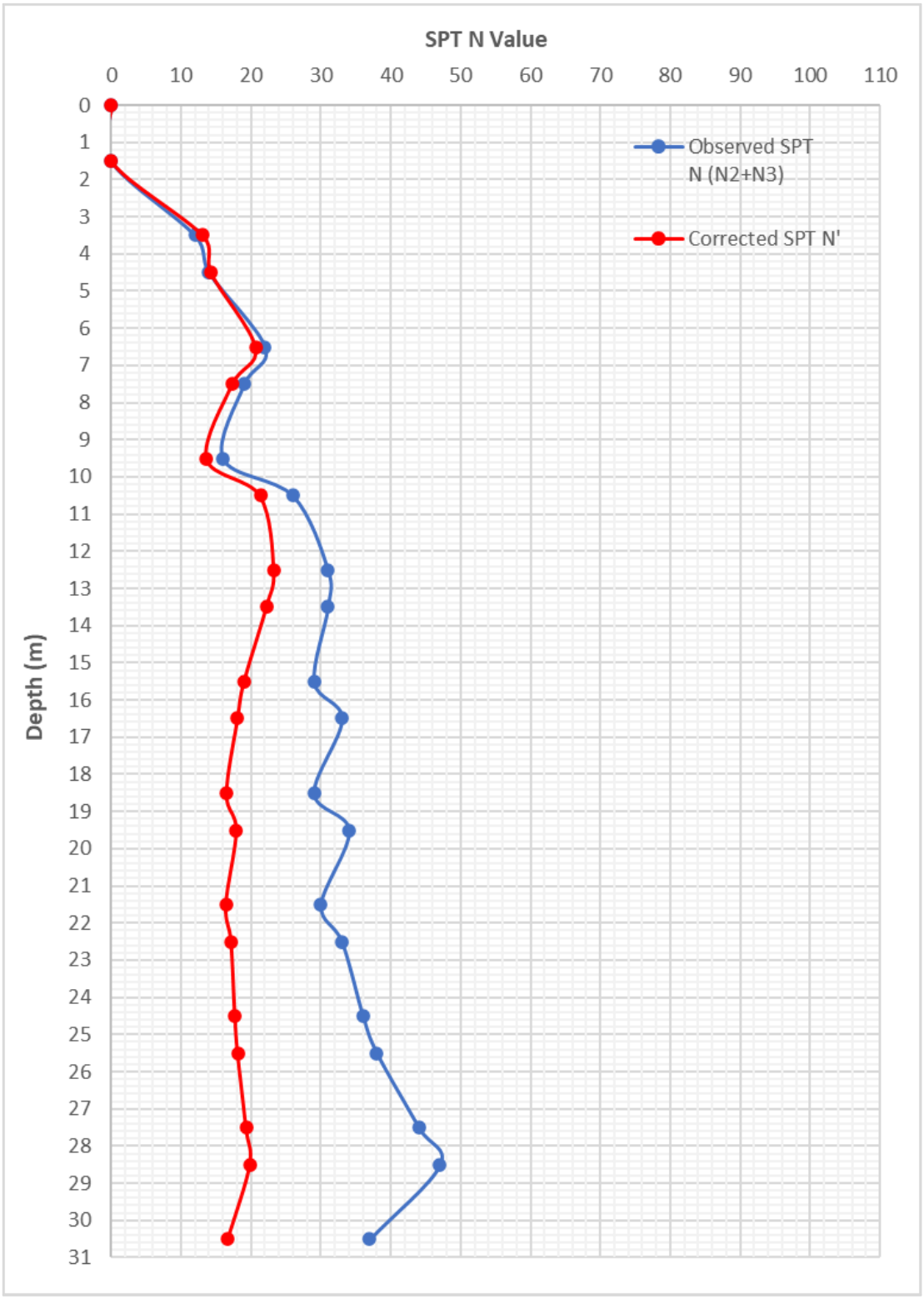
BH-28A


SPT N Value
0
10
20
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80
90
100
110
Depth (m)
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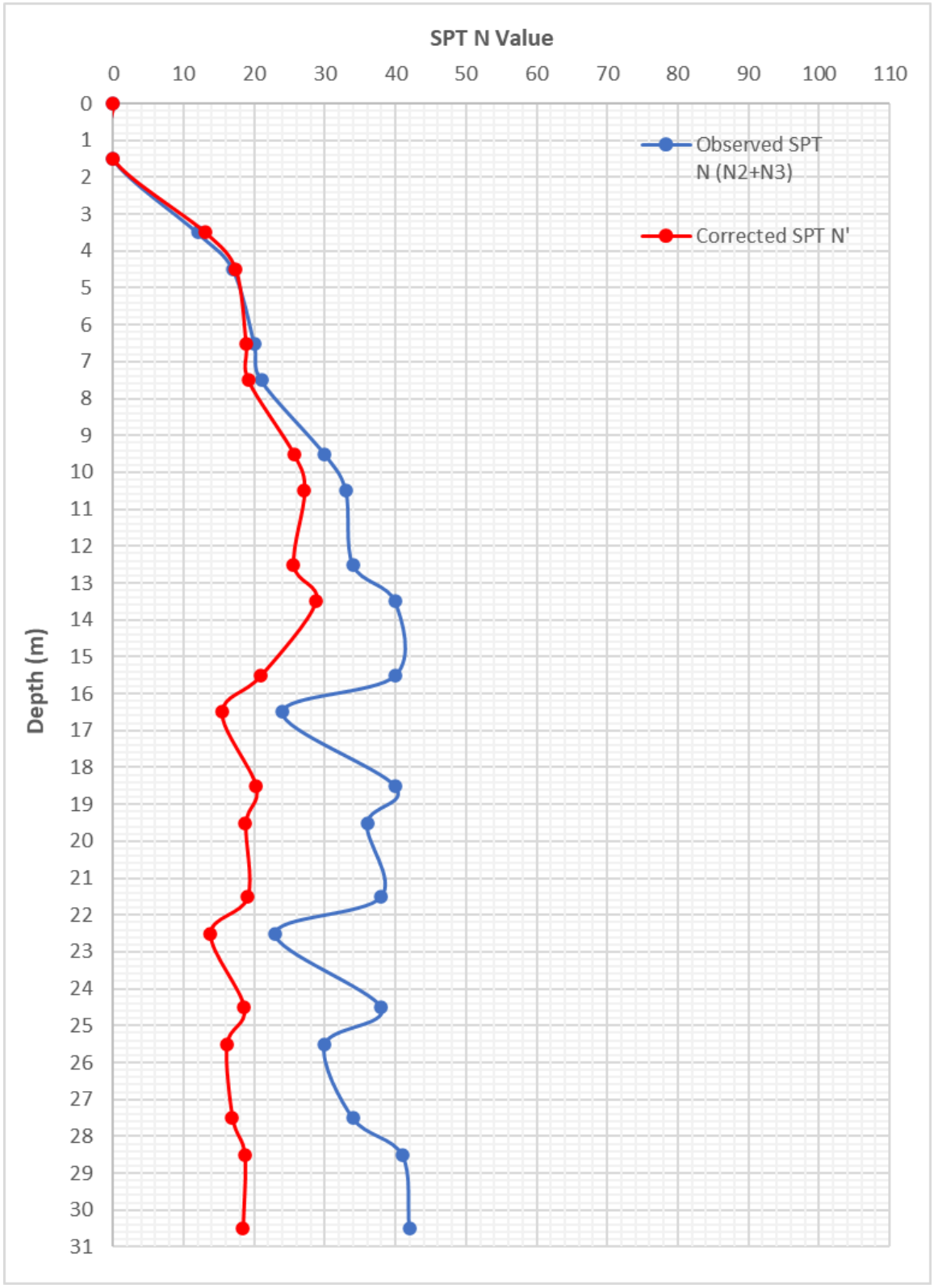
31
Observed SPT N (N2+N3)
Corrected SPT N'

BH-29


SPT N Value
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110
Depth (m)
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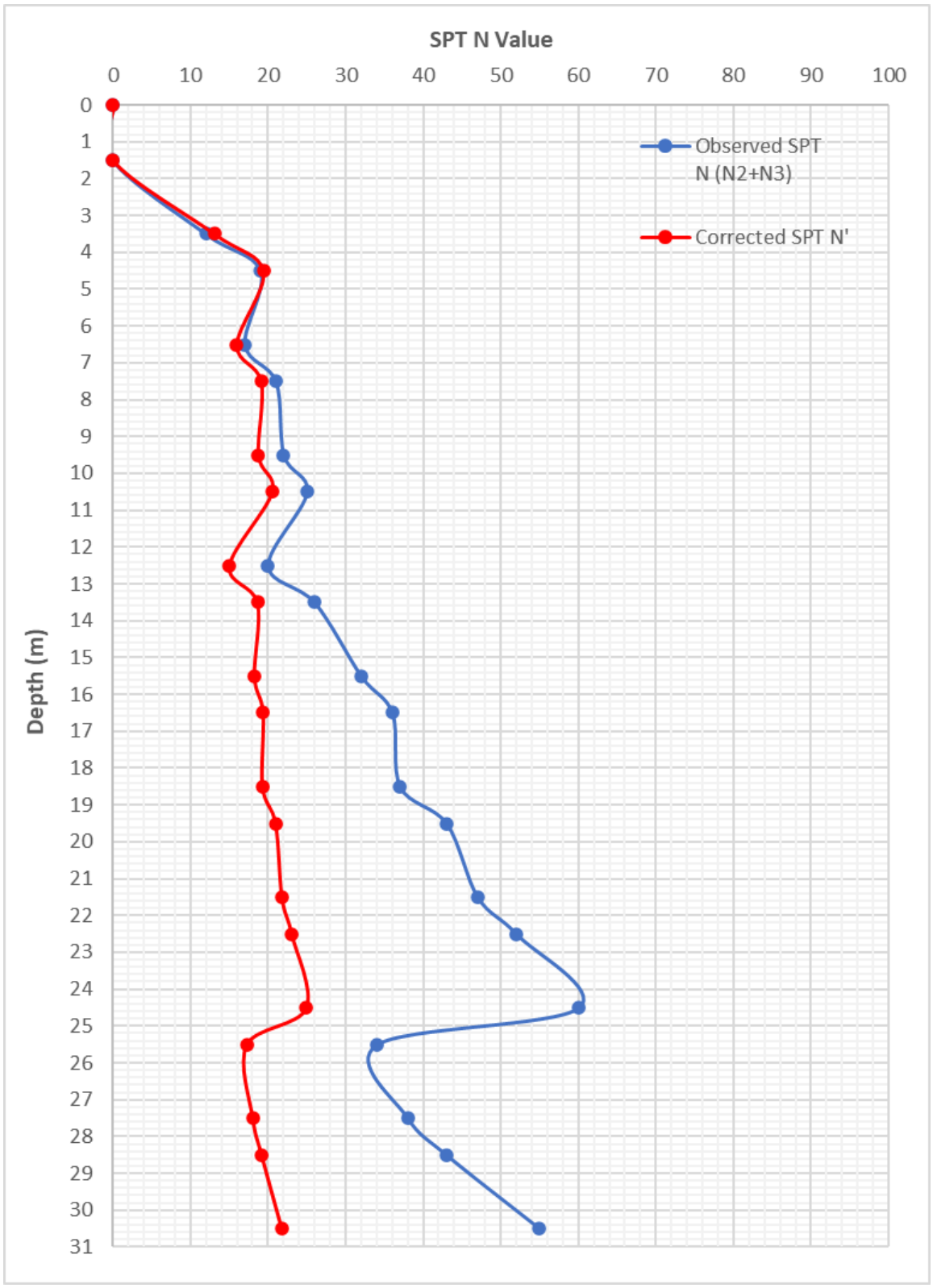
31
Observed SPT N (N2+N3)
Corrected SPT N'

BH-30


SPT N Value
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90
100
Depth (m)
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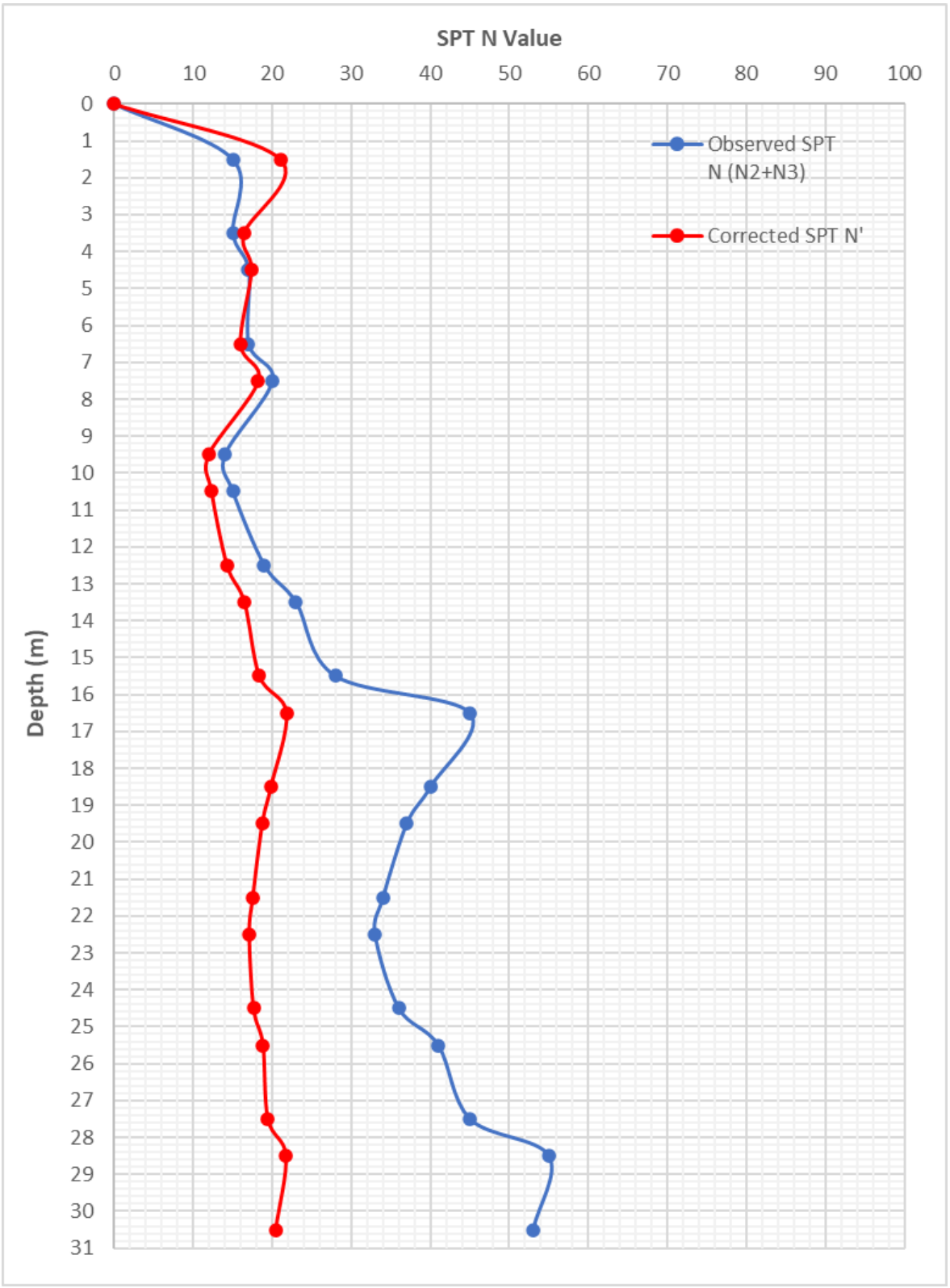
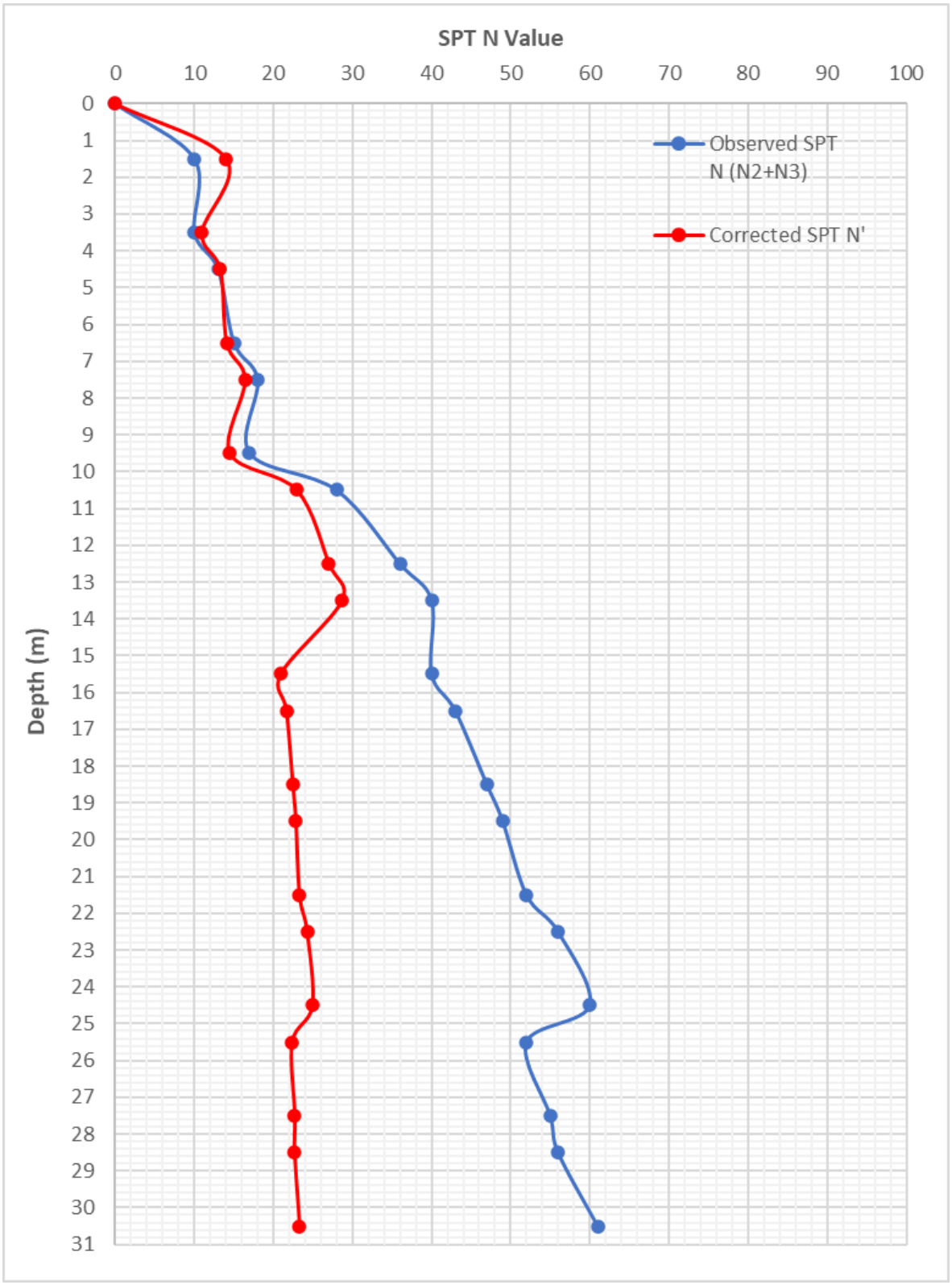
Observed SPT N (N2+N3)
Corrected SPT N'

