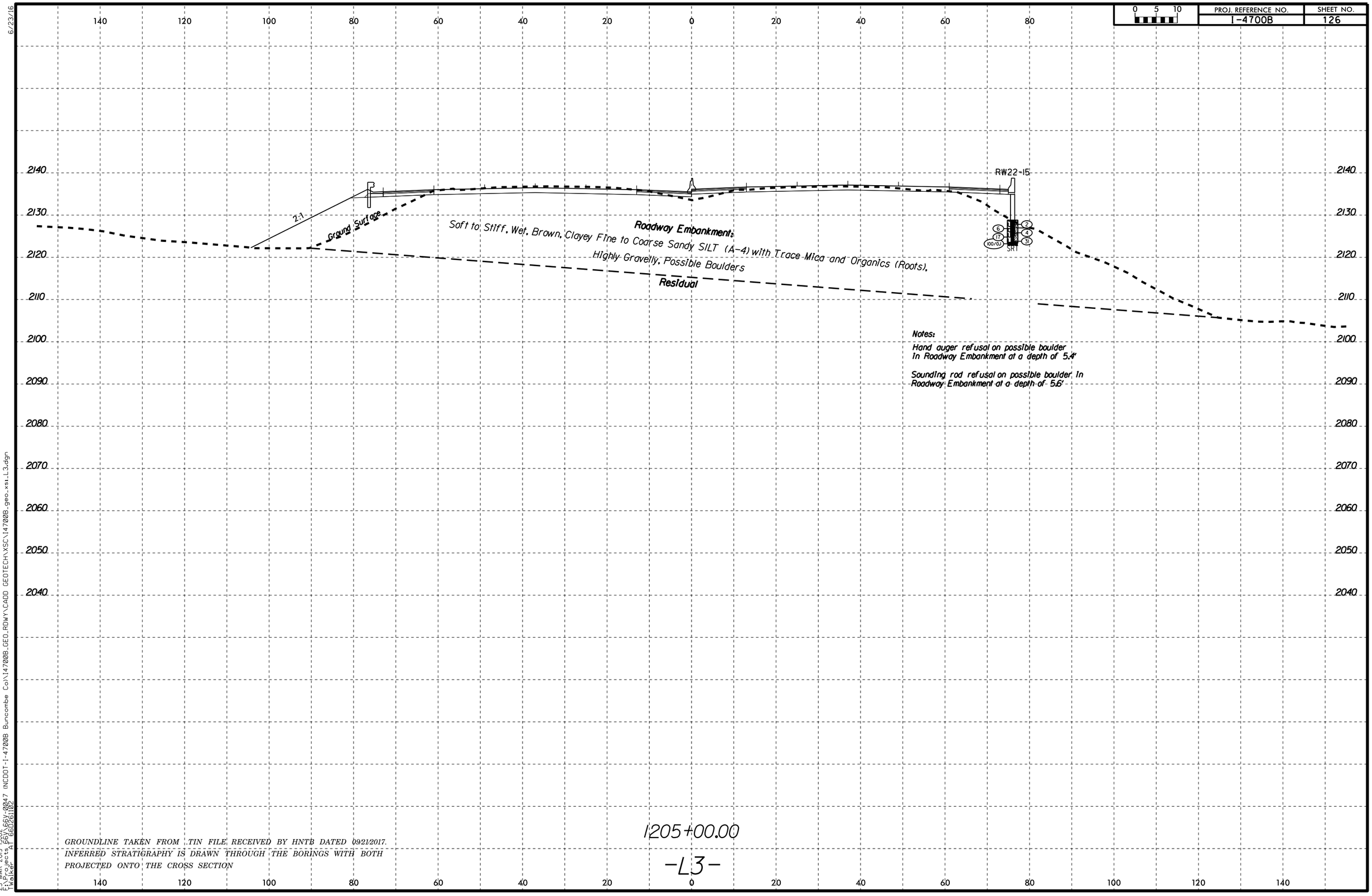
TWalker AT 66D261102



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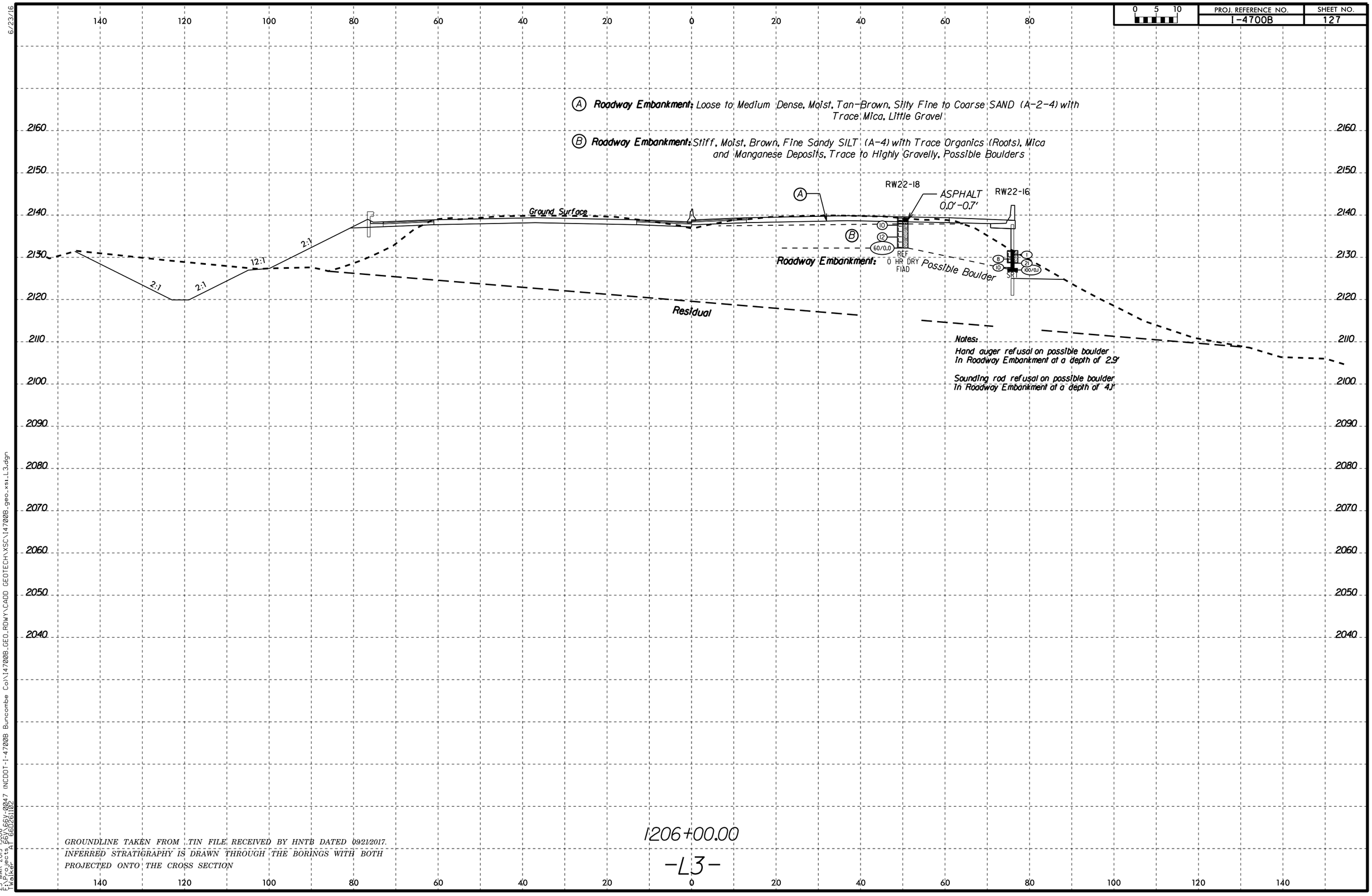
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	127