D.5 Zone 5: CH: CH: 3+515 km to 4+520 km (BH-31 to BH-40)

BH-31



BH-32


SPT N Value
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100
Depth (m)
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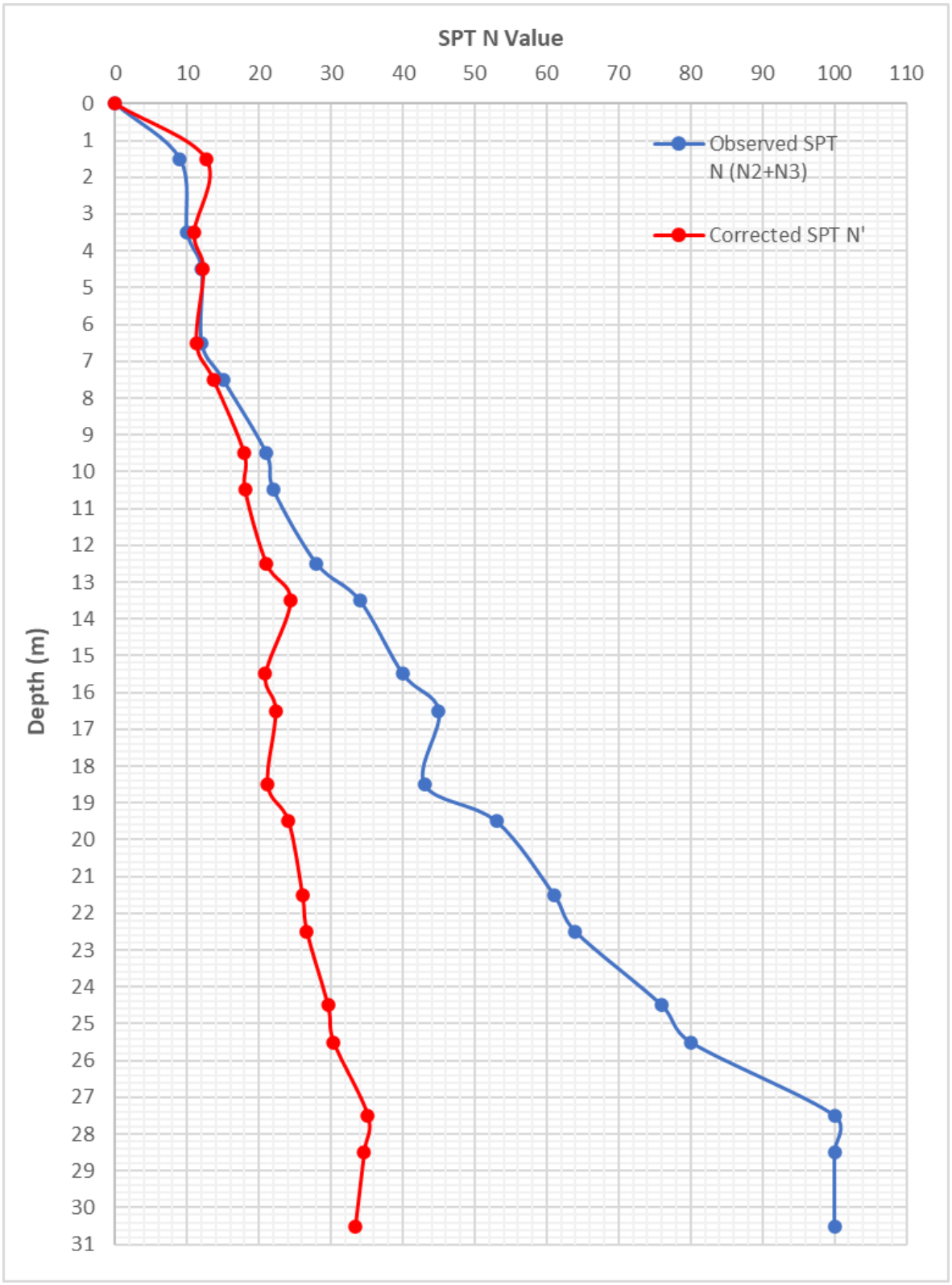
Observed SPT N (N2+N3)
Corrected SPT N'

BH-33


SPT N Value
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Depth (m)
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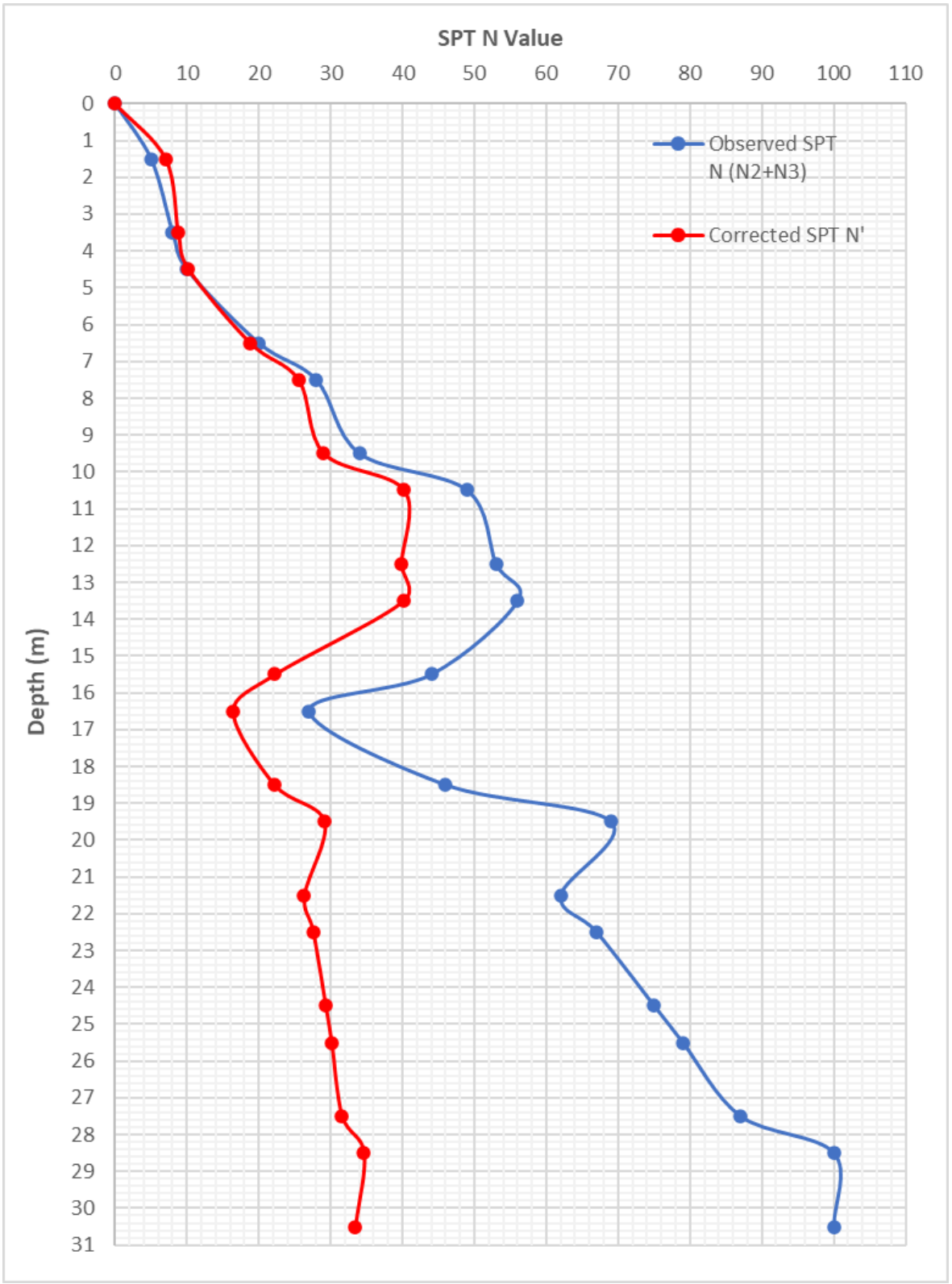
31
Observed SPT N (N2+N3)
Corrected SPT N'

BH-34


SPT N Value
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Depth (m)
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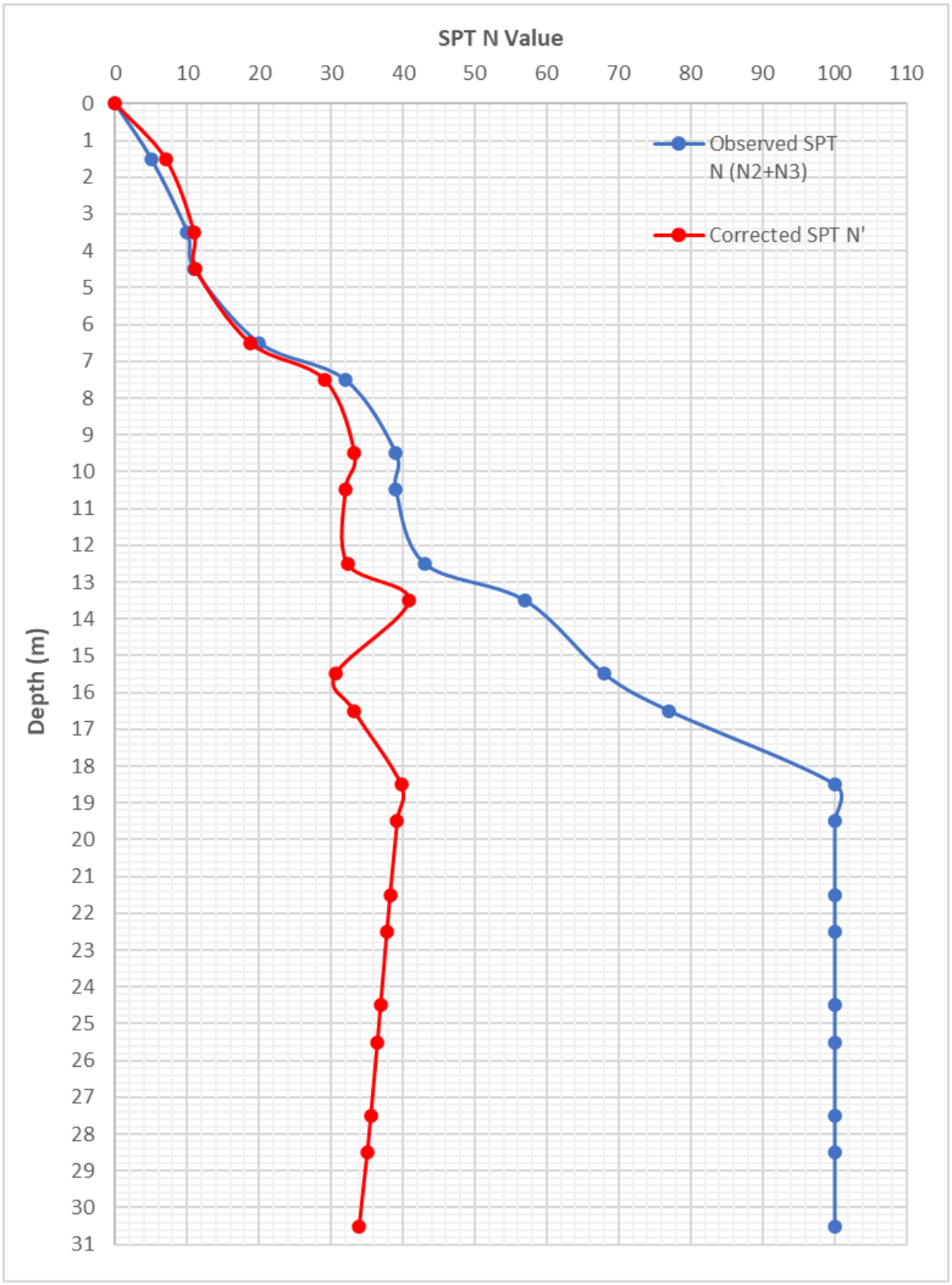
Observed SPT N (N2+N3)
Corrected SPT N'

BH-35


SPT N Value
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Depth (m)
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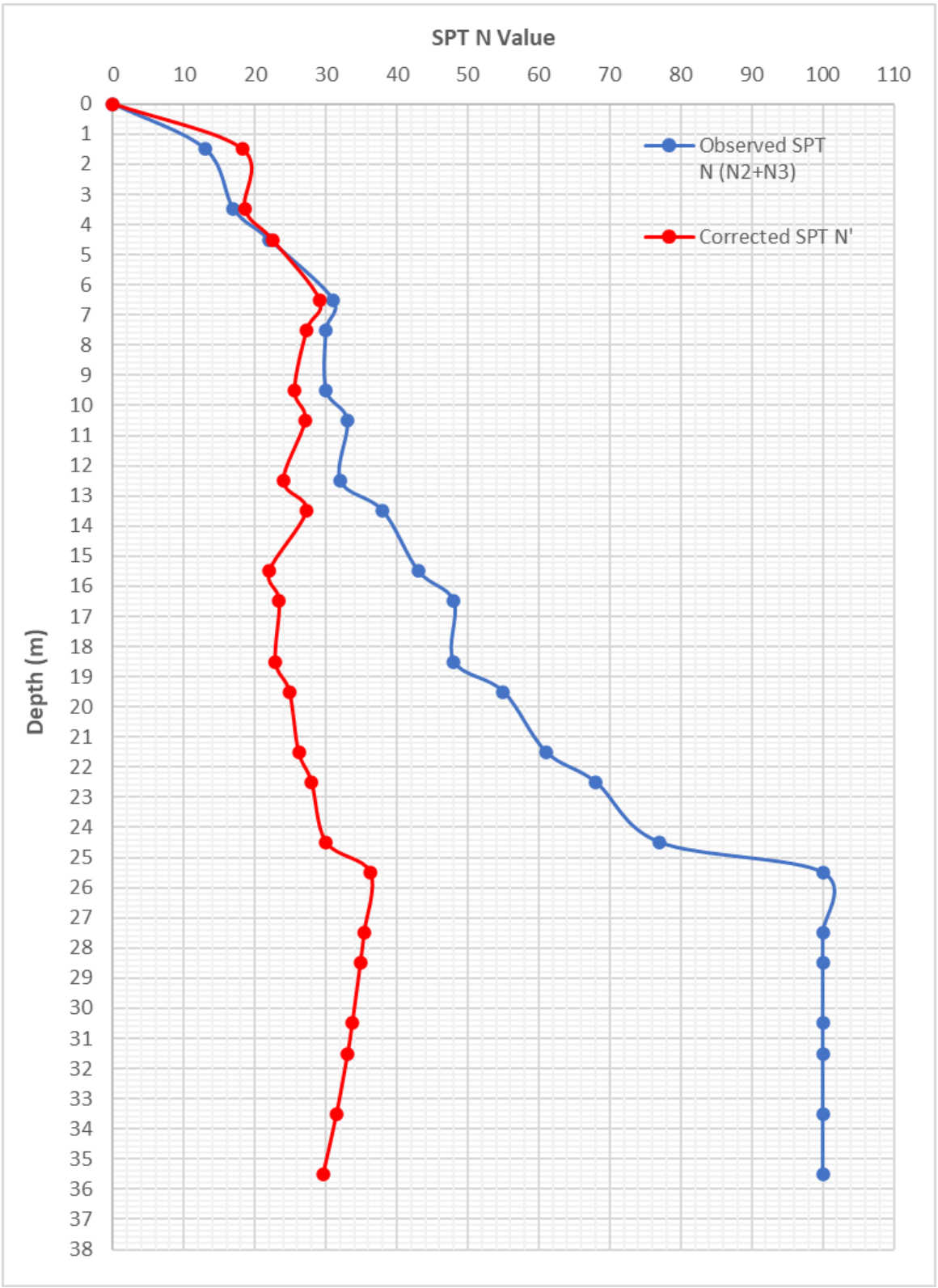
Observed SPT N (N2+N3)
Corrected SPT N'

BH-36


SPT N Value
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Depth (m)
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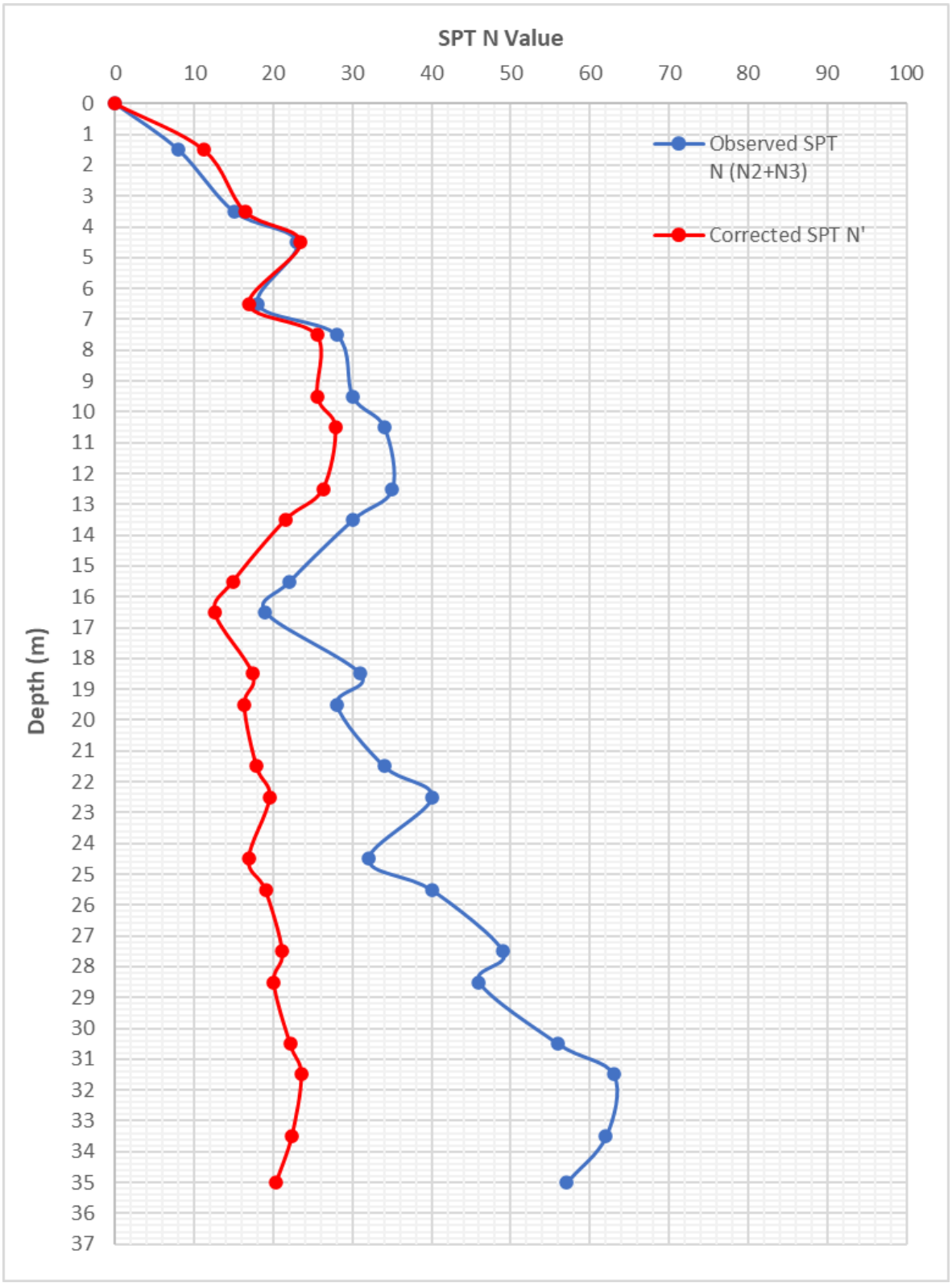
Observed SPT N (N2+N3)
Corrected SPT N'

BH-37


SPT N Value
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Depth (m)
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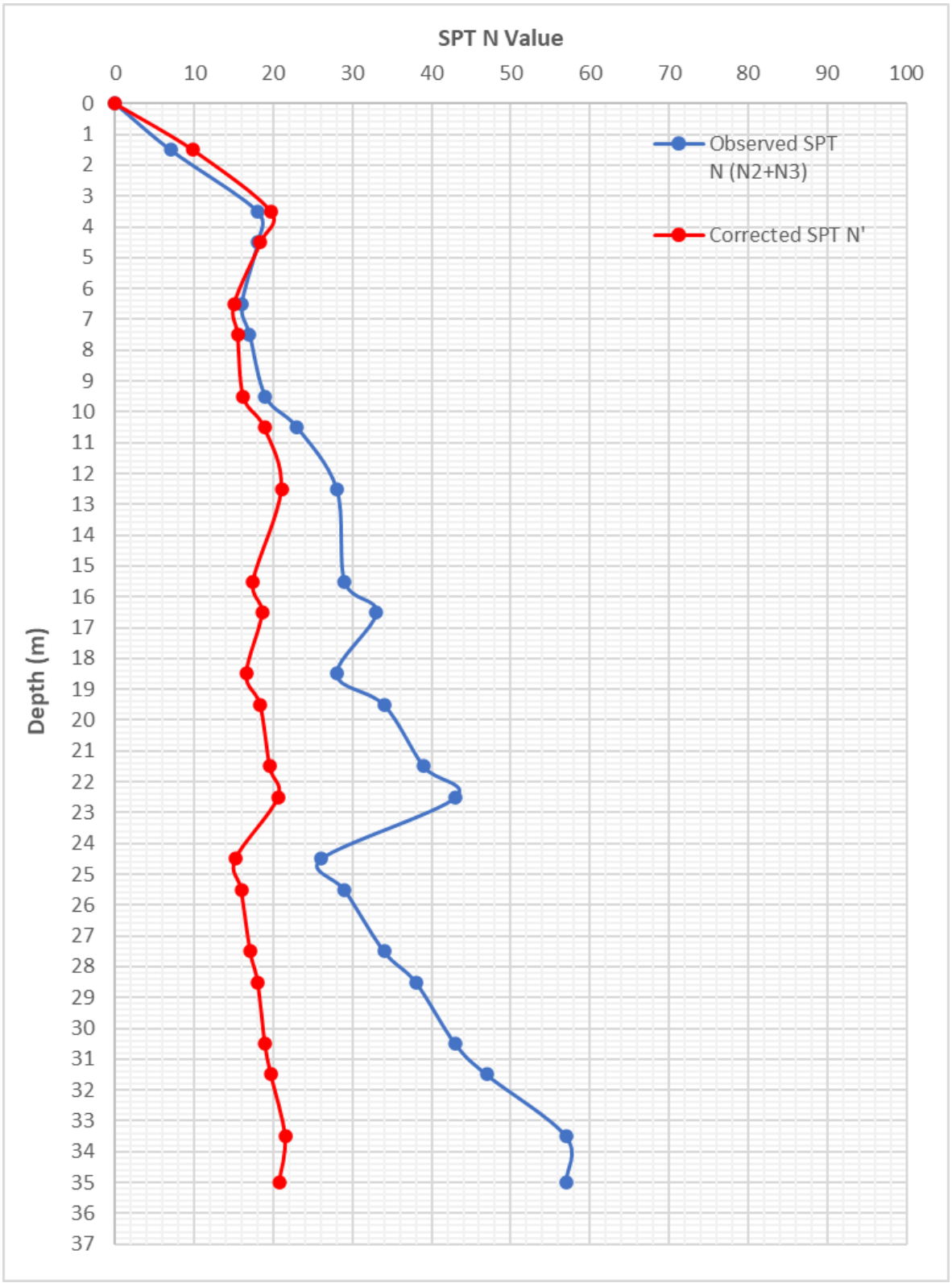
37
Observed SPT N (N2+N3)
Corrected SPT N'

BH-38


SPT N Value
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Depth (m)
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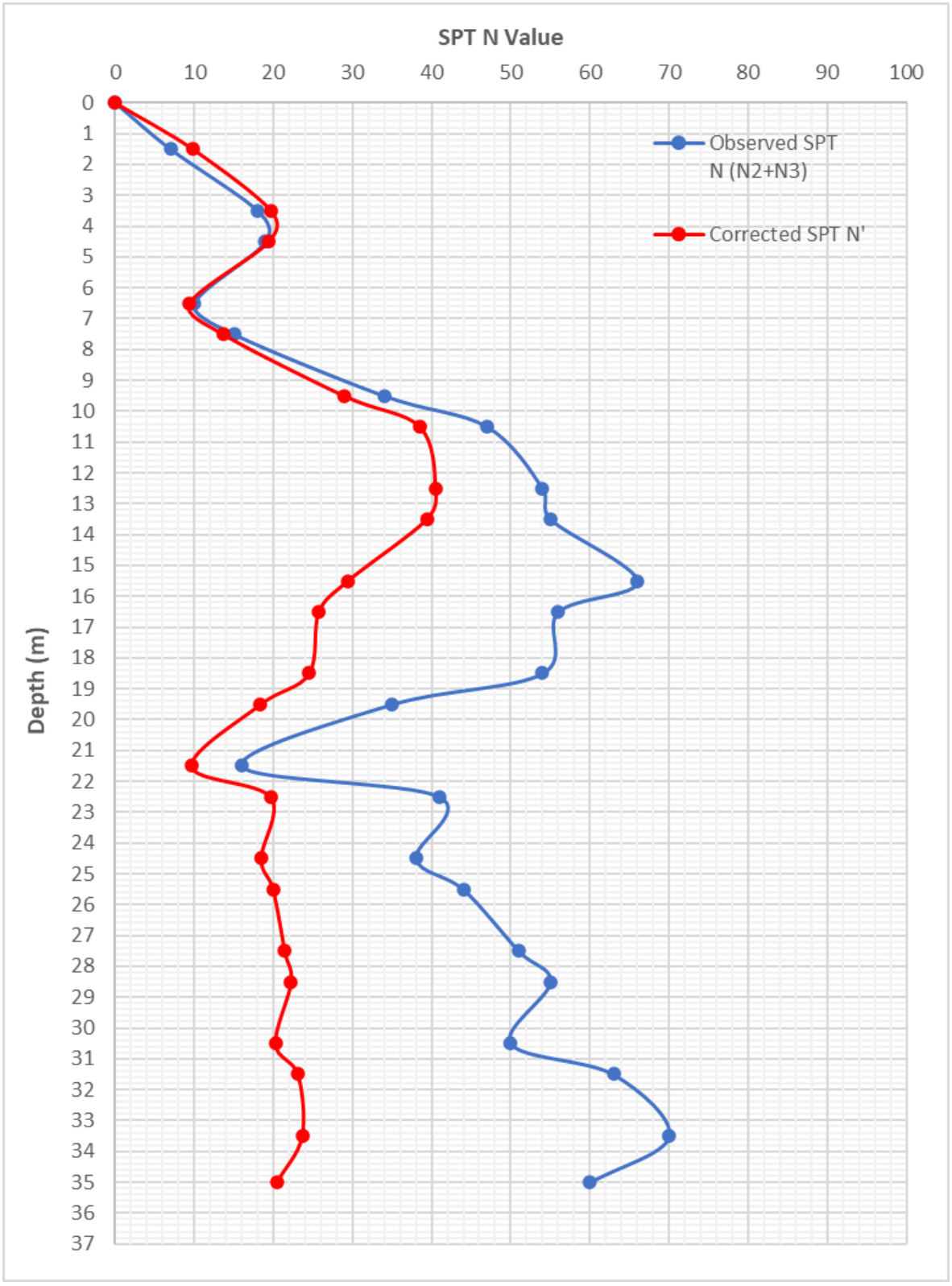
37
Observed SPT N (N2+N3)
Corrected SPT N'

BH-39


SPT N Value
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Depth (m)
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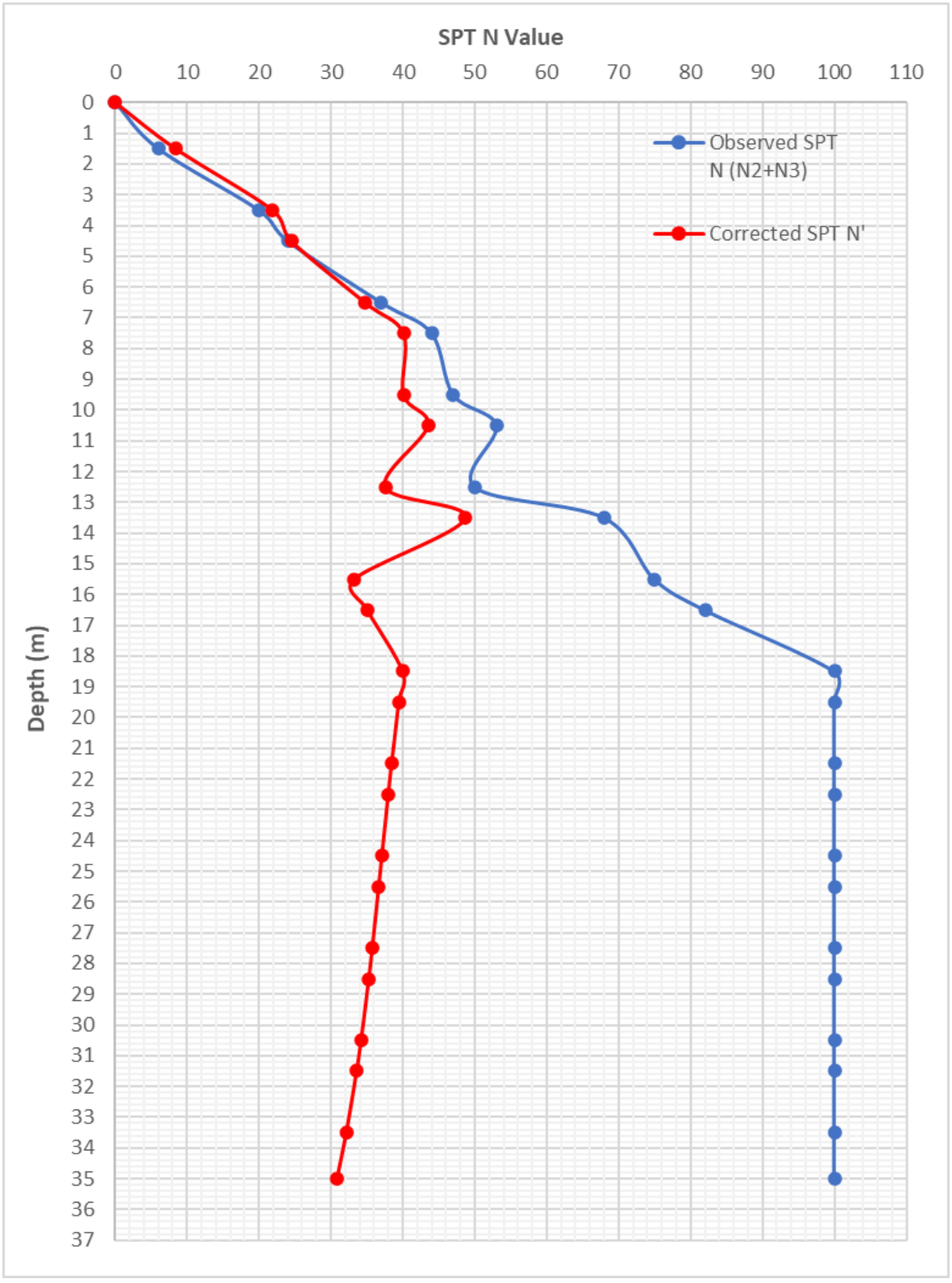
37
Observed SPT N (N2+N3)
Corrected SPT N'

BH-40


SPT N Value
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Depth (m)
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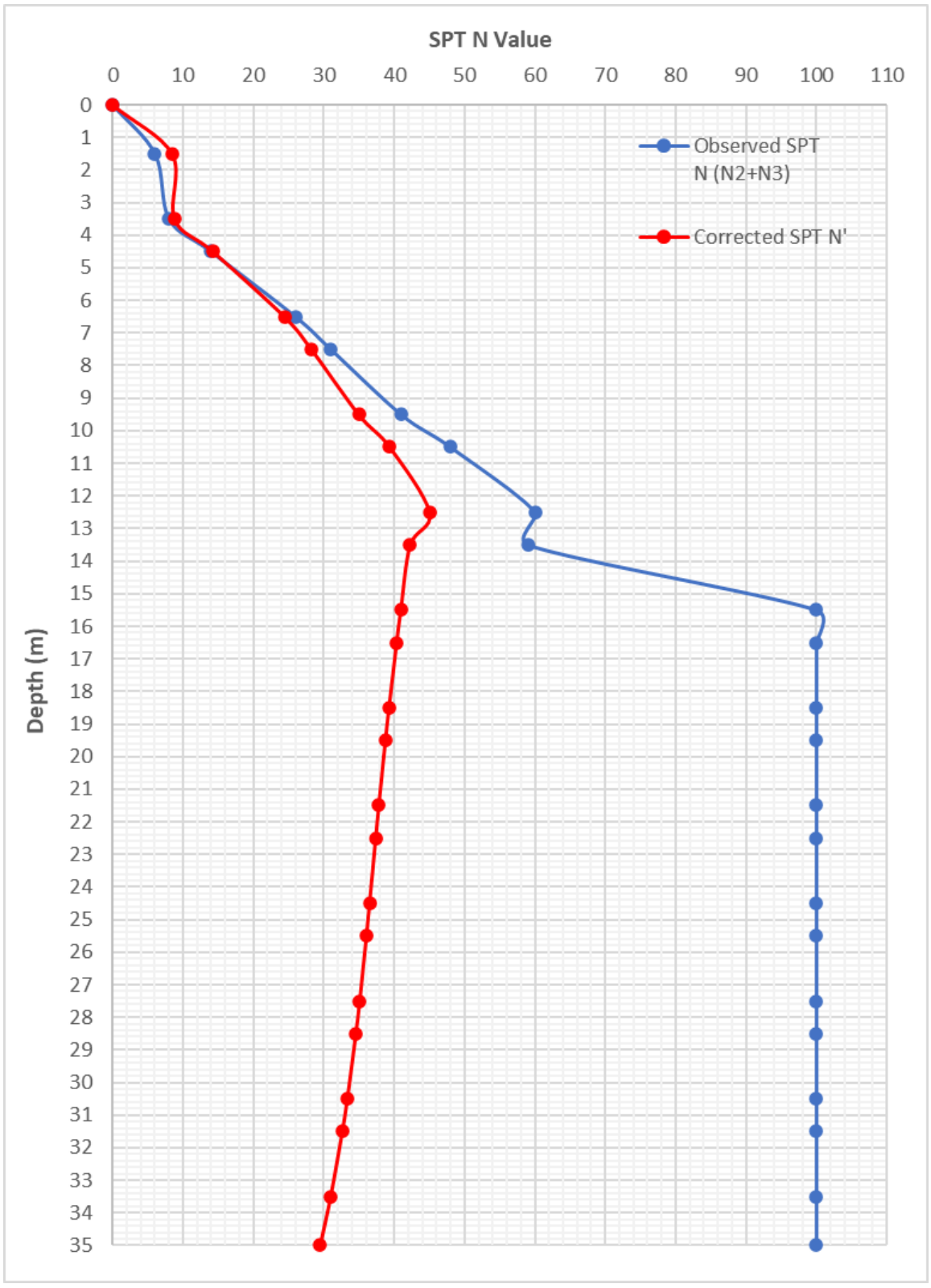
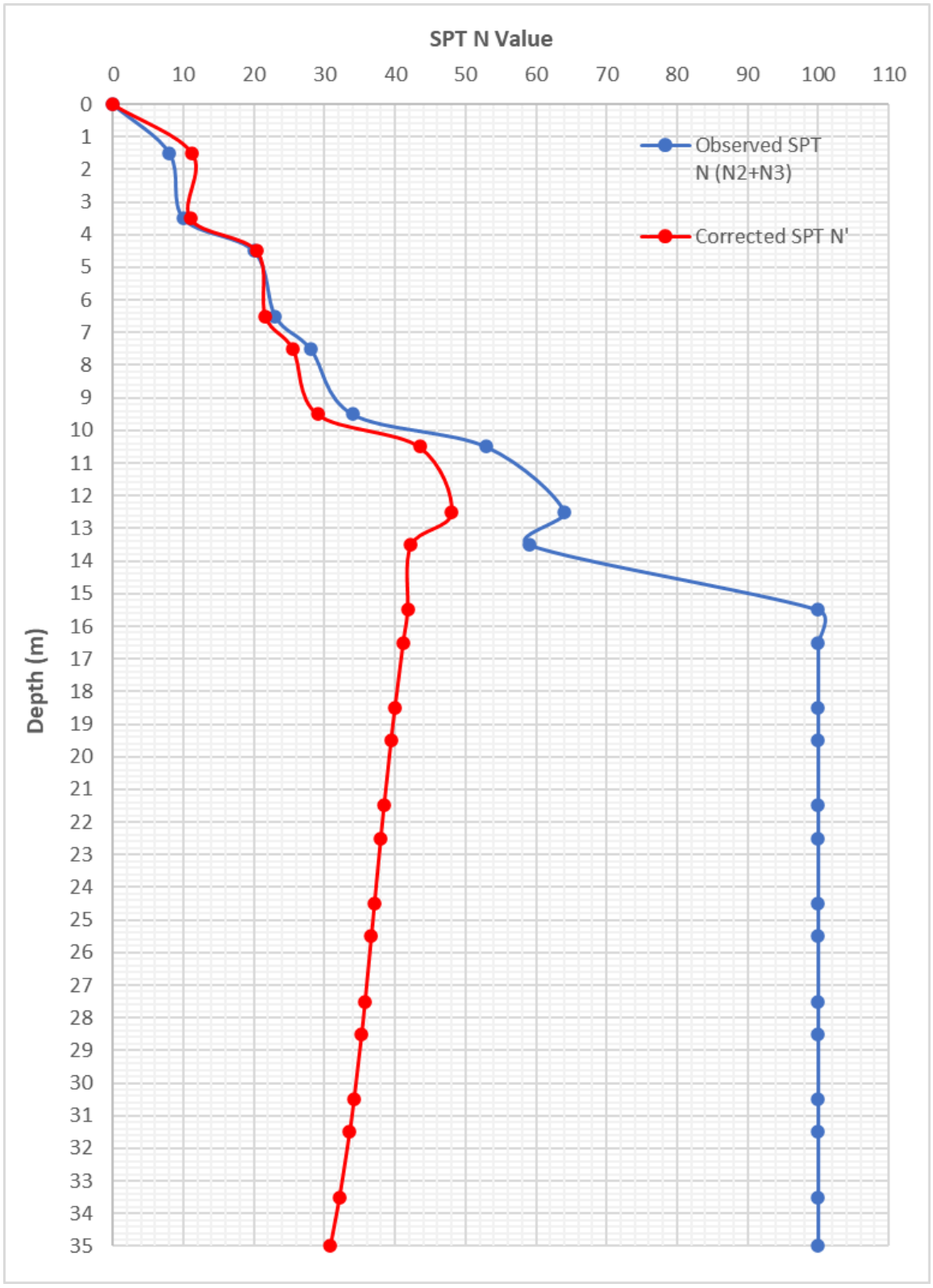
Observed SPT N (N2+N3)
Corrected SPT N'