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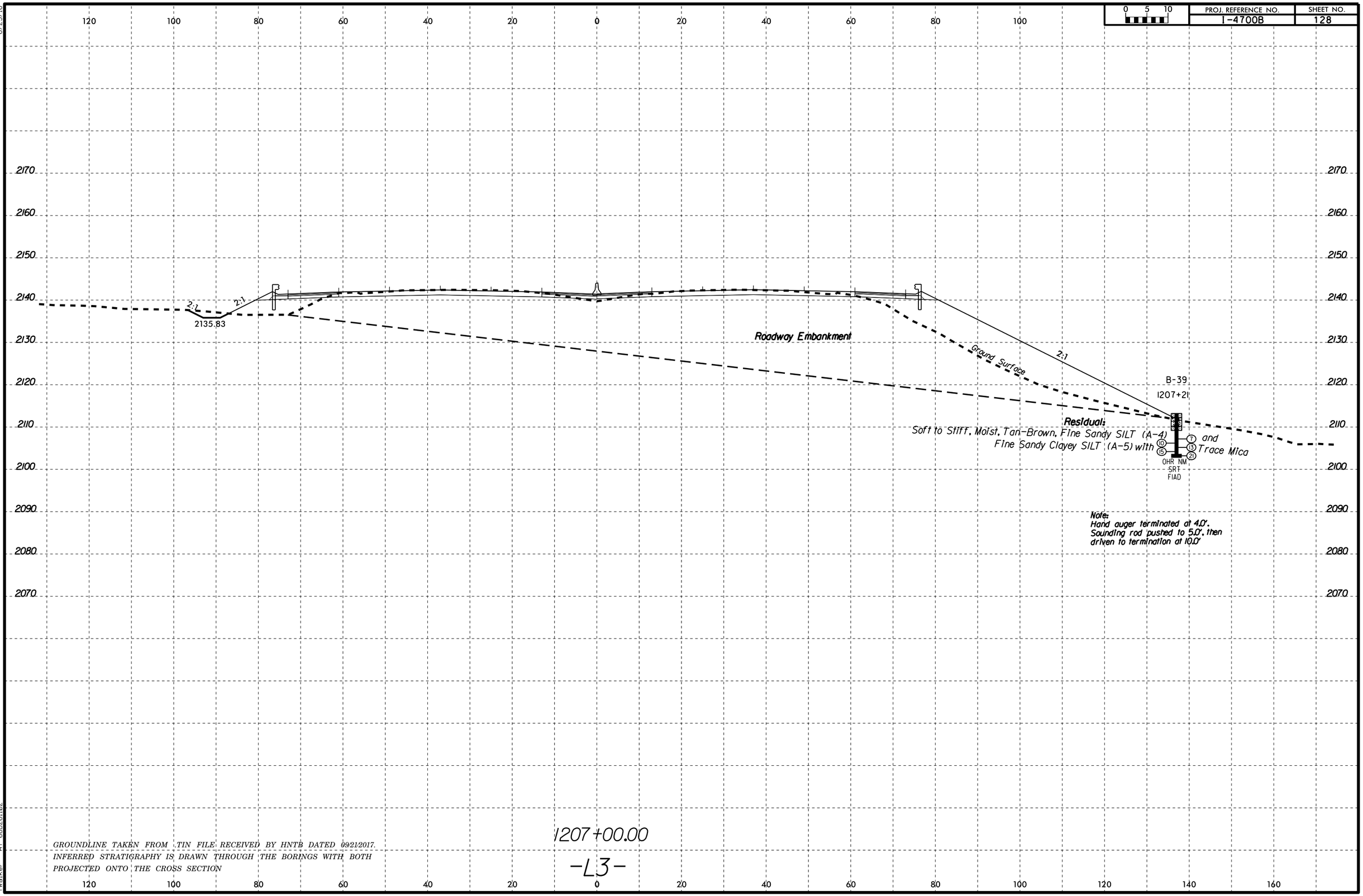
T Walker A1 660261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	128



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

25-MAR-2019 15:06
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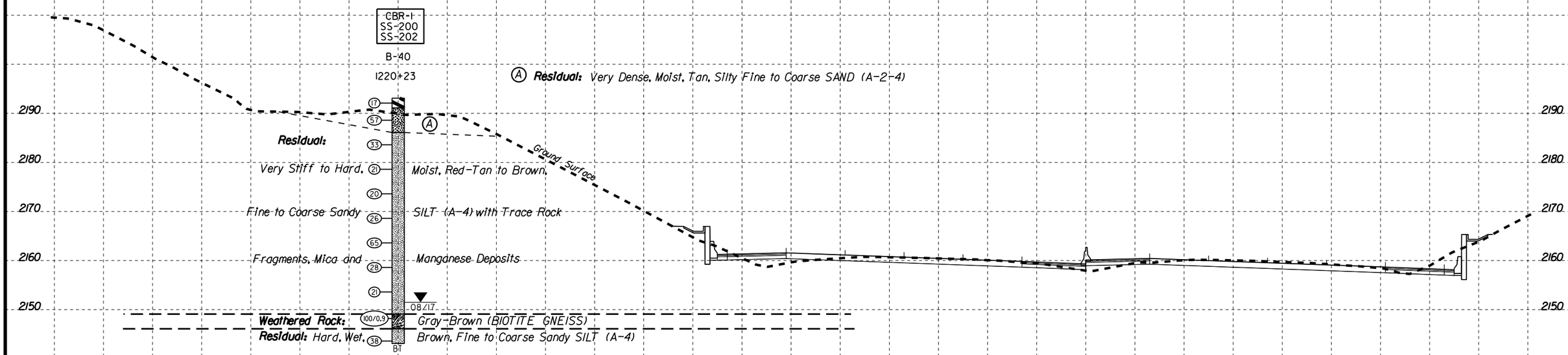
TWalker AT 66026102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	129

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-200	140' LT	1220+23	0.1-1.5	A-7-6(12)	41	19	8.2	26.3	17.5	48.0	97.7	94.2	68.7	15.1	-
SS-202	140' LT	1220+23	8.5-10.0	A-4(0)	34	NP	35.9	28.3	21.0	14.8	98.4	69.9	43.5	11.5	-
CBR-1	140' LT	1220+23	10.0-20.0	A-4(0)	33	3	22.0	38.0	23.8	16.2	89.8	75.9	44.4	12.1	-



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

1220+00.00

-L3-

6/23/16

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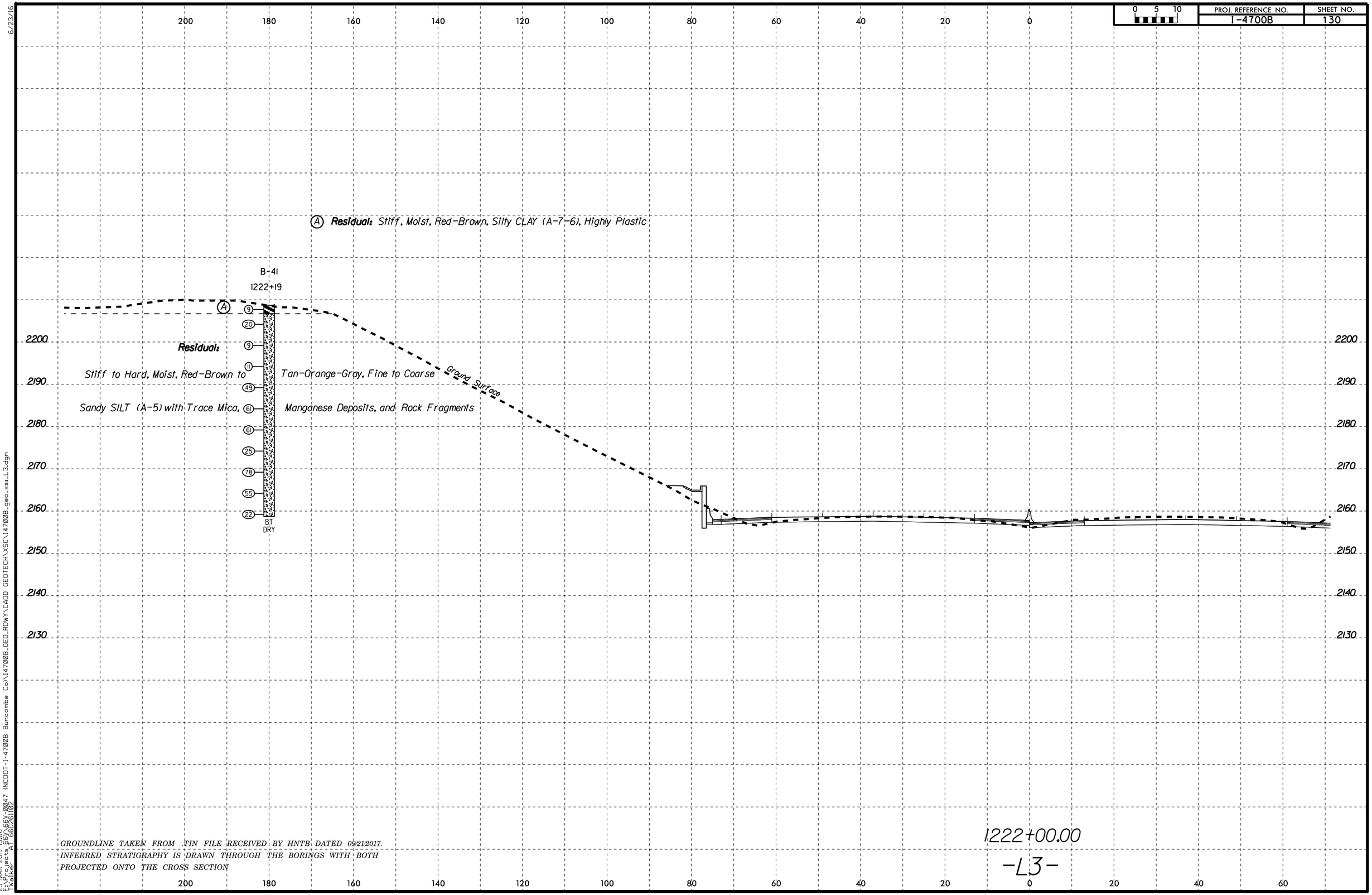
TWalker AT 66026102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	130



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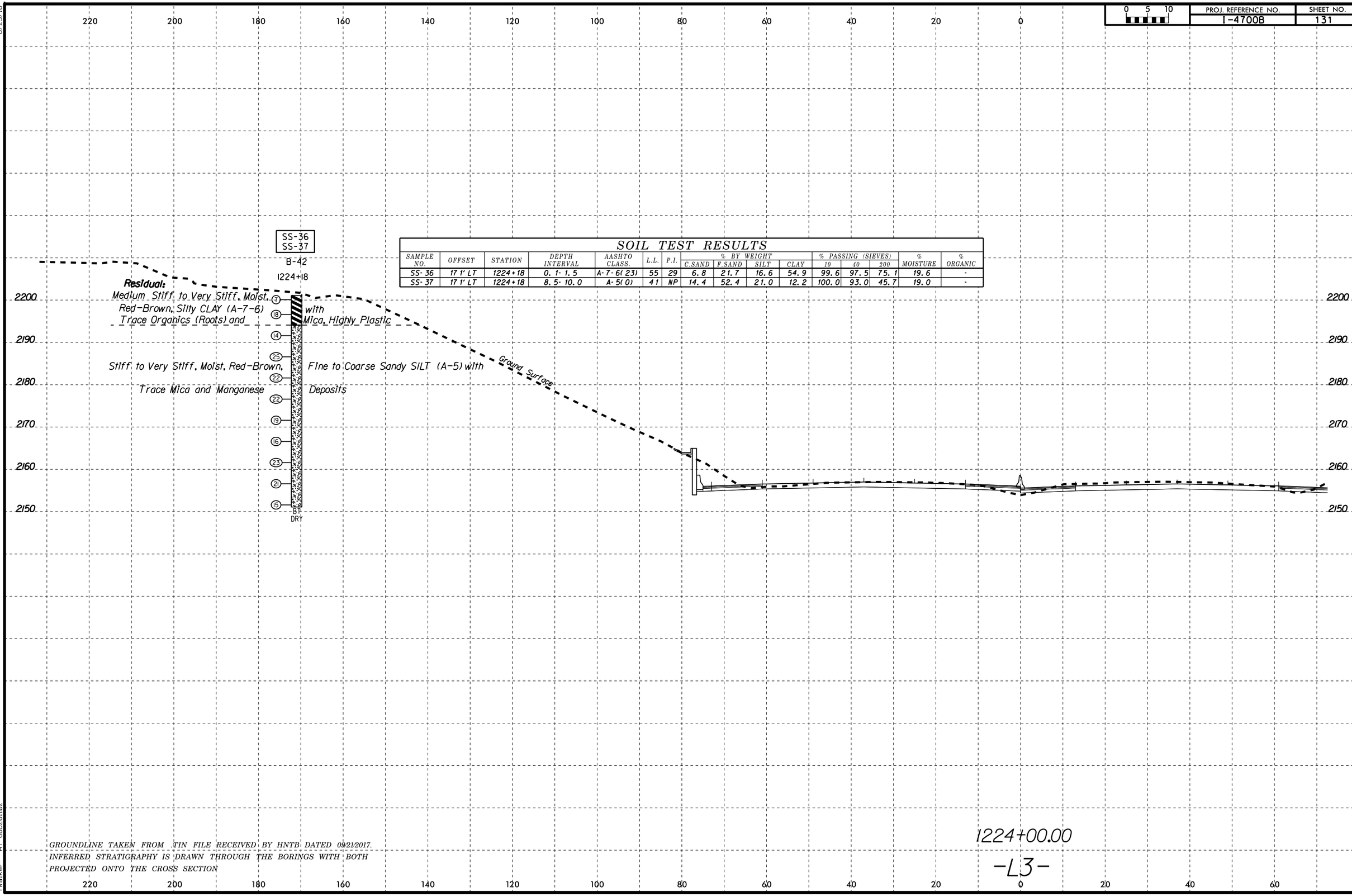
Walker, A.T. 66026102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	131



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-36	17.1' LT	1224+18	0.1-1.5	A-7-6(23)	55	29	6.8	21.7	16.6	54.9	99.6	97.5	75.1	19.6	-
SS-37	17.1' LT	1224+18	8.5-10.0	A-5(0)	41	NP	14.4	52.4	21.0	12.2	100.0	93.0	45.7	19.0	-

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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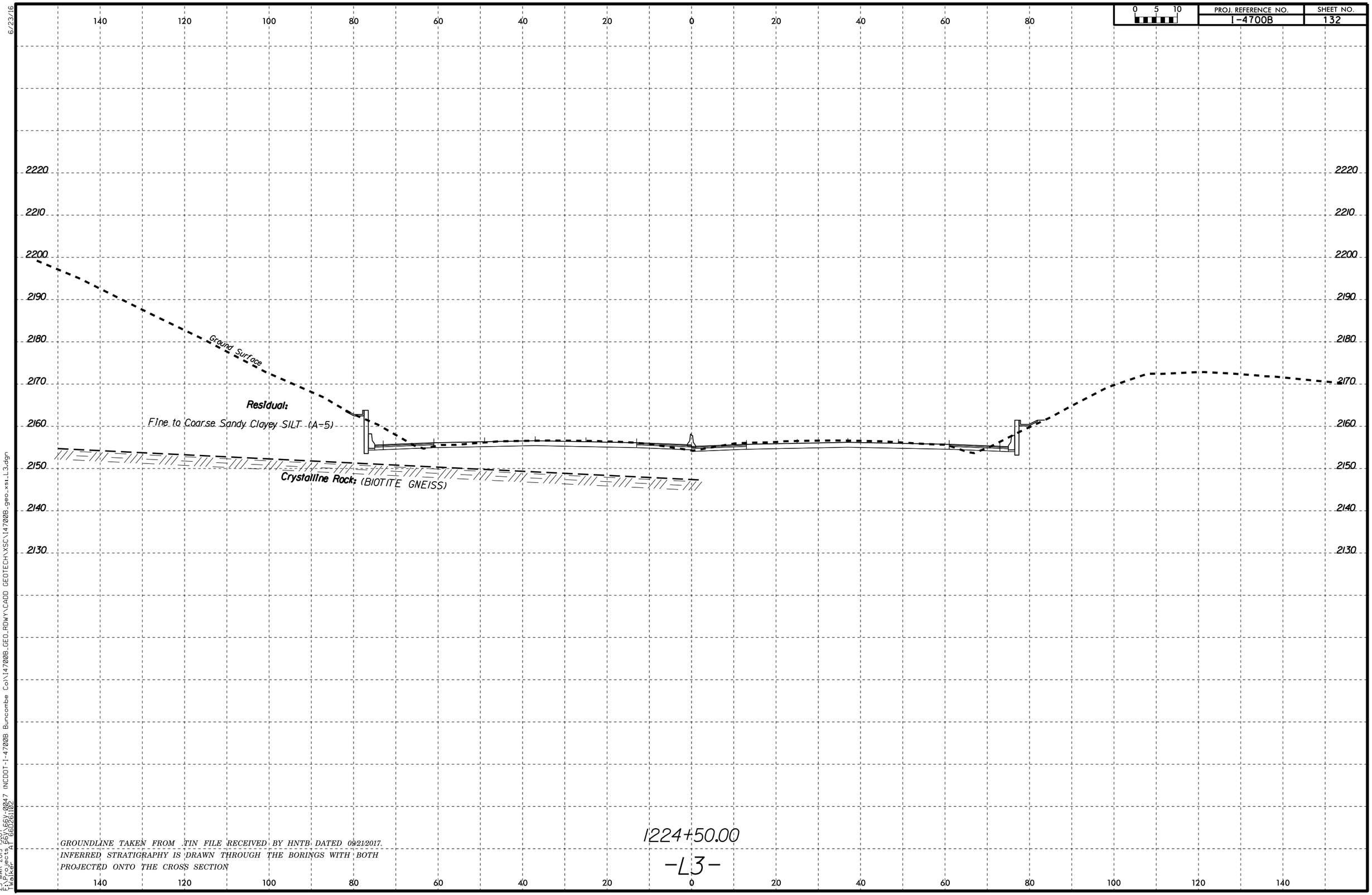