D.6 Zone 6: CH: CH: 4+515 km to 5+530 km (BH-41 to BH-50)

BH-41



BH-42


SPT N Value
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Depth (m)
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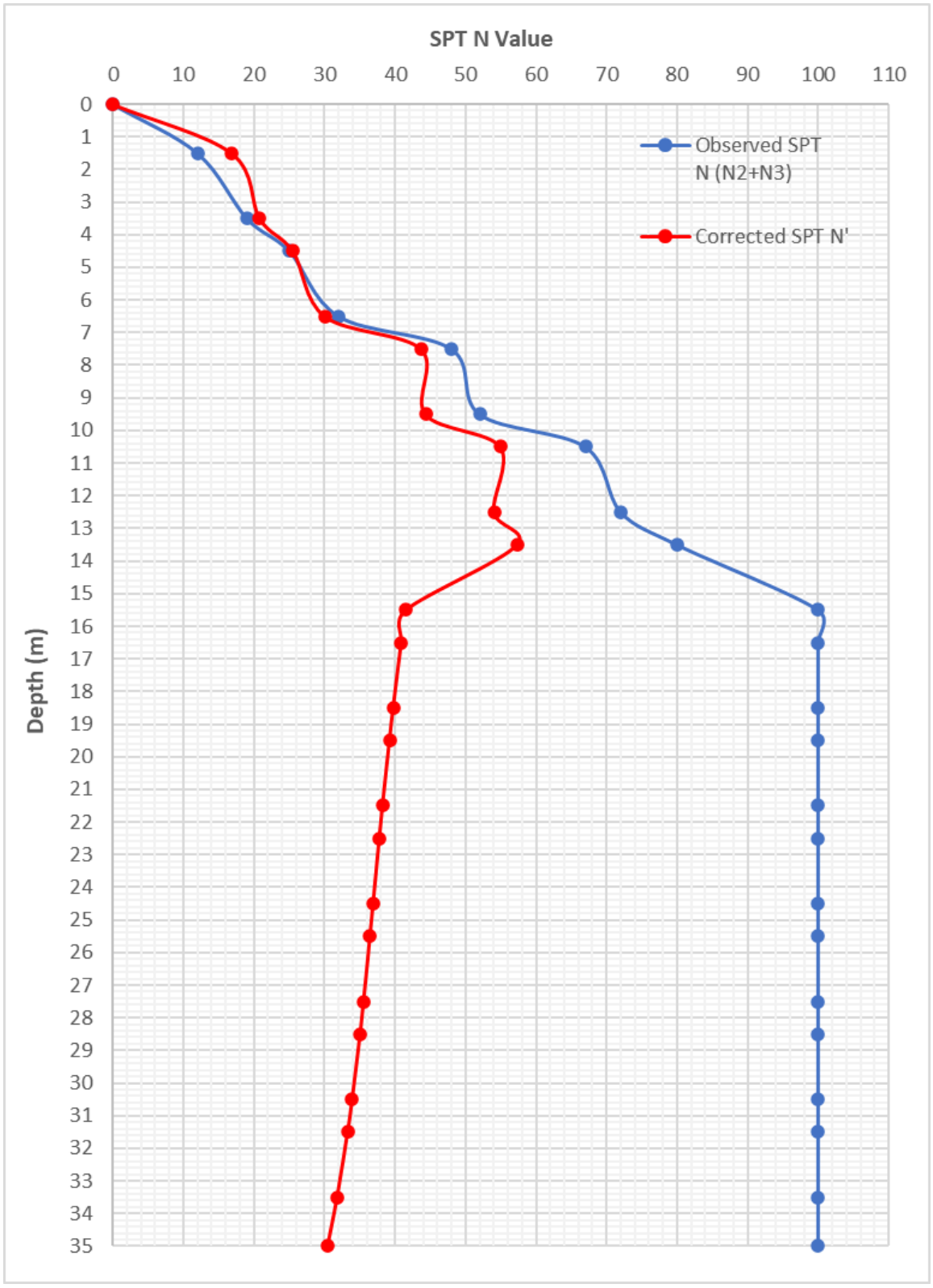
Observed SPT N (N2+N3)
Corrected SPT N'

BH-43


SPT N Value
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Depth (m)
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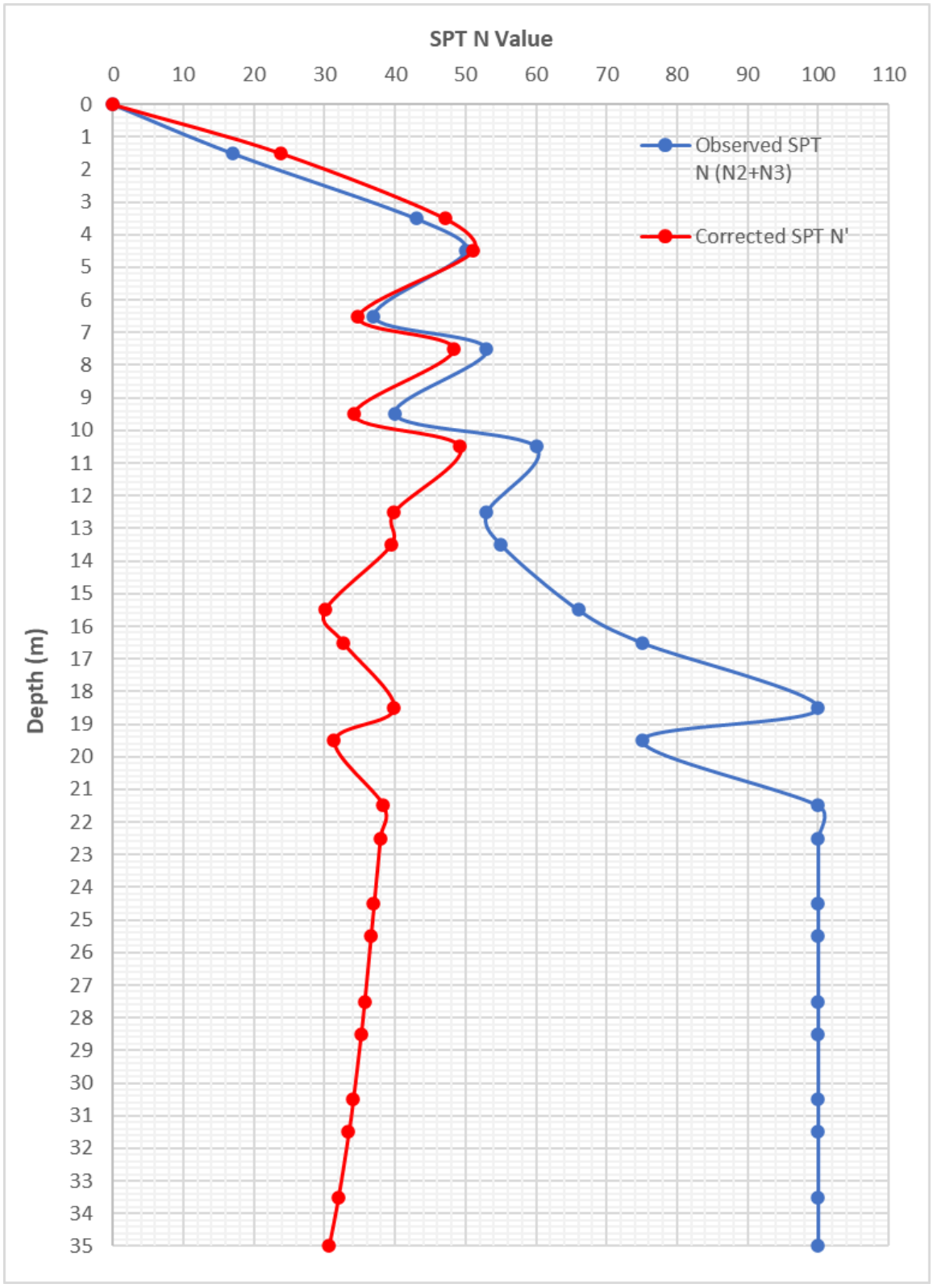
Observed SPT N (N2+N3)
Corrected SPT N'

BH-44


SPT N Value
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Depth (m)
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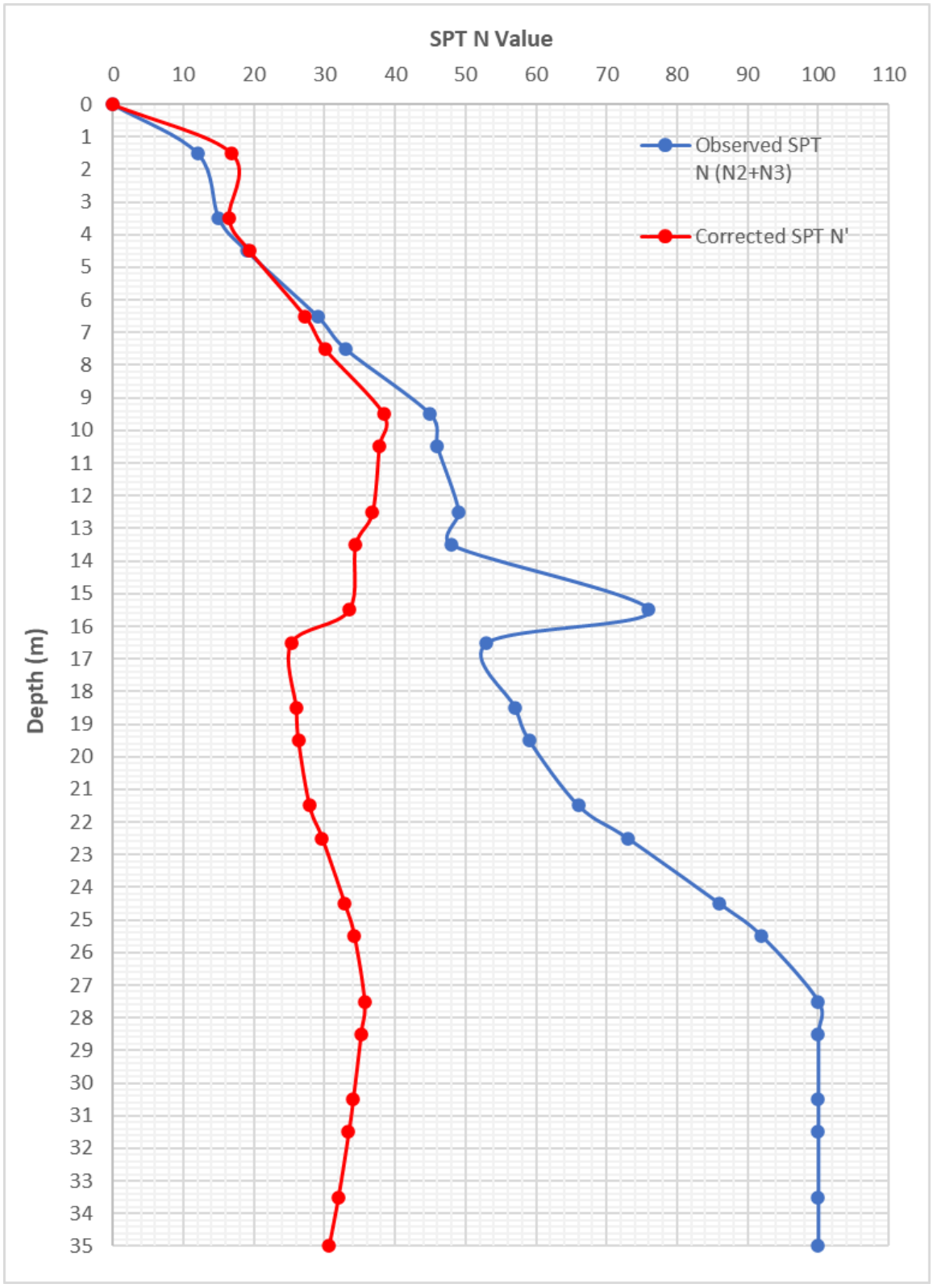
Observed SPT N (N2+N3)
Corrected SPT N'

BH-45


SPT N Value
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Depth (m)
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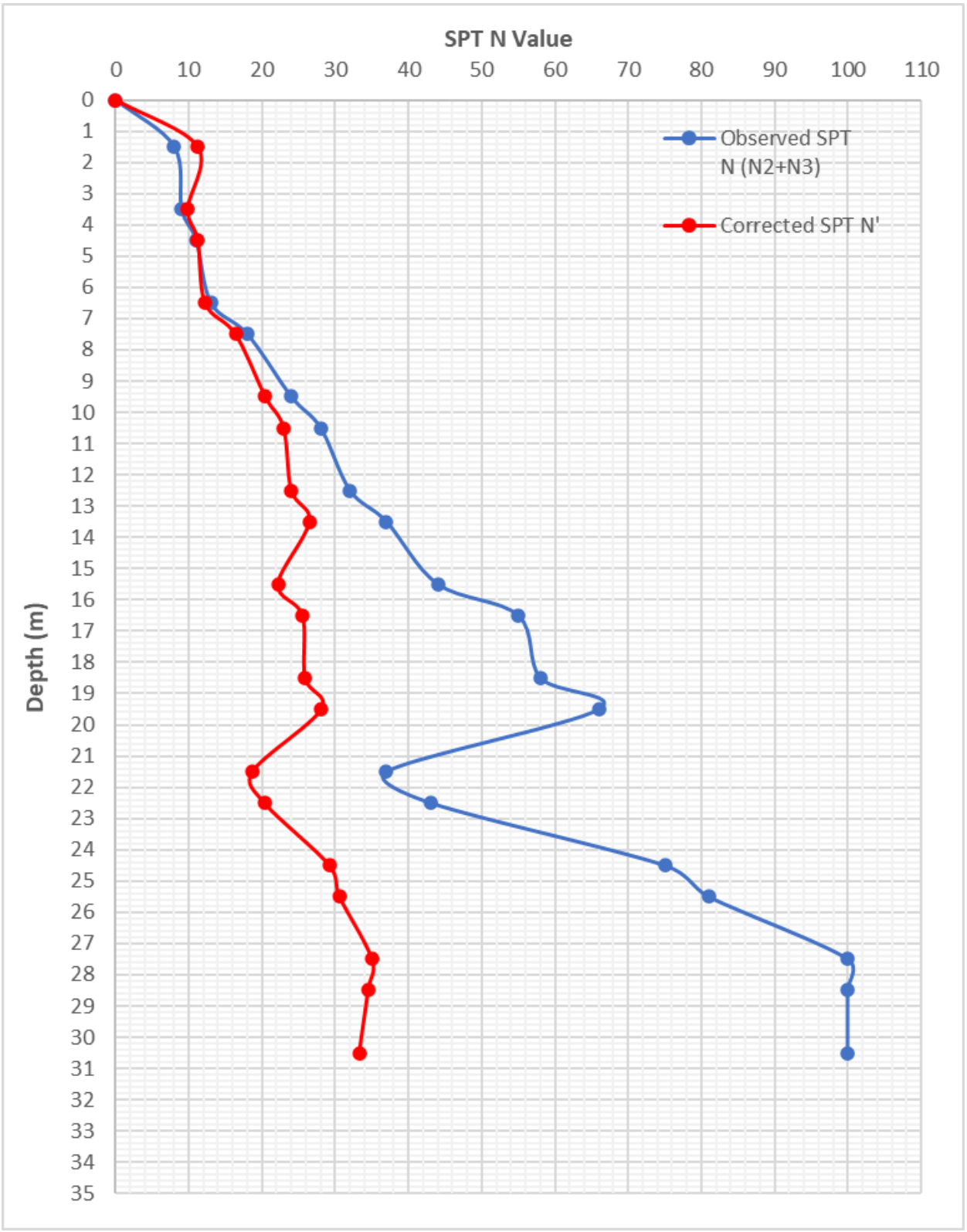
Observed SPT N (N2+N3)
Corrected SPT N'

BH-45A


SPT N Value
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Depth (m)
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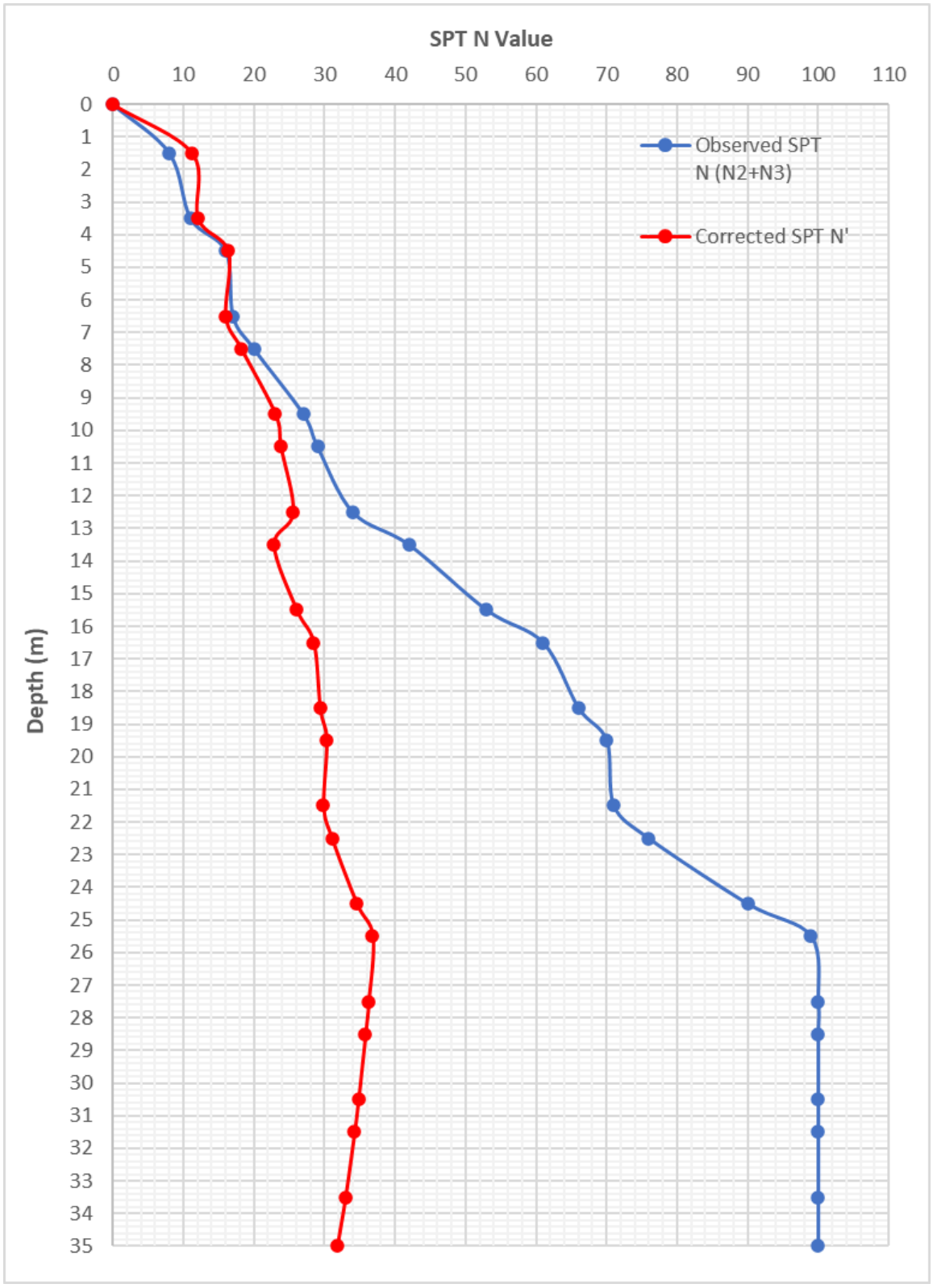
Observed SPT N (N2+N3)
Corrected SPT N'

BH-46


SPT N Value
0
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Depth (m)
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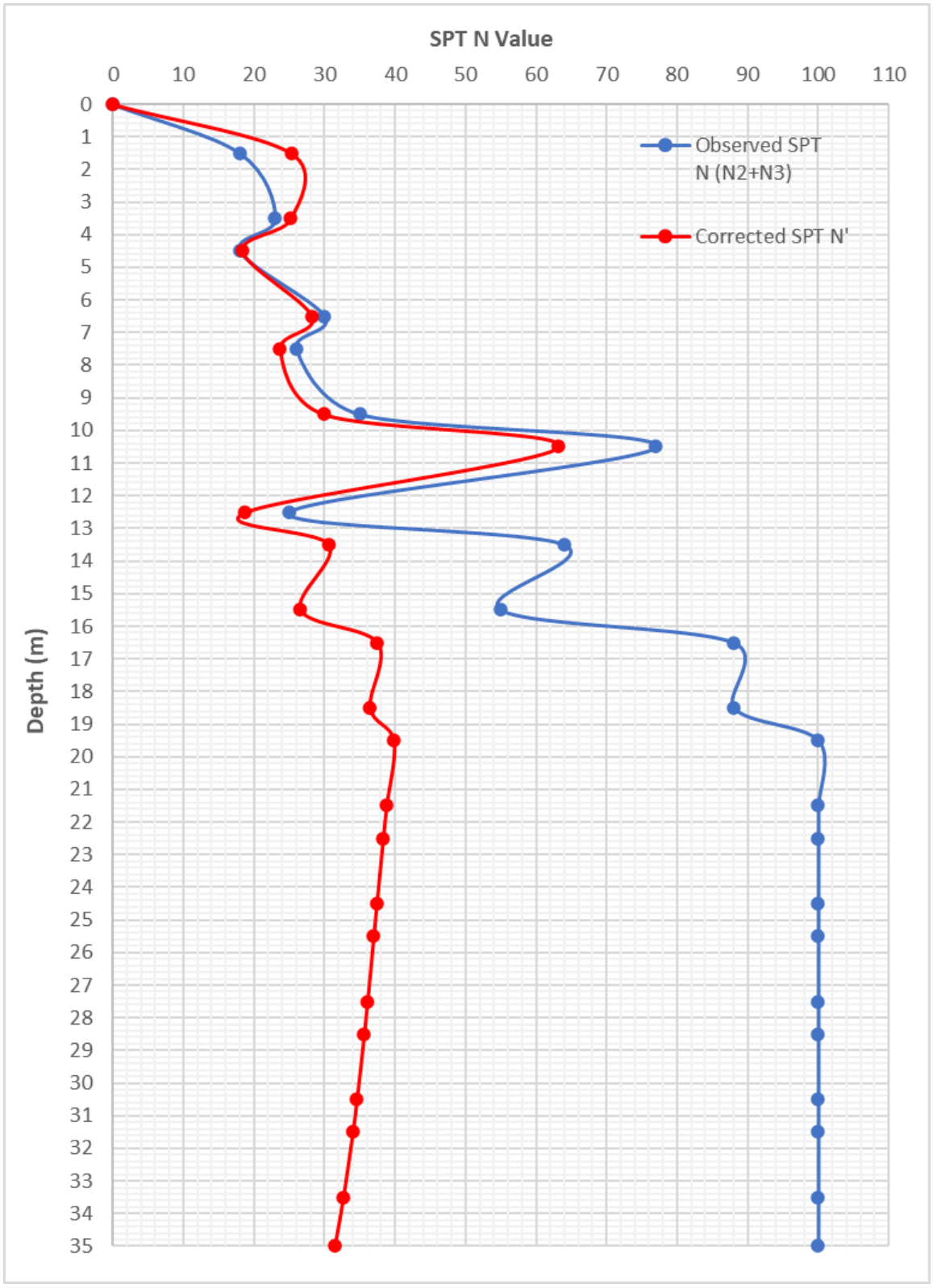
Observed SPT N (N2+N3)
Corrected SPT N'

BH-48


SPT N Value
0
10
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40
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80
90
100
110
Depth (m)
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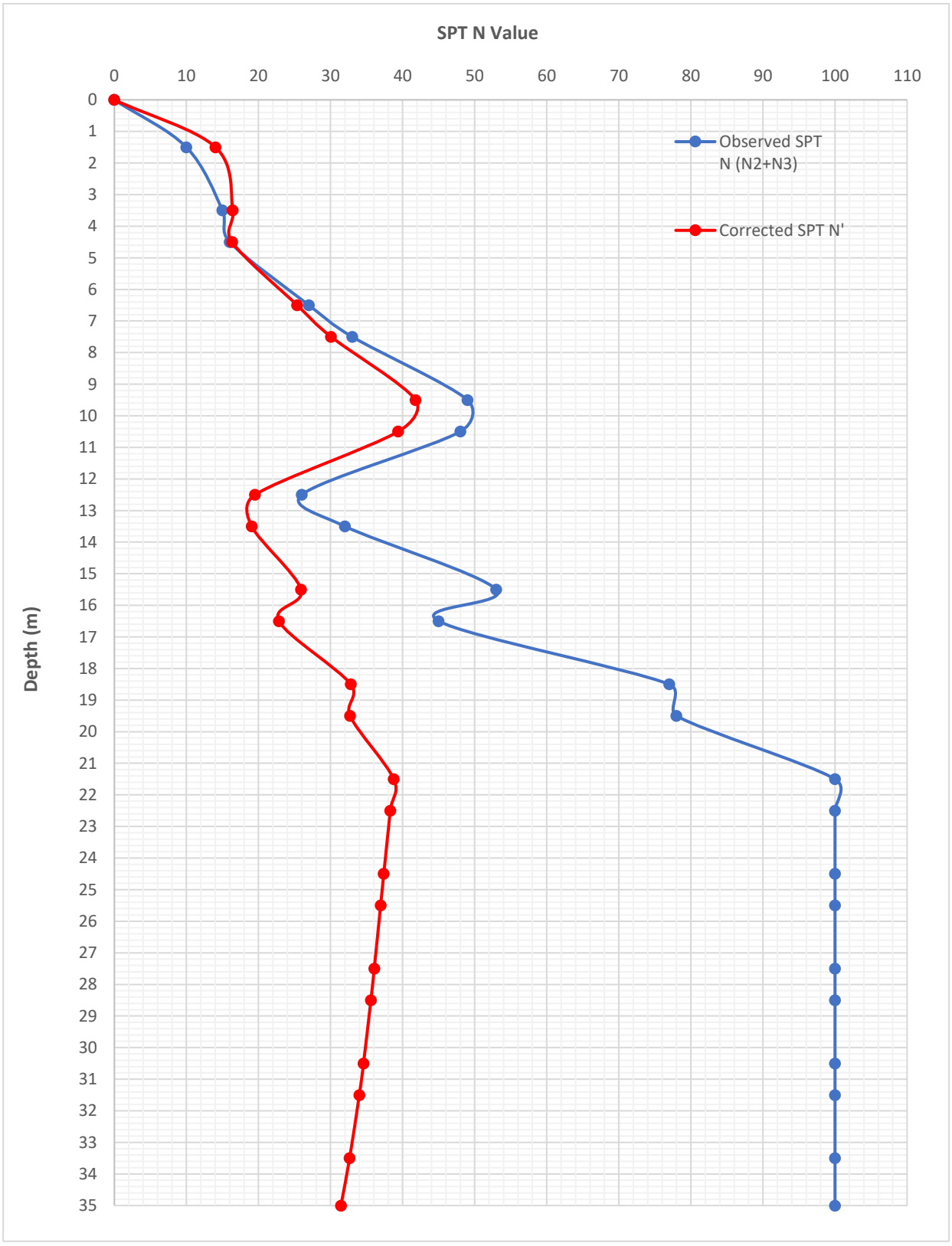
Observed SPT N (N2+N3)
Corrected SPT N'

BH-49


SPT N Value
0
10
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90
100
110
Depth (m)
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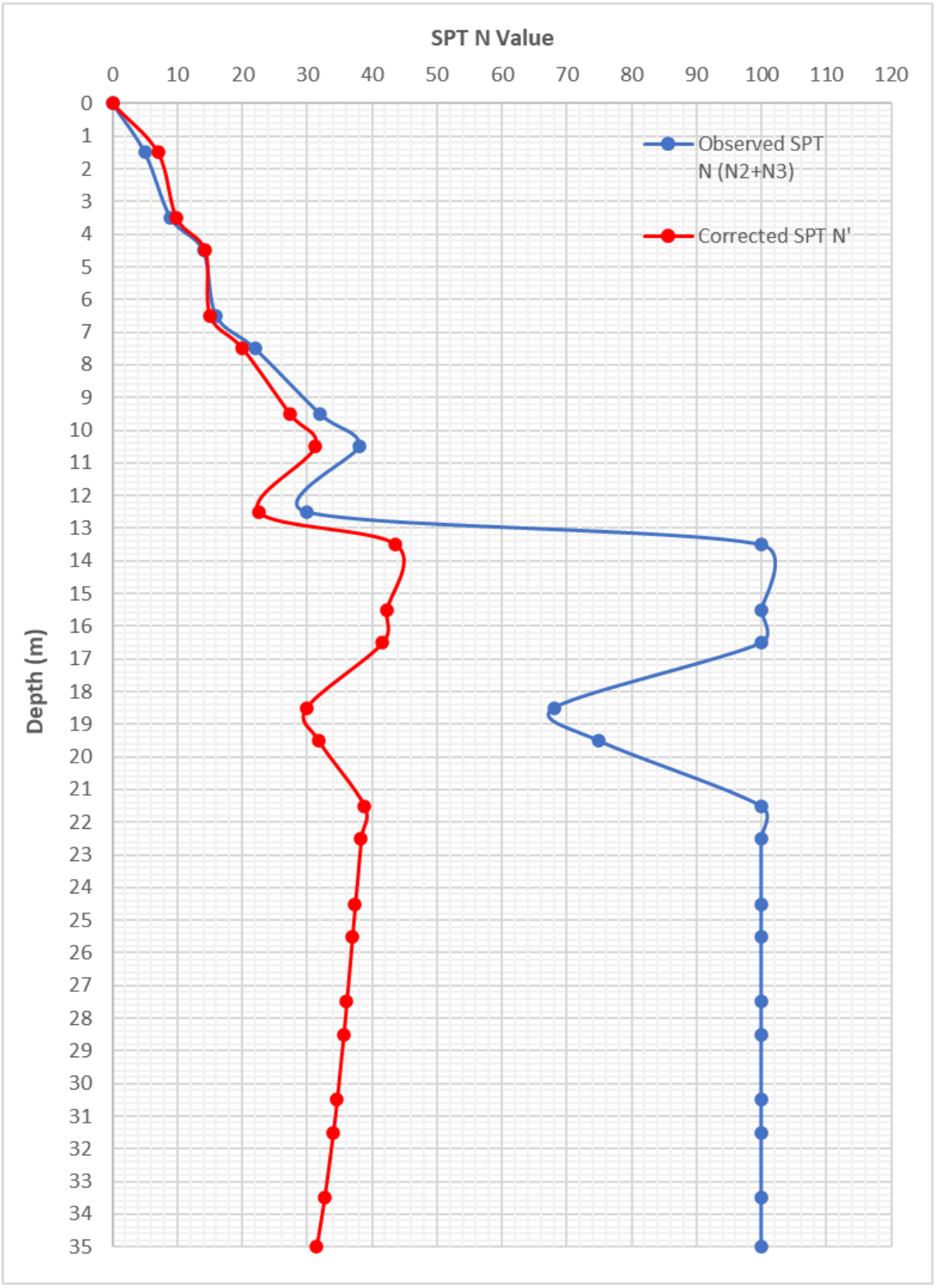
Observed SPT N (N2+N3)
Corrected SPT N'

BH-50


SPT N Value
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100
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120
Depth (m)
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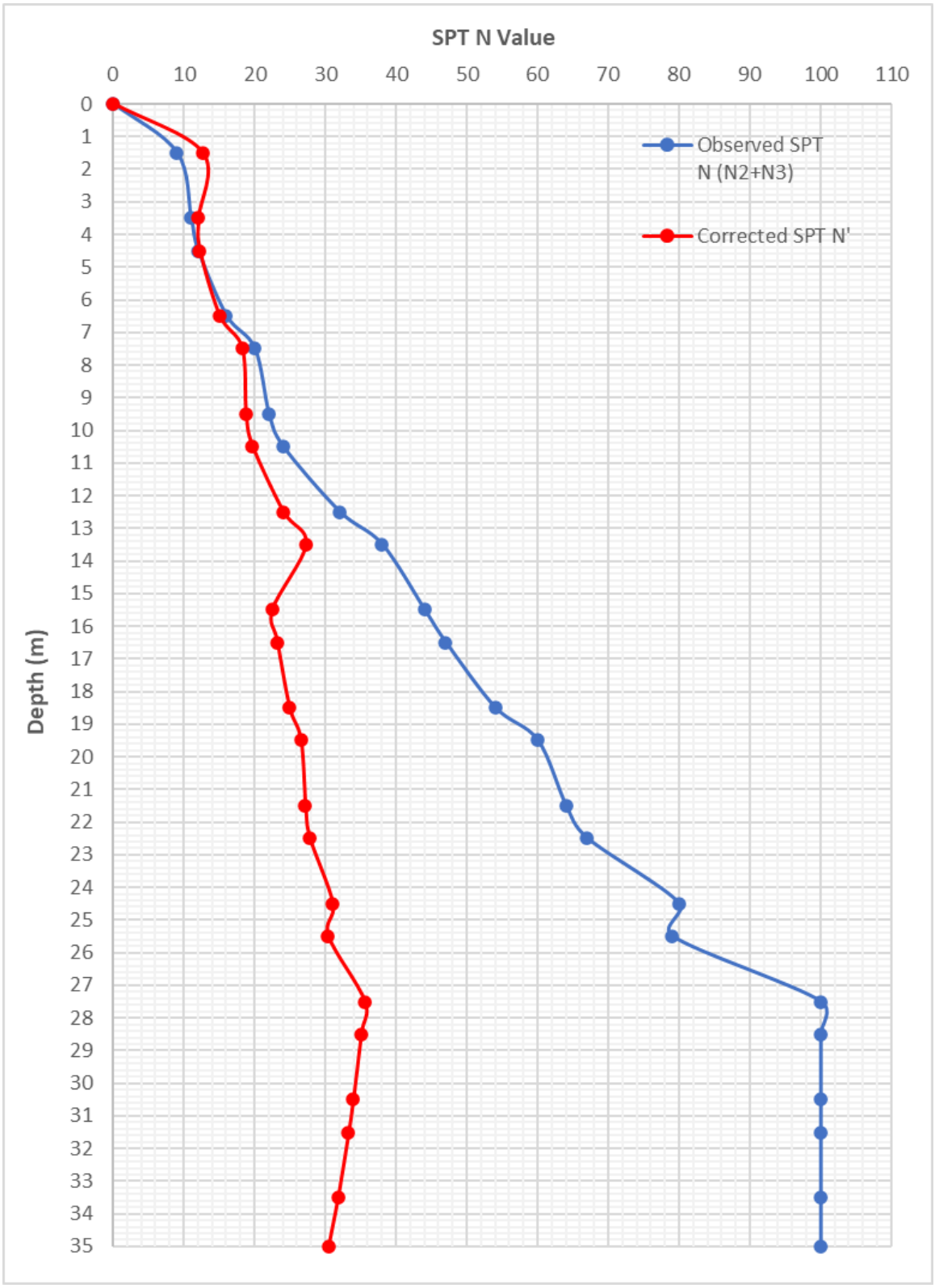
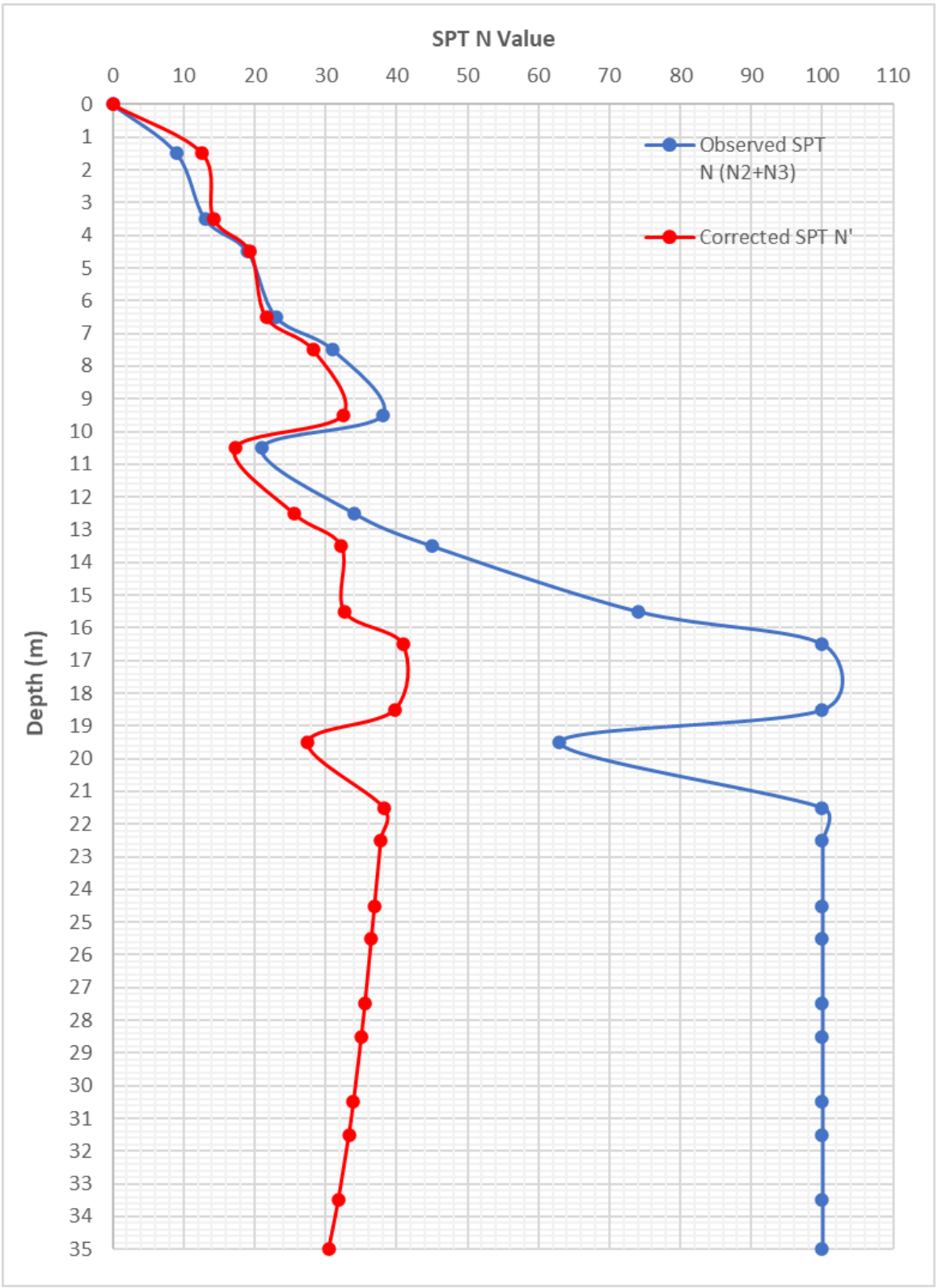
Observed SPT N (N2+N3)
Corrected SPT N'