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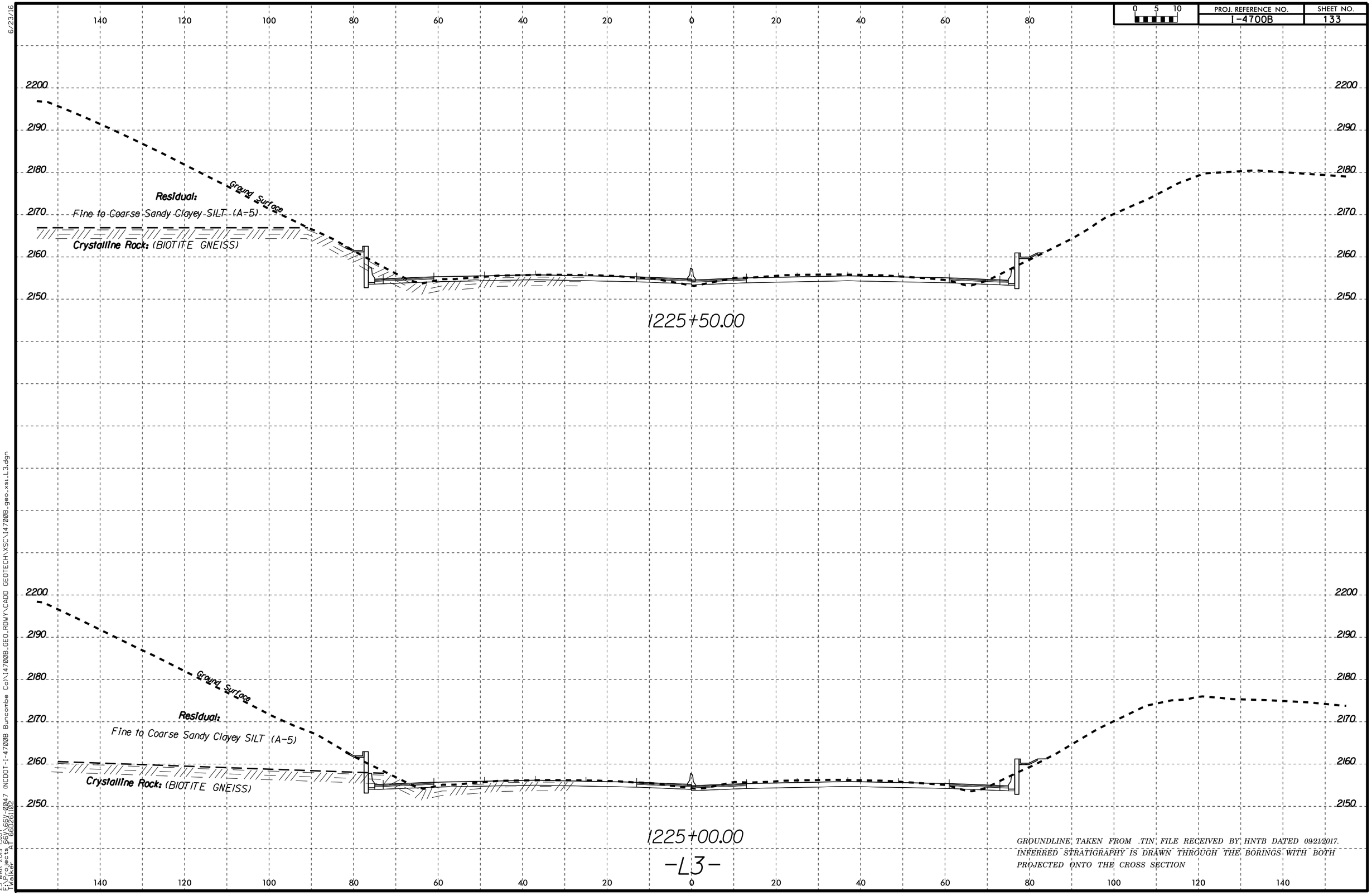
TWalker AT 66026110 2



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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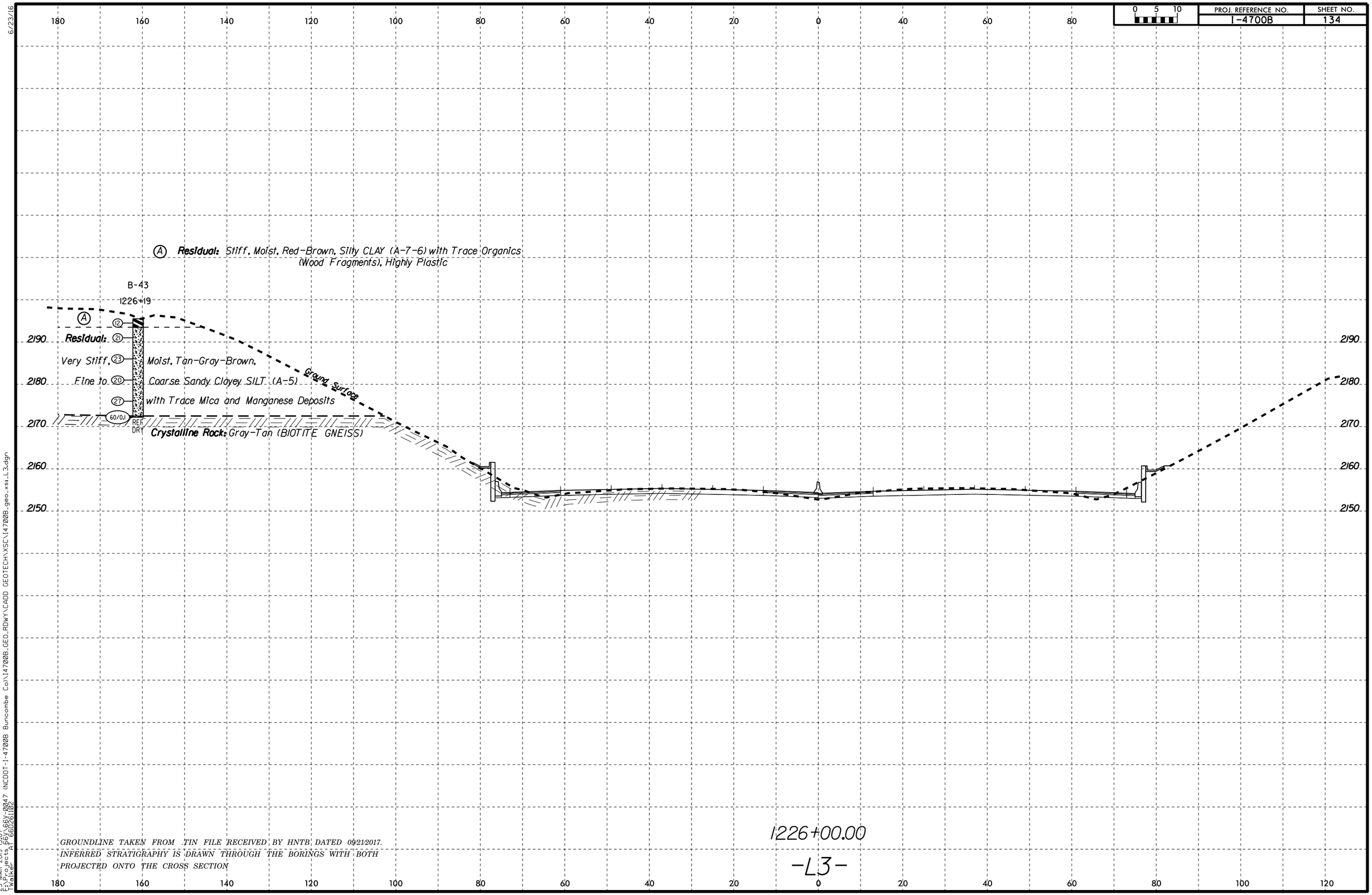
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	134



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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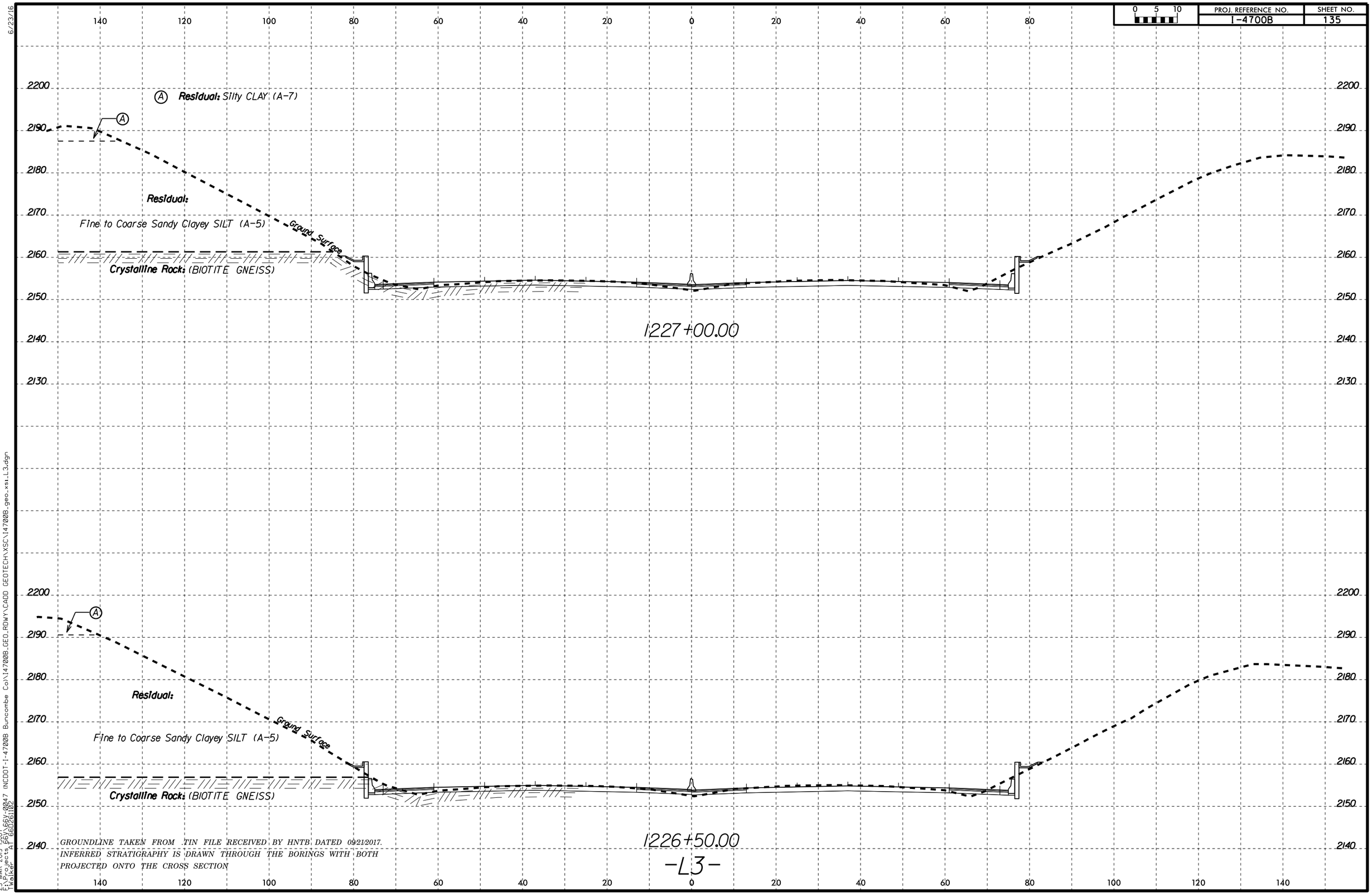
Walker A1 66026102



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

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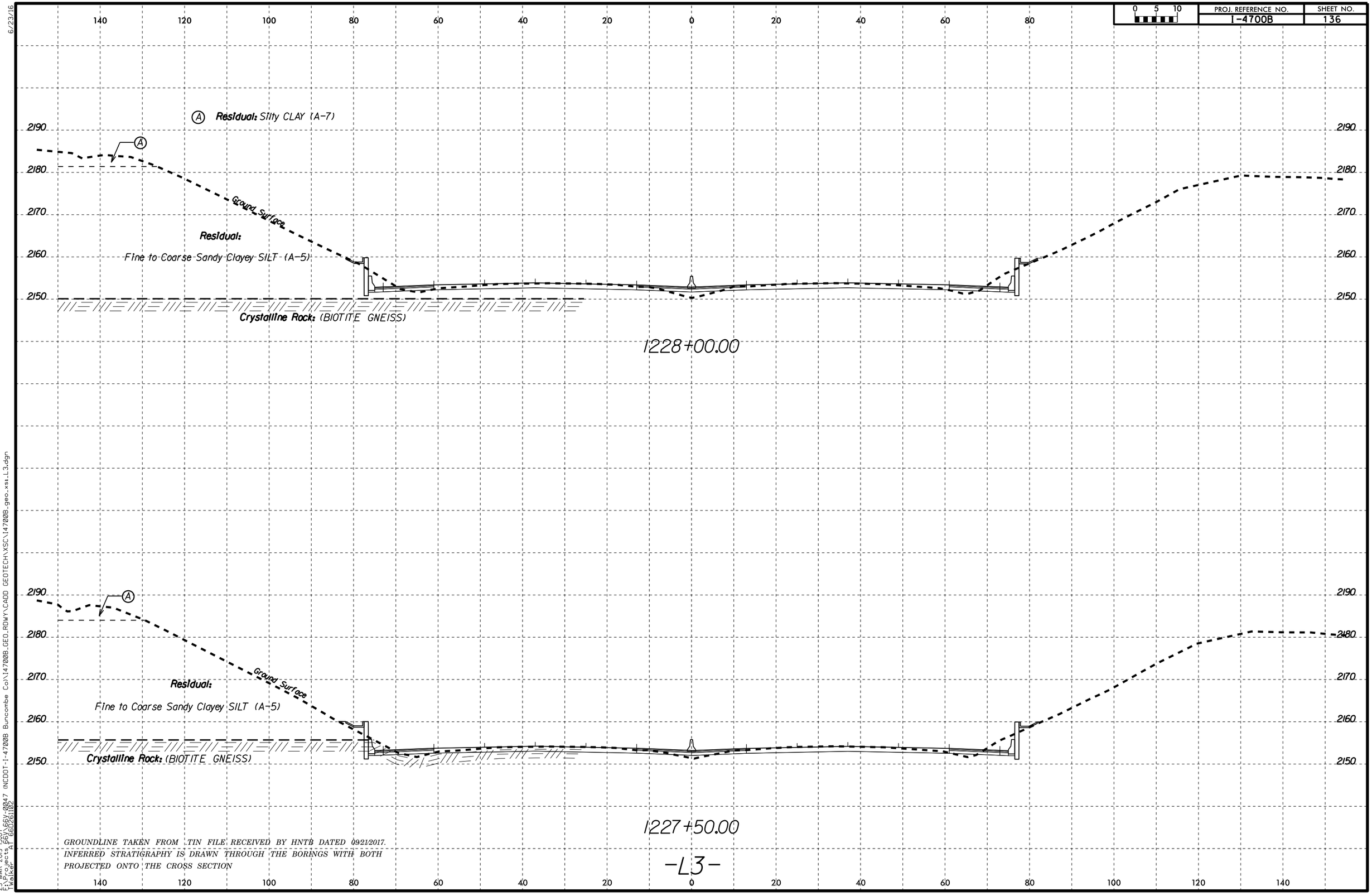
TWalker AT 66D261102