D.7 Zone 7: CH: 5+530 km to 6+490 km (BH-51 to BH-60)

BH-51



BH-52


SPT N Value
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Depth (m)
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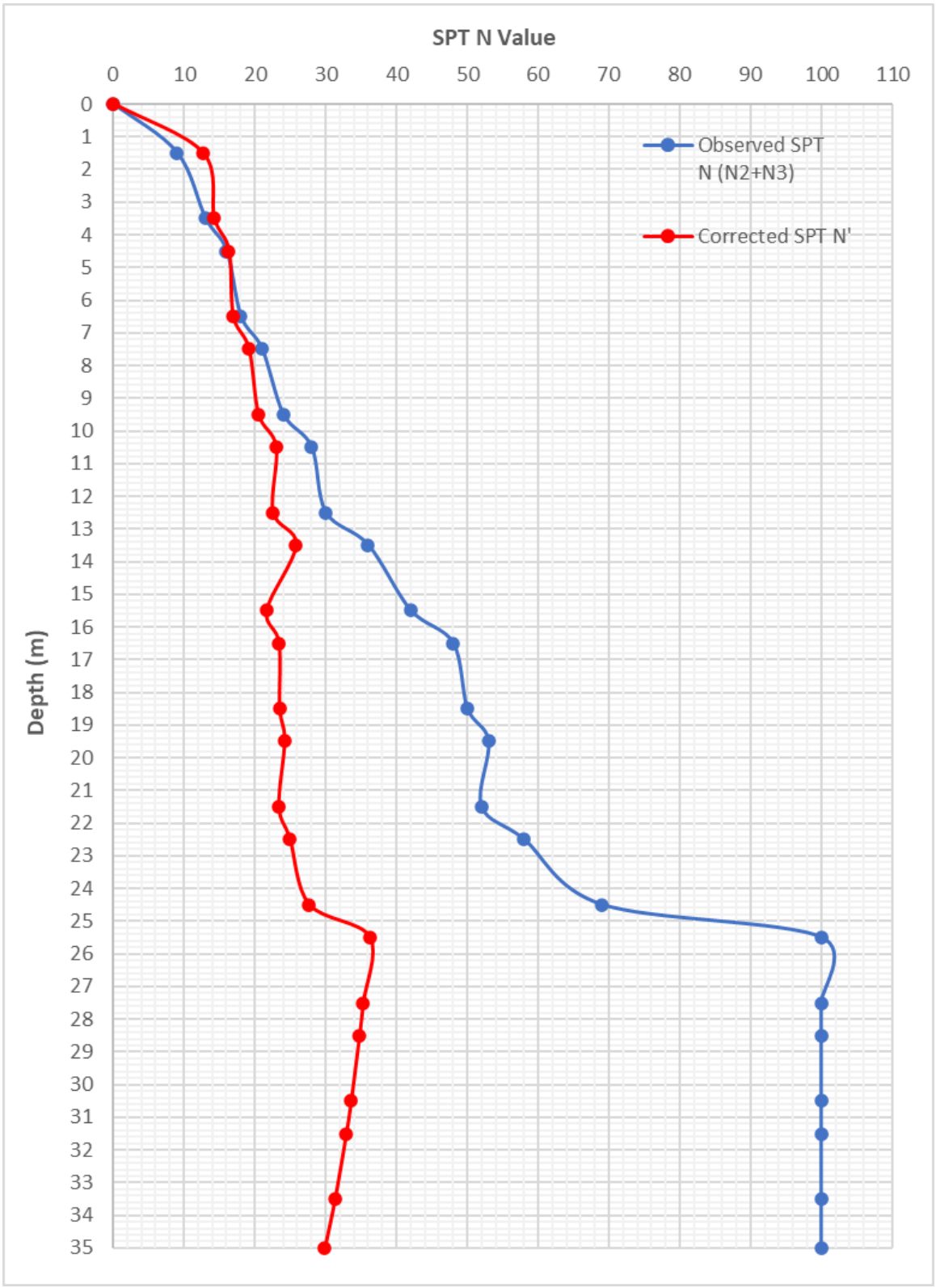
Observed SPT N (N2+N3)
Corrected SPT N'

BH-53


SPT N Value
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100
110
Depth (m)
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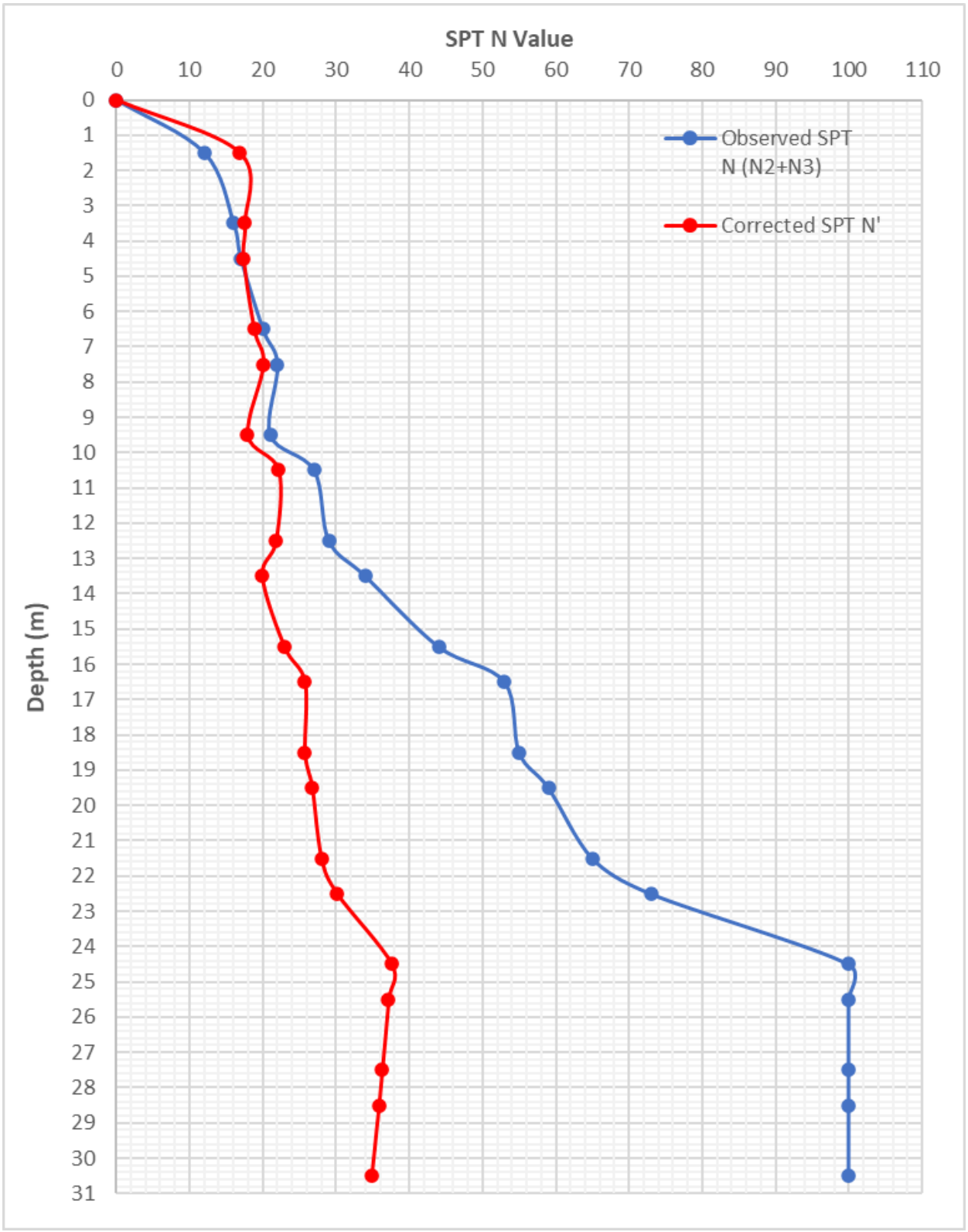
Observed SPT N (N2+N3)
Corrected SPT N'

BH-54


SPT N Value
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100
110
Depth (m)
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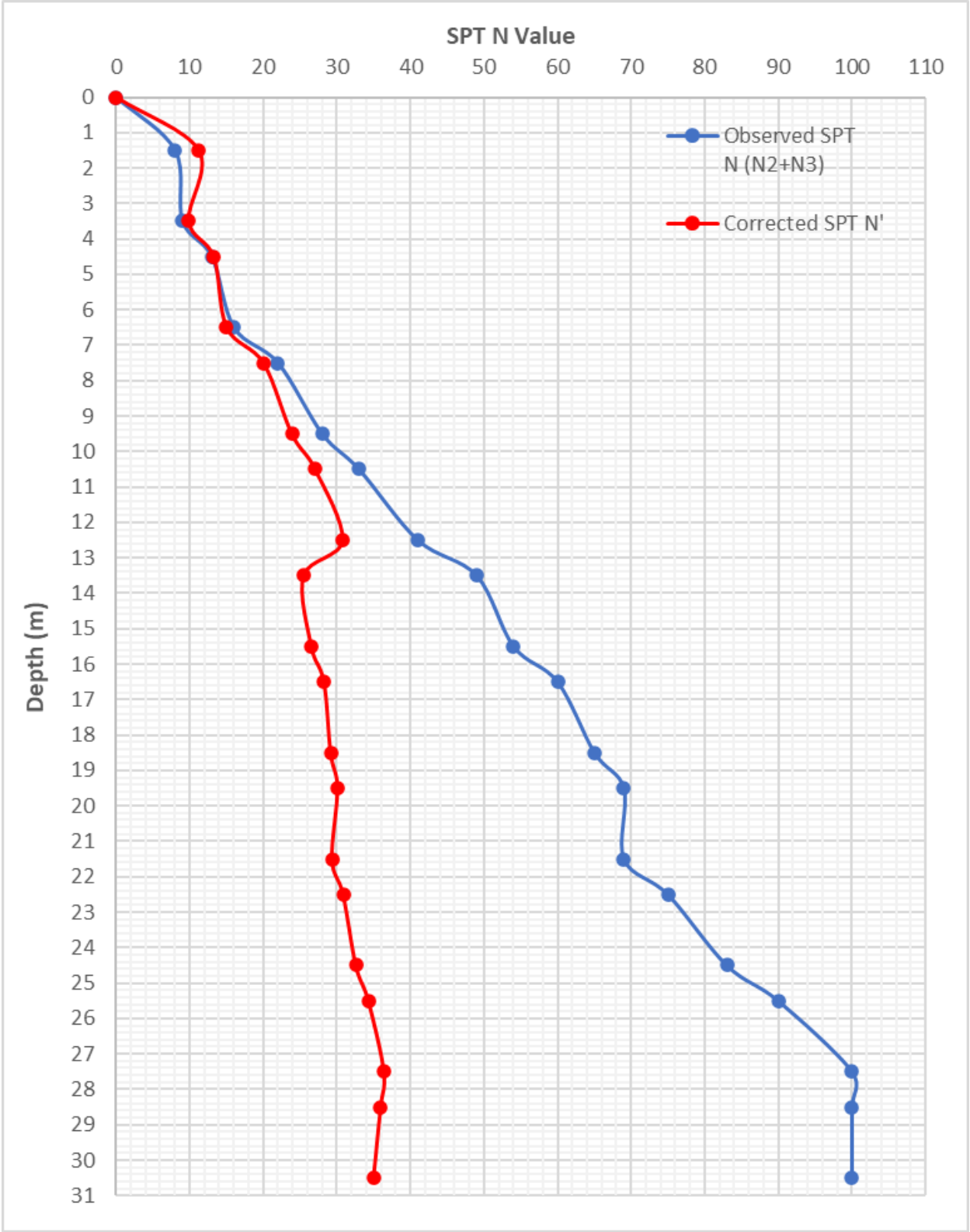
Observed SPT N (N2+N3)
Corrected SPT N'

BH-55


SPT N Value
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Depth (m)
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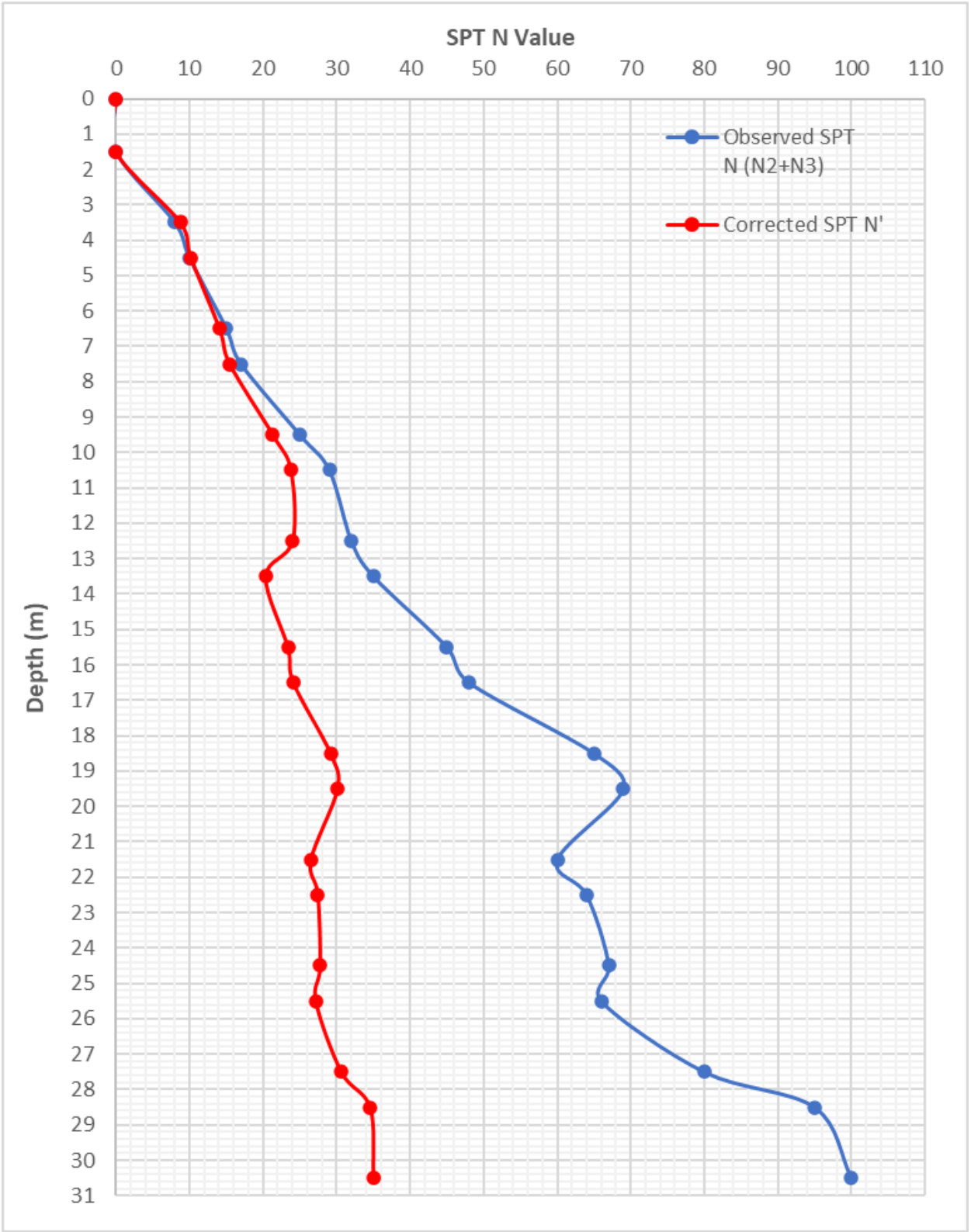
Observed SPT N (N2+N3)
Corrected SPT N'

BH-56


SPT N Value
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Depth (m)
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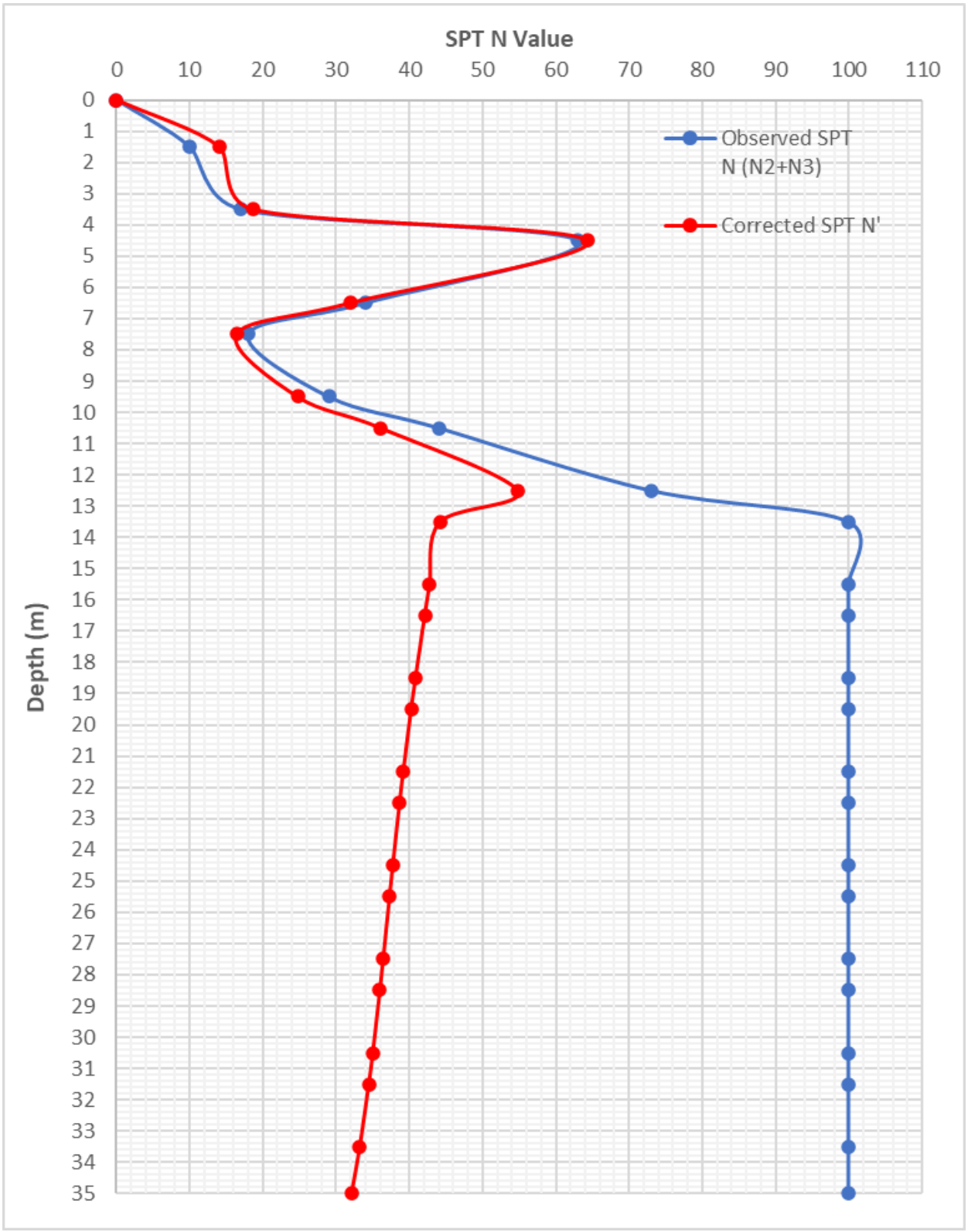
Observed SPT N (N2+N3)
Corrected SPT N'

BH-57


SPT N Value
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Depth (m)
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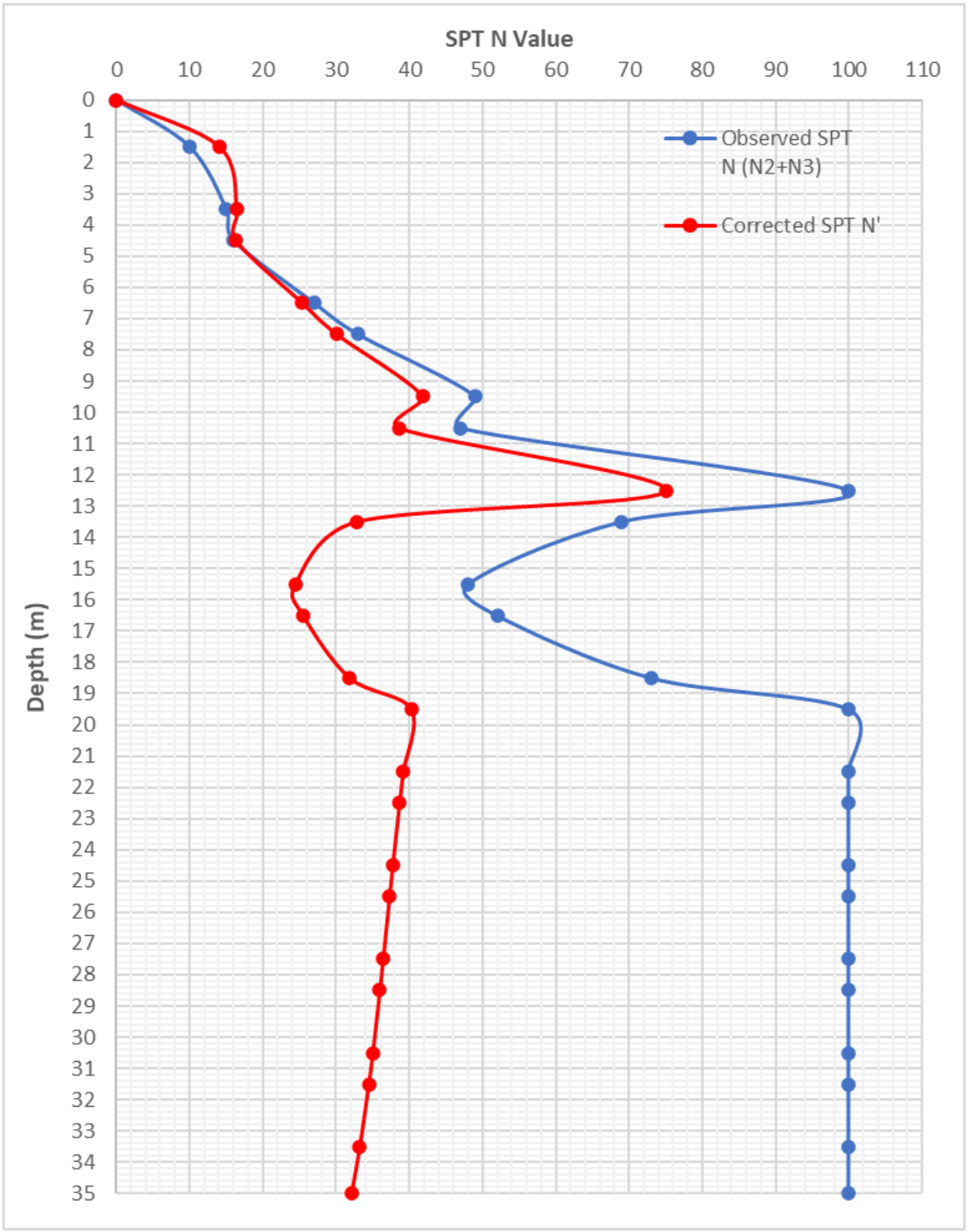
Observed SPT N (N2+N3)
Corrected SPT N'

BH-58


SPT N Value
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Depth (m)
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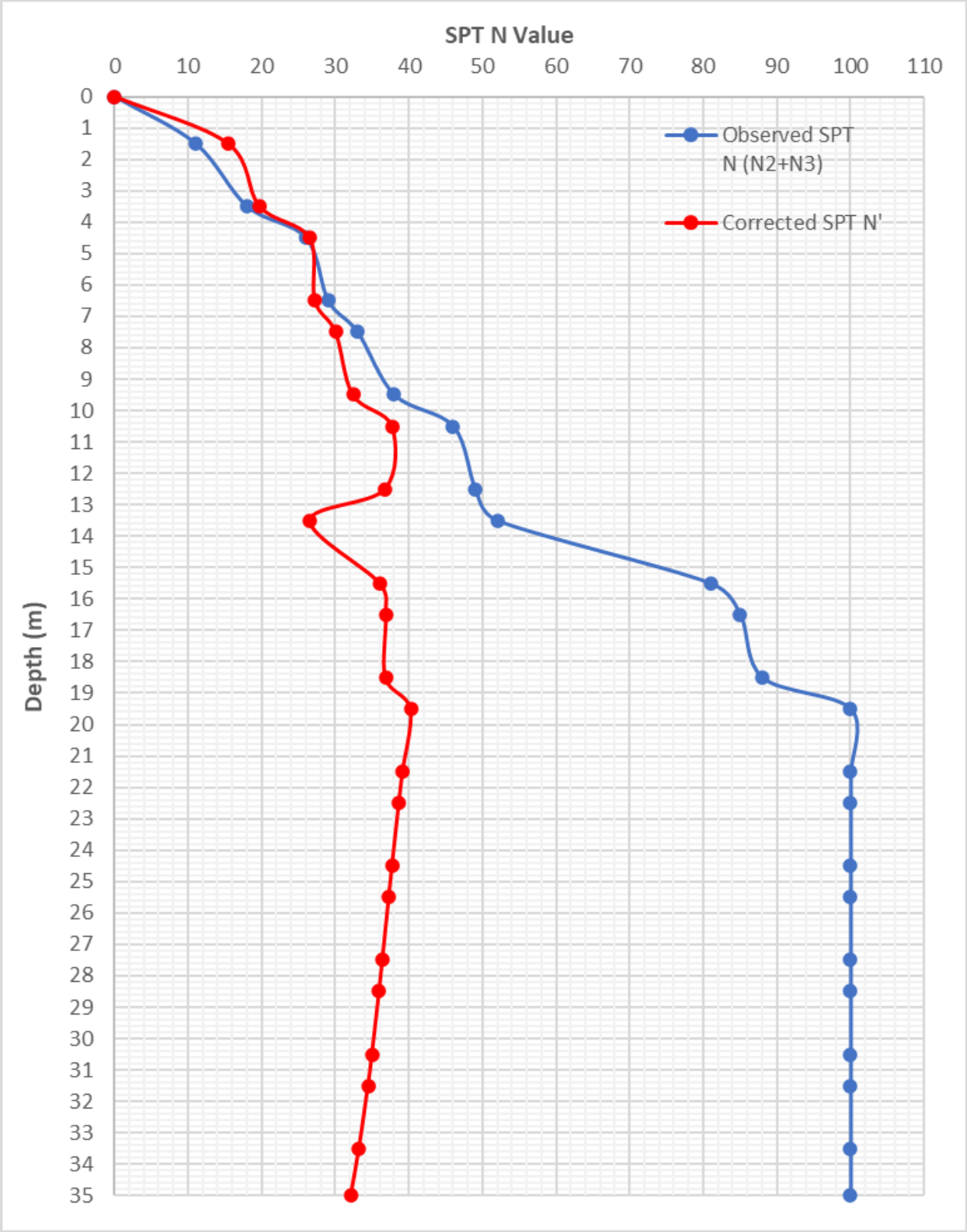
Observed SPT N (N2+N3)
Corrected SPT N'

BH-59


SPT N Value
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Depth (m)
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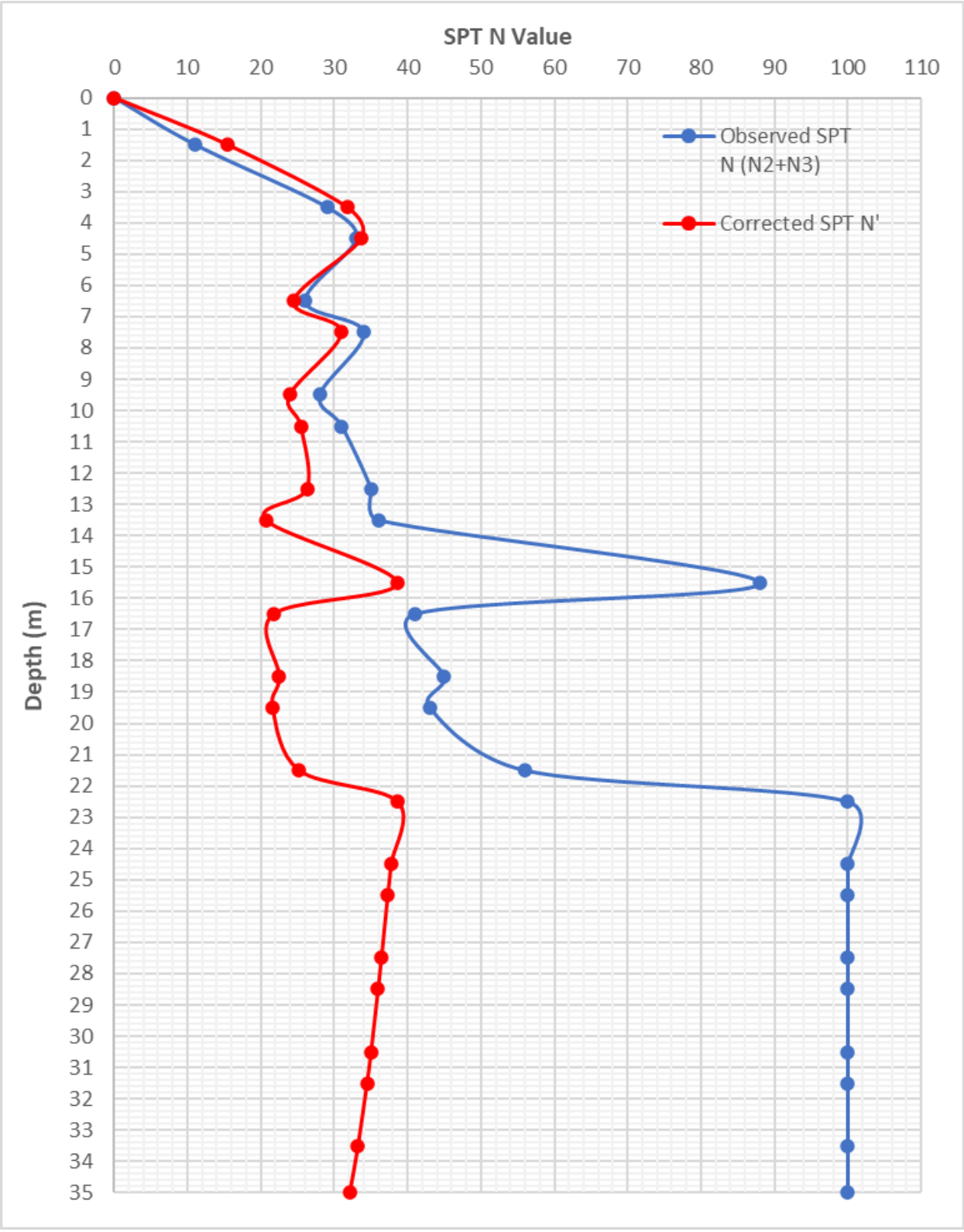
Observed SPT N (N2+N3)
Corrected SPT N'

BH-60


SPT N Value
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Depth (m)
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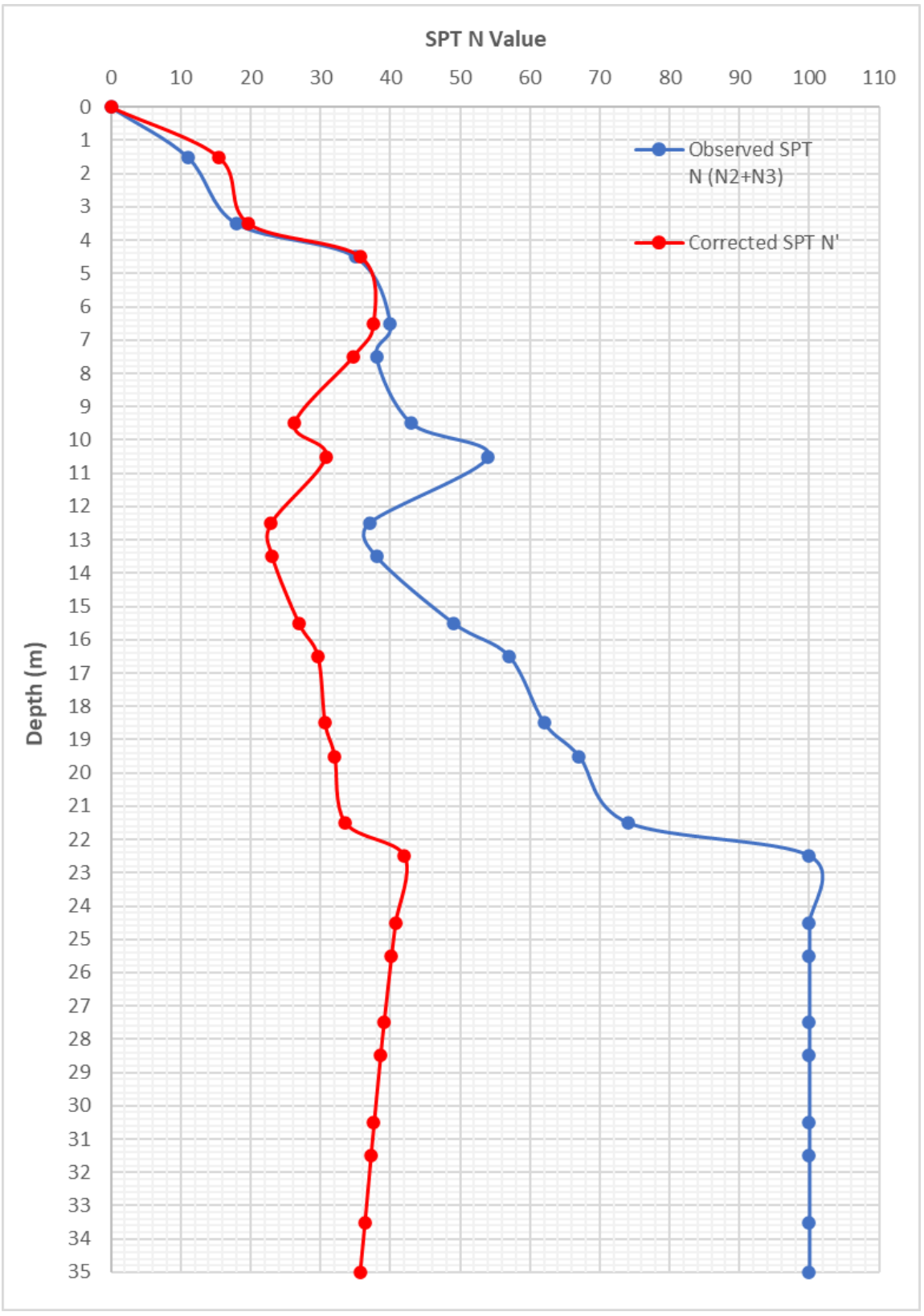
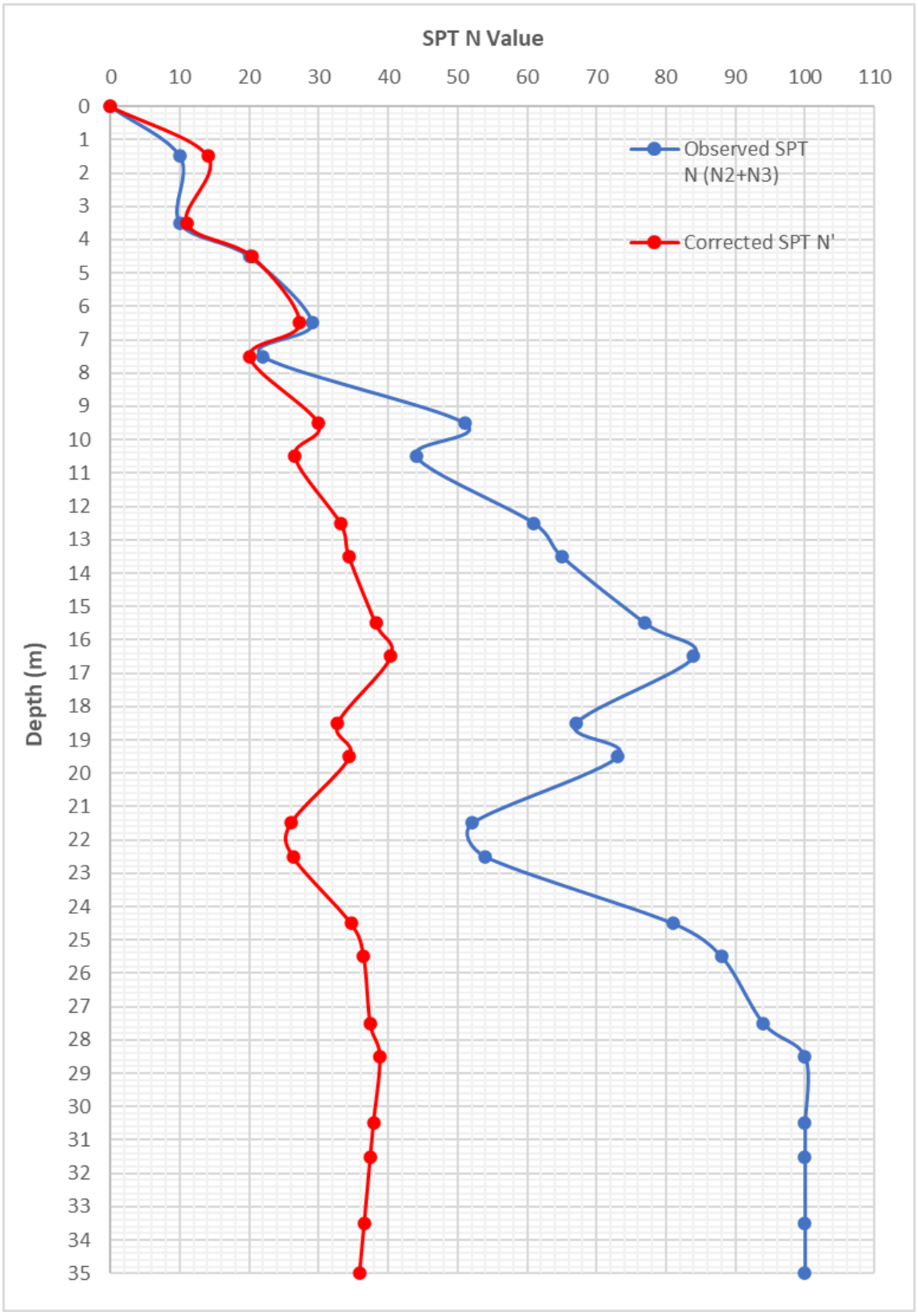
Observed SPT N (N2+N3)
Corrected SPT N'