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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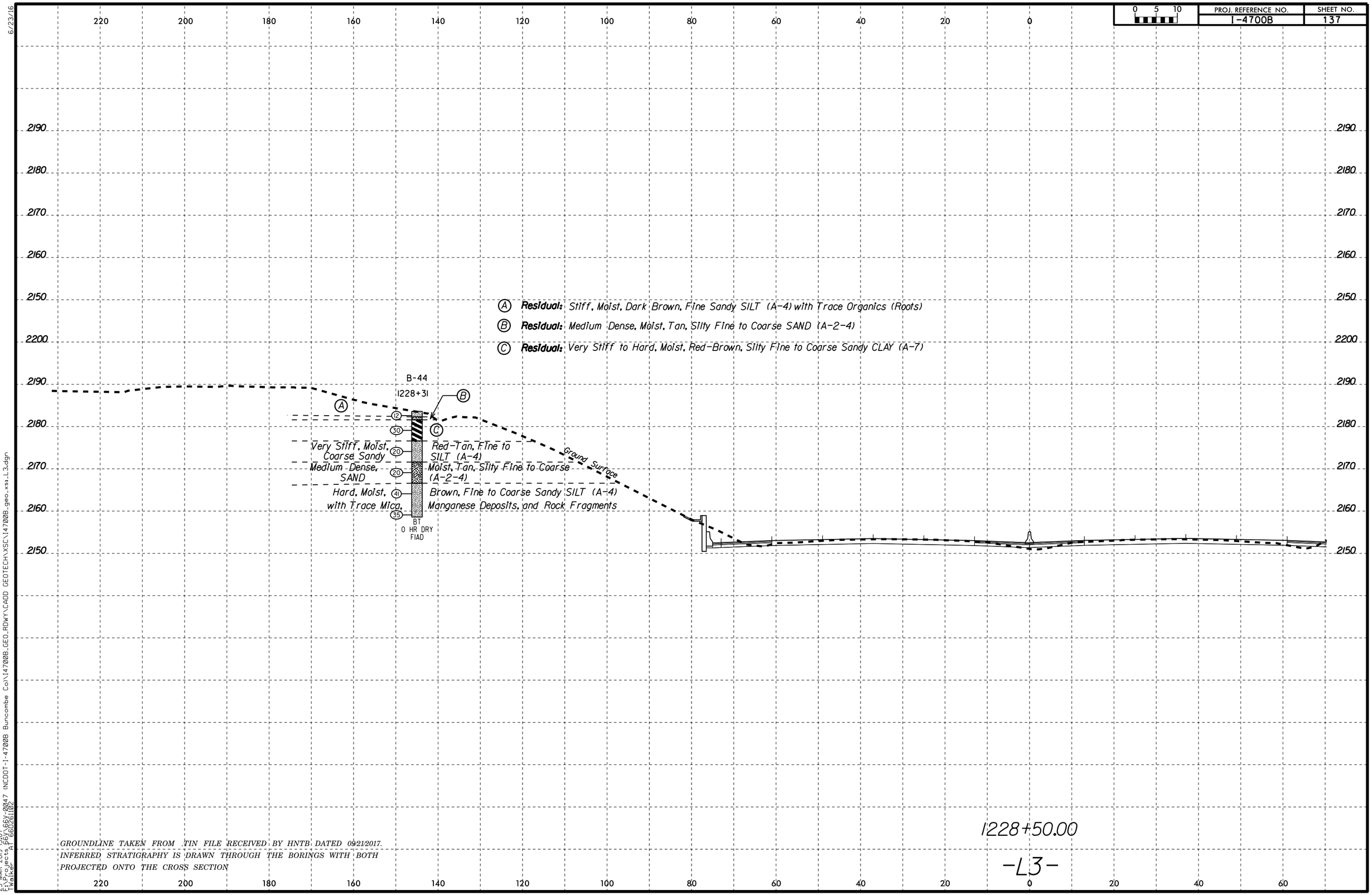
TWalker AT 66D261102

PROJ. REFERENCE NO.	SHEET NO.
I-4700B	137



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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TWalker AT 66026102

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-28 (2)	**STATION** 1126+24	**OFFSET** 76 ft RT	**ALIGNMENT** -NBL2-	**0 HR.** 5.2
COLLAR ELEV. 1,996.2 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 659,205	**EASTING** 936,802	**24 HR.** 3.2
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** 08/23/17	**COMP. DATE** 08/23/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2000											
										1,996.2 GROUND SURFACE	0.0
1995										1,995.2 **ROADWAY EMBANKMENT** Soft, Brown-Tan, Clayey SILT (A-5) with Trace Mica and Organics (Roots)	1.0
1990										**ALLUVIAL** Very Soft, Dark Gray, Fine Sandy CLAY (A-6) with Trace Mica and Organics (Roots) 1,989.2	7.0
										Medium Dense to Dense, Orange-Brown, Silty Fine to Coarse SAND (A-1-b) with Trace Rounded Gravel	
1985											
	1,982.7	13.5	15	12	12	24		Sat.		1,982.1	14.1
										1,981.2 **RESIDUAL** Orange-Tan, Clayey Fine Sandy SILT (A-5) with Trace Mica	15.0
										Boring Terminated at Elevation 1,981.2 ft in SILT (RESIDUAL)	
										Note: Auger Probed from 0-13.5'	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-32 (B1-B)	**STATION** 1161+16	**OFFSET** 78 ft RT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,001.8 ft	**TOTAL DEPTH** 26.7 ft	**NORTHING** 660,820	**EASTING** 933,700 / **24 HR.** Dry
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** 08/21/17	**COMP. DATE** 08/22/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
2005									
	2,001.8	0.0							2,001.8 GROUND SURFACE 0.0
2000			5	17	16		M		**ARTIFICIAL FILL** Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) and Gravel
	1,998.3	3.5	8	5	6		M		
1995									1,994.8 7.0
	1,993.3	8.5	1	1	1		Sat.		**ALLUVIAL** Dark Brown-Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Organics (Wood Fragments and Roots)
1990	1,990.2	11.6	60/0.1						1,990.3 11.5; 1,990.1 11.7 **CRYSTALLINE ROCK** Dark Gray (BIOTITE GNEISS)
1985						RS-1			
1980									1,975.1 26.7
									Boring Terminated at Elevation 1,975.1 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

Notes:
1. Driller noted harder drilling at 11.5', Auger refusal at 11.6', began coring at 11.7'
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT BORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-32 (B1-B)	**STATION** 1161+16	**OFFSET** 78 ft RT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,001.8 ft	**TOTAL DEPTH** 26.7 ft	**NORTHING** 660,820	**EASTING** 933,700 / **24 HR.** Dry
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** 08/21/17	**COMP. DATE** 08/22/17	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 15.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
1990											Begin Coring @ 11.7 ft
	1,990.1	11.7	5.0	1:45/1.0 3:22/1.0 2:36/1.0 2:21/1.0 2:27/1.0	(4.3) 86%	(2.9) 58%		(13.9) 93%	(11.0) 73%		1,990.1 11.7 **CRYSTALLINE ROCK** Dark Gray, Fresh to Slight Weathering, Hard to Medium Hard, Moderately Close to Close Fracture Spacing (BIOTITE GNEISS) RS-1: 16.8'-17.1', qu=7,924 psi, GSI=65-85
1985	1,985.1	16.7									
			5.0	2:18/1.0 3:09/1.0 3:04/1.0 2:48/1.0 2:43/1.0	(4.8) 96%	(3.6) 72%	RS-1				
1980	1,980.1	21.7									
			5.0	2:48/1.0 3:00/1.0 2:50/1.0 2:53/1.0 2:50/1.0	(4.8) 96%	(4.5) 90%					
	1,975.1	26.7									1,975.1 26.7
											Boring Terminated at Elevation 1,975.1 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

Notes:
1. Driller noted harder drilling at 11.5', Auger refusal at 11.6', began coring at 11.7'
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT CORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

CORE PHOTOGRAPHS:
36030.1.FS3 I-4700B
B-32 (B1-B): -L3- Station 1161+16, 78' Rt.

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

SCALE IN FEET

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

SCALE IN FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-33 (B1-C)	**STATION** 1161+35	**OFFSET** 7 ft RT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,001.0 ft	**TOTAL DEPTH** 31.6 ft	**NORTHING** 660,767	**EASTING** 933,650 / **24 HR.** Dry
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** 08/22/17	**COMP. DATE** 08/22/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
2005								
	2,001.0	0.0						2,001.0 GROUND SURFACE 0.0
2000			3	8	6		M	**ARTIFICIAL FILL** Tan-Orange-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace to Little Gravel and Mica
	1,997.5	3.5						
1995			8	7	5		M	
	1,994.0	7.0						
	1,992.5	8.5						**ALLUVIAL** Dark Brown-Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Mica
1990			3	0	1		M	
	1,989.6	11.4						
	1,989.4	11.6	60/0.0					**CRYSTALLINE ROCK** Dark Gray (BIOTITE GNEISS)
1985								
1980								
1975						RS-2		
1970								
								1,969.4 31.6

Boring Terminated at Elevation 1,969.4 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

Notes:
1. Auger refusal at 11.6', began coring
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT BORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-33 (B1-C)	**STATION** 1161+35	**OFFSET** 7 ft RT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,001.0 ft	**TOTAL DEPTH** 31.6 ft	**NORTHING** 660,767	**EASTING** 933,650 / **24 HR.** Dry
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** 08/22/17	**COMP. DATE** 08/22/17	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 20.0 ft		

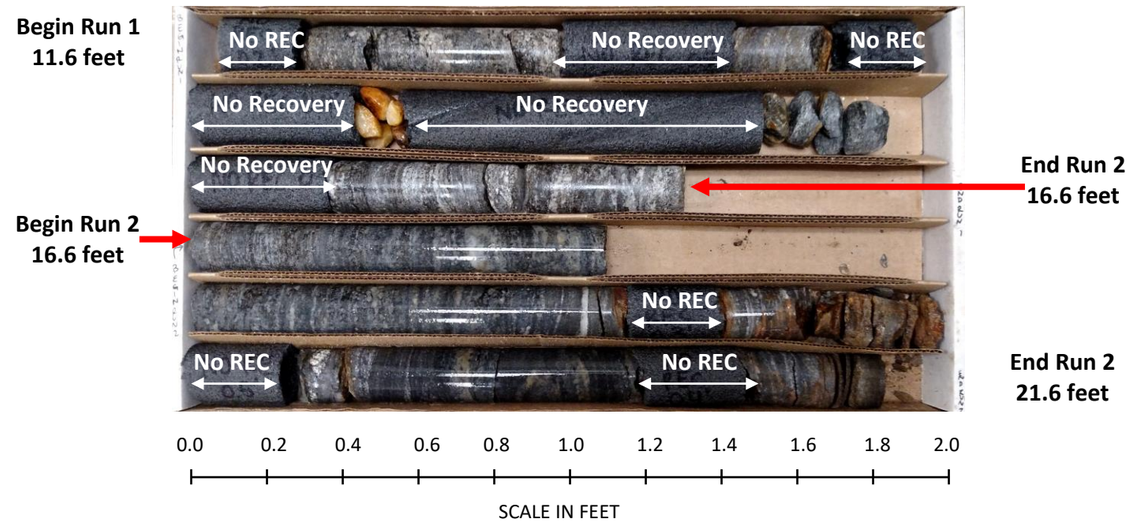
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
1989.4										Begin Coring @ 11.6 ft
	1,989.4	11.6	5.0	2:02/1.0 1:40/1.0 1:38/1.0 2:11/1.0 2:19/1.0	(2.2) 44%	(1.1) 22%		(13.6) 68%	(10.9) 55%	1,989.4 11.6 **CRYSTALLINE ROCK** Dark Gray, Slight to Moderately Severe Weathering, Moderately Hard to Soft, Moderately Close to Very Close Spacing (BIOTITE GNEISS) RS-2: 23.8'-24.1', qu=14,221 psi, GSI=50-70
1985	1,984.4	16.6	5.0	1:56/1.0 2:41/1.0 2:17/1.0 2:14/1.0 1:33/1.0	(3.8) 76%	(2.8) 56%				
1980	1,979.4	21.6	5.0	2:00/1.0 2:37/1.0 2:57/1.0 2:22/1.0 1:12/1.0	(3.8) 76%	(3.5) 70%	RS-2			
1975	1,974.4	26.6	5.0	1:33/1.0 2:04/1.0 2:28/1.0 2:28/1.0 2:15/1.0	(3.8) 76%	(3.5) 70%				
1970	1,969.4	31.6								1,969.4 31.6

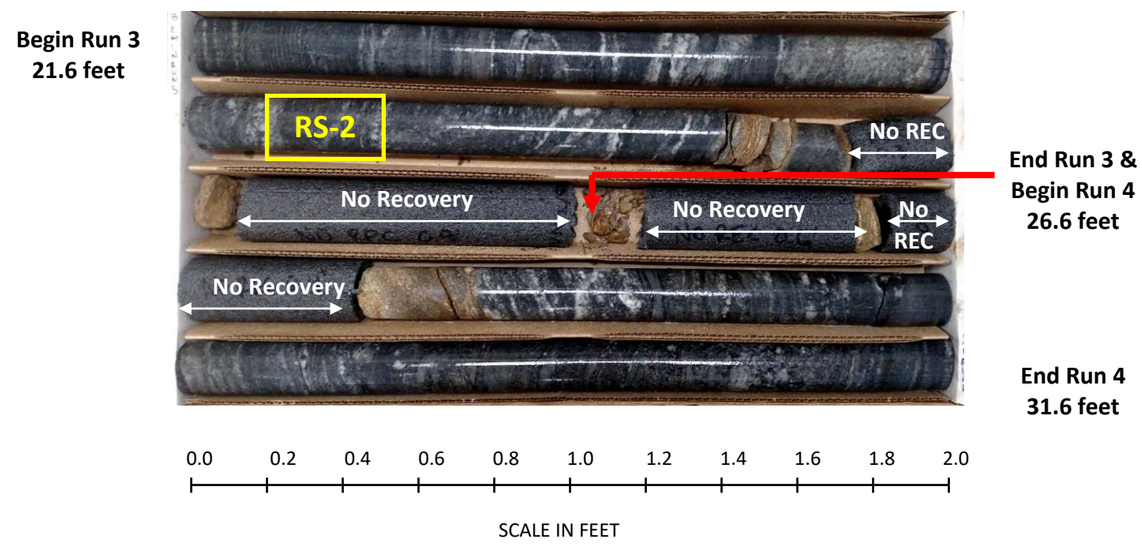
Boring Terminated at Elevation 1,969.4 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

Notes:
1. Auger refusal at 11.6', began coring
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT CORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

CORE PHOTOGRAPHS:
36030.1.FS3 I-4700B
B-33 (B1-C): -L3- Station 1161+35, 7' Rt.





GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-34 (B1-A)	**STATION** 1161+76	**OFFSET** 63 ft LT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,000.7 ft	**TOTAL DEPTH** 32.7 ft	**NORTHING** 660,724	**EASTING** 933,581 / **24 HR.** 7.2
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** 08/22/17	**COMP. DATE** 08/23/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
2000	2,000.7	0.0						GROUND SURFACE
	1,997.2	3.5	1	6	6		M	**ARTIFICIAL FILL** Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Mica, Gravel, and Organics (Roots)
			2	2	2		M	
	1,992.2	8.5	1	1	1		Sat.	**ALLUVIAL** Dark Gray-Black, Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Organics (Roots and Leaves)
	1,988.8	11.9	60/0.1					**CRYSTALLINE ROCK** Dark Gray (BIOTITE GNEISS)
	1,973.2	27.5	35	65/0.2		RS-3		**WEATHERED ROCK** Dark Gray-Brown (BIOTITE GNEISS)
								CRYSTALLINE ROCK Dark Gray (BIOTITE GNEISS)

BLOWS PER FOOT (0, 25, 50, 75, 100): 12, 4, 2, 60/0.1, 100/0.7

LOG

ELEV. (ft)	DEPTH (ft)
2,000.7	0.0
1,993.7	7.0
1,988.8	11.9
1,988.7	12.0
1,977.9	22.8
1,972.0	28.7
1,968.0	32.7

Boring Terminated at Elevation 1,968.0 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

Notes:
1. Auger refusal at 11.9', began coring at 12.0'
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT BORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** M. Arnold
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-34 (B1-A)	**STATION** 1161+76	**OFFSET** 63 ft LT	**ALIGNMENT** -L3- / **0 HR.** NM
COLLAR ELEV. 2,000.7 ft	**TOTAL DEPTH** 32.7 ft	**NORTHING** 660,724	**EASTING** 933,581 / **24 HR.** 7.2
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** 08/22/17	**COMP. DATE** 08/23/17	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 20.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
1988.7										Begin Coring @ 12.0 ft
	1,988.7	12.0	5.0	1:15/1.0 2:11/1.0 0:55/1.0 1:09/1.0 2:10/1.0	(1.4) 28%	(0.5) 10%		(6.5) 60%	(4.8) 44%	**CRYSTALLINE ROCK** Dark Gray, Slight to Moderately Severe Weathering, Moderately Hard to Soft, Moderately Close to Very Close Spacing BIOTITE GNEISS GSI-45-65
	1,983.7	17.0	5.0	2:12/1.0 2:22/1.0 2:03/1.0 2:04/1.0 3:40/1.0	(4.3) 86%	(3.7) 74%				
	1,978.7	22.0	5.0	2:41/1.0 0:48/1.0 0:44/1.0 0:54/1.0 1:04/1.0	(0.8) 16%	(0.6) 12%		(0.0) 0%	(0.0) 0%	**WEATHERED ROCK** Dark Gray-Brown (BIOTITE GNEISS)
	1,973.7	27.0								
	1,973.0	27.7	5.0	N=100/0.7 1:06/1.0 1:59/1.0 2:24/1.0 2:30/1.0 3:09/1.0	(3.8) 76%	(3.4) 68%		(3.8) 95%	(3.4) 85%	**CRYSTALLINE ROCK** Dark Gray, Slight to Moderately Severe Weathering, Moderately Hard to Soft, Moderately Close to Very Close Spacing BIOTITE GNEISS RS-3: 31.6'-31.9', qu=10,080 psi, GSI-55-75
	1,968.0	32.7					RS-3			Boring Terminated at Elevation 1,968.0 ft in CRYSTALLINE ROCK (BIOTITE GNEISS)

LOG

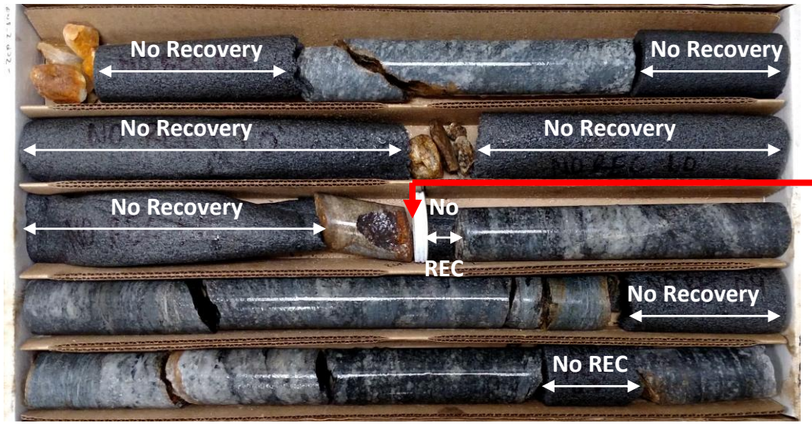
ELEV. (ft)	DEPTH (ft)
1,988.7	12.0
1,977.9	22.8
1,972.0	28.7
1,968.0	32.7

Notes:
1. Auger refusal at 11.9', began coring at 12.0'
2. 0 Hr. water level not measured due to water introduced for coring

NCDOT CORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

CORE PHOTOGRAPHS:
36030.1.FS3 I-4700B
B-34 (B1-A): -L3- Station 1161+76, 63' Lt.

Begin Run 1
12.0 feet

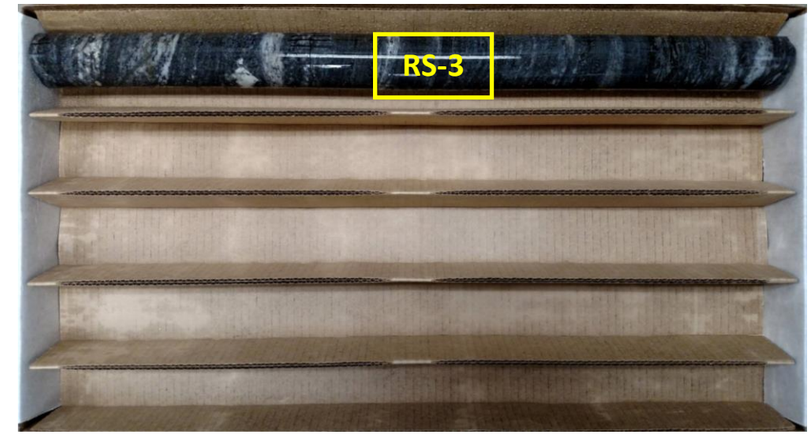


End Run 1 &
Begin Run 2
17.0 feet

End Run 2
22.0 feet

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

SCALE IN FEET



End Run 4
32.7 feet

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

SCALE IN FEET

Begin Run 3
22.0 feet

End Run 3
27.0 feet

Begin Run 4
27.7 feet

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

SCALE IN FEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** S. Woods
SITE DESCRIPTION Retaining Wall 22 on -L- from 1193+75 to 1206+75, 76.29' Right			**GROUND WTR (ft)**
BORING NO. RW22-13 (2)	**STATION** 1204+05	**OFFSET** 50 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 2,133.9 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 663,938	**EASTING** 930,980	**24 HR.** FIAD
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** 11/30/18	**COMP. DATE** 11/30/18	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2135										2,133.9 GROUND SURFACE	0.0
2130										**ROADWAY EMBANKMENT** AUGER PROBE	
	2,125.9	8.0	60/0.0			60/0.0				2,125.9	8.0
										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,125.9 ft on POSSIBLE BOULDER (ROADWAY EMBANKMENT)	

Notes:
1. Auger probed to 8.0'
2. Auger refusal at 8.0'
3. FIAD due to boring location in roadway

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** S. Woods
SITE DESCRIPTION Retaining Wall 22 on -L- from 1193+75 to 1206+75, 76.29' Right			**GROUND WTR (ft)**
BORING NO. RW22-18 (2)	**STATION** 1206+07	**OFFSET** 50 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 2,139.5 ft	**TOTAL DEPTH** 8.2 ft	**NORTHING** 664,091	**EASTING** 930,848	**24 HR.** FIAD
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** 11/30/18	**COMP. DATE** 11/30/18	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
2140										2,139.5 GROUND SURFACE	0.0
2135										**ROADWAY EMBANKMENT** AUGER PROBE	
	2,131.3	8.2	60/0.0			60/0.0				2,131.3	8.2
										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,131.3 ft on POSSIBLE BOULDER (ROADWAY EMBANKMENT)	

Notes:
1. Auger probed to 8.2'
2. Auger refusal at 8.2'
3. FIAD due to boring location in roadway

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 36030.1.FS3	**TIP** I-4700B	**COUNTY** BUNCOMBE	**GEOLOGIST** S. Woods
SITE DESCRIPTION I-26 from near NC 146 (Exit 37) to near NC 191 (Exit 33)			**GROUND WTR (ft)**
BORING NO. B-45	**STATION** 1231+19	**OFFSET** 120 ft LT	**ALIGNMENT** -L3-	**0 HR.** Dry
COLLAR ELEV. 2,166.1 ft	**TOTAL DEPTH** 25.0 ft	**NORTHING** 666,166	**EASTING** 929,463	**24 HR.** 16.0
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** 09/05/17	**COMP. DATE** 09/05/17	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
2170											
	2,166.1	0.0								2,166.1 GROUND SURFACE	0.0
2165			2	2	4	6		M		**RESIDUAL** Orange, Fine to Coarse Sandy Silty CLAY (A-7) with Trace Mica	2.0
	2,162.6	3.5									
2160			5	7	7	14		M		Tan-Orange, Silty Fine to Coarse SAND (A-2-4) with Trace Mica and Manganese Deposits	
	2,157.6	8.5									
2155			5	6	6	12		M			
	2,152.6	13.5								2,154.1	12.0
2150			4	5	4	9		M		Tan-Orange-White, Clayey Fine to Coarse Sandy SILT (A-4) with Trace Mica and Manganese Deposits	
	2,147.6	18.5								2,149.1	17.0
2145			3	3	4	7		M		Tan-Orange-White, Clayey SILT (A-5) with Trace Manganese Deposits	
	2,142.6	23.5									
			3	4	6	10		W		2,141.1	25.0

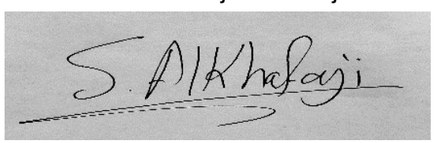
Boring Terminated at Elevation 2,141.1 ft in SILT (RESIDUAL)

Note:
0.0-0.1' = SURFICIAL ORGANIC SOILS

NCDOT BORE DOUBLE I4700B_GEO_BH_RDWY.GPJ NC_DOT.GDT 3/25/19

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.: 36030.1.FS3 (I-4700B)
COUNTY: Buncombe

Sample #	Boring #	Alignment	Station	Offset	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (in)	Diameter (in)	Unit Weight (PCF)	Unconfined Compressive Strength (psi)	GSI
RS-1	B-32	-L3-	1161+16	78' RT.	16.8-17.1	Biotite Gneiss	Zatm	72%	4.15	1.77	182.8	7,924	65-85
RS-2	B-33	-L3-	1161+35	7' RT.	23.8-24.1	Biotite Gneiss	Zatm	70%	4.01	1.78	167.3	14,221	50-70
RS-3	B-34	-L3-	1161+76	63' LT.	31.6-31.9	Biotite Gneiss	Zatm	68%	4.13	1.77	171.1	10,080	55-75

Lab Technician: Saja Alkhafaji