D.8 Zone 8: CH: 6+490 km to 7+490 km (BH-61 to BH-70)

BH-61



BH-62


SPT N Value
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Depth (m)
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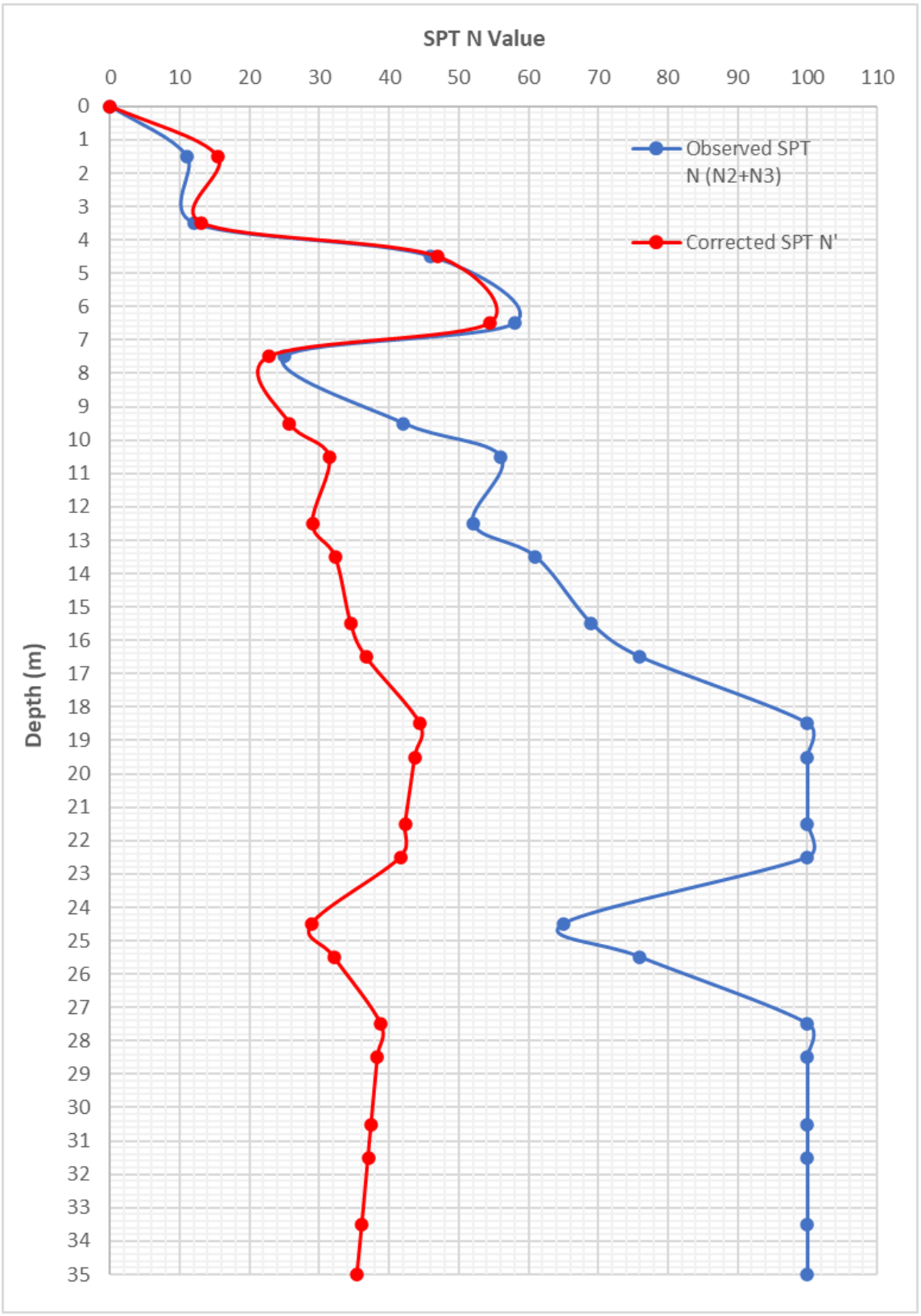
Observed SPT N (N2+N3)
Corrected SPT N'

BH-63


SPT N Value
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Depth (m)
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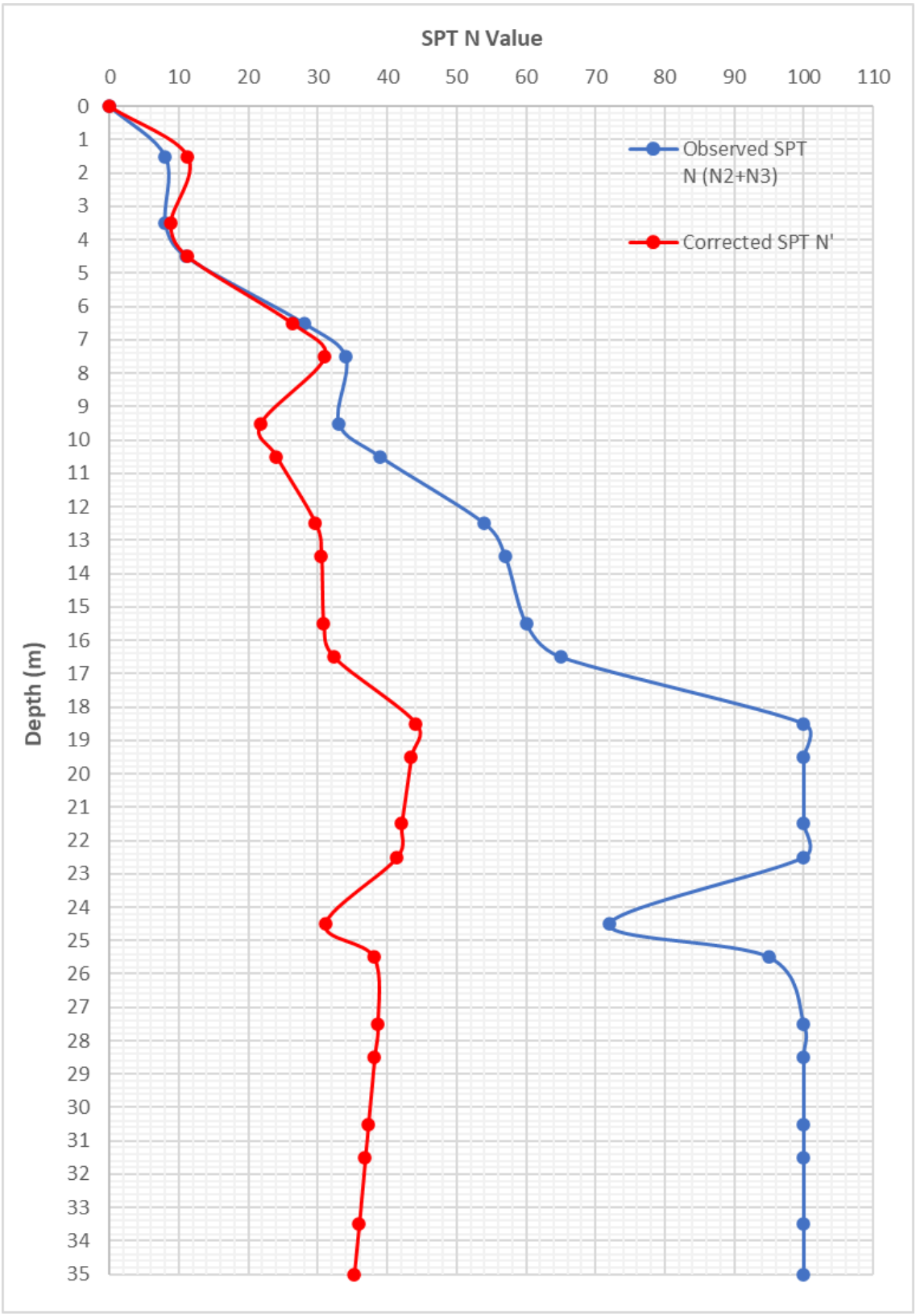
Observed SPT N (N2+N3)
Corrected SPT N'

BH-64


SPT N Value
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Depth (m)
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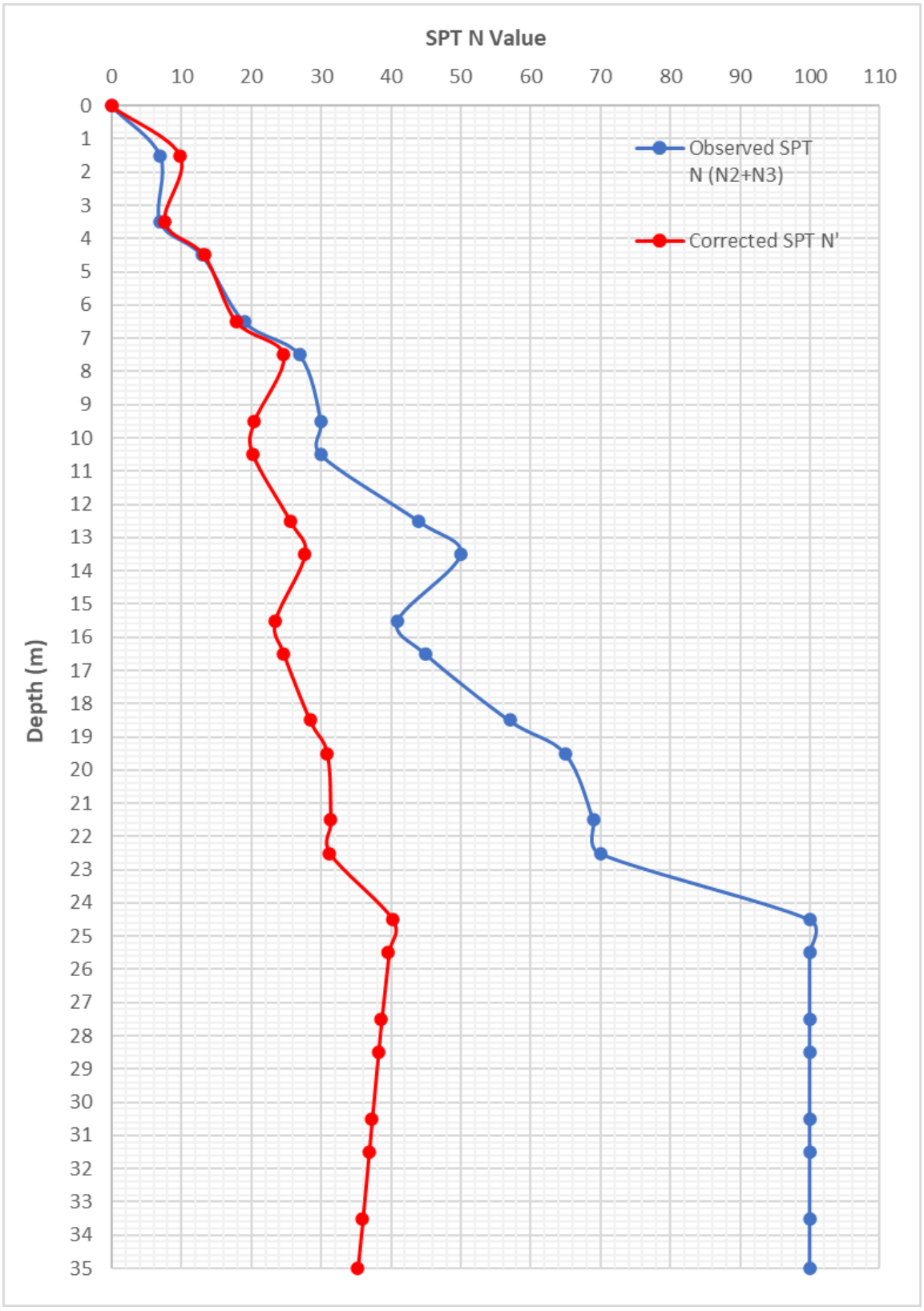
Observed SPT N (N2+N3)
Corrected SPT N'

BH-65


SPT N Value
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Depth (m)
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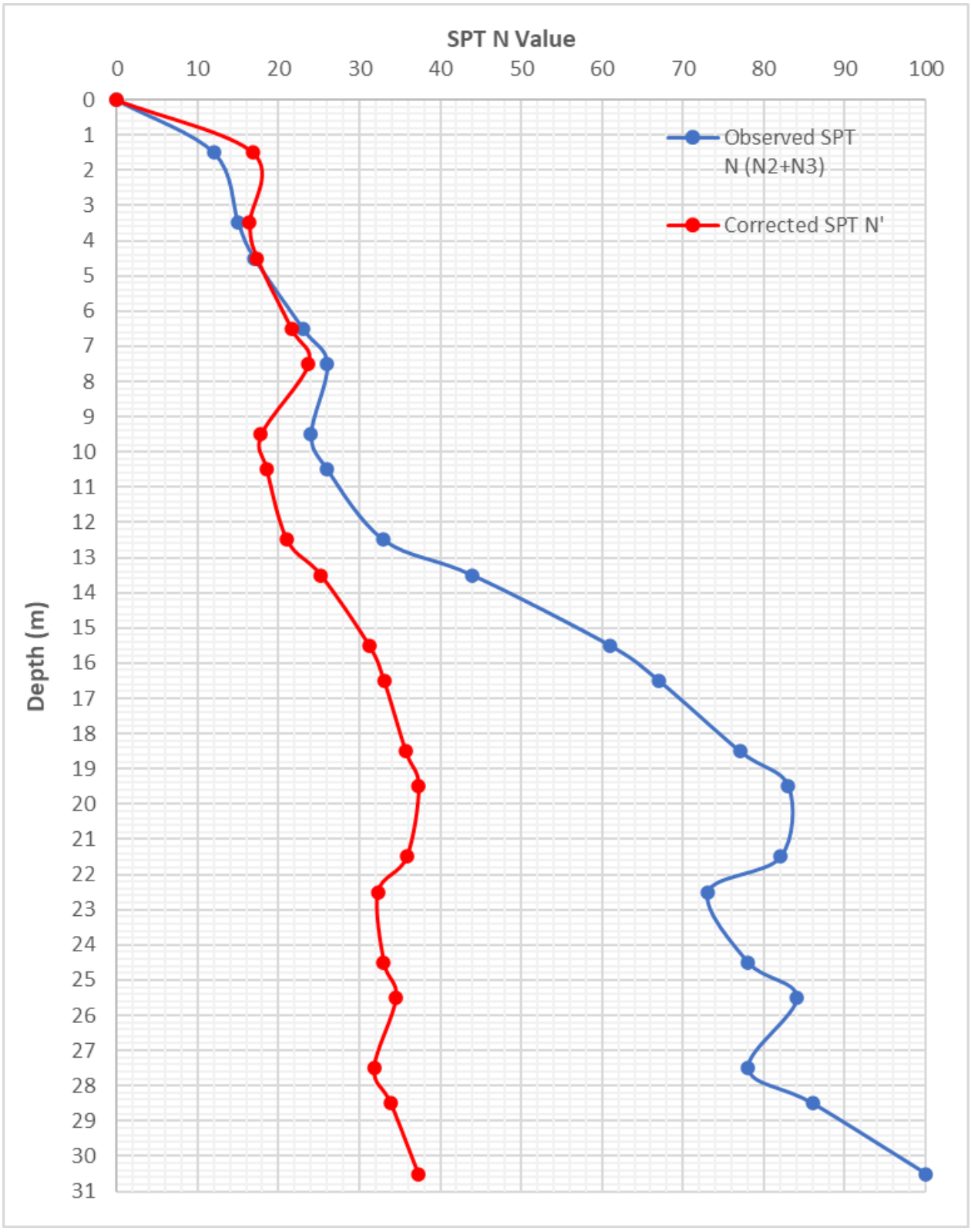
Observed SPT N (N2+N3)
Corrected SPT N'

BH-66


SPT N Value
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Depth (m)
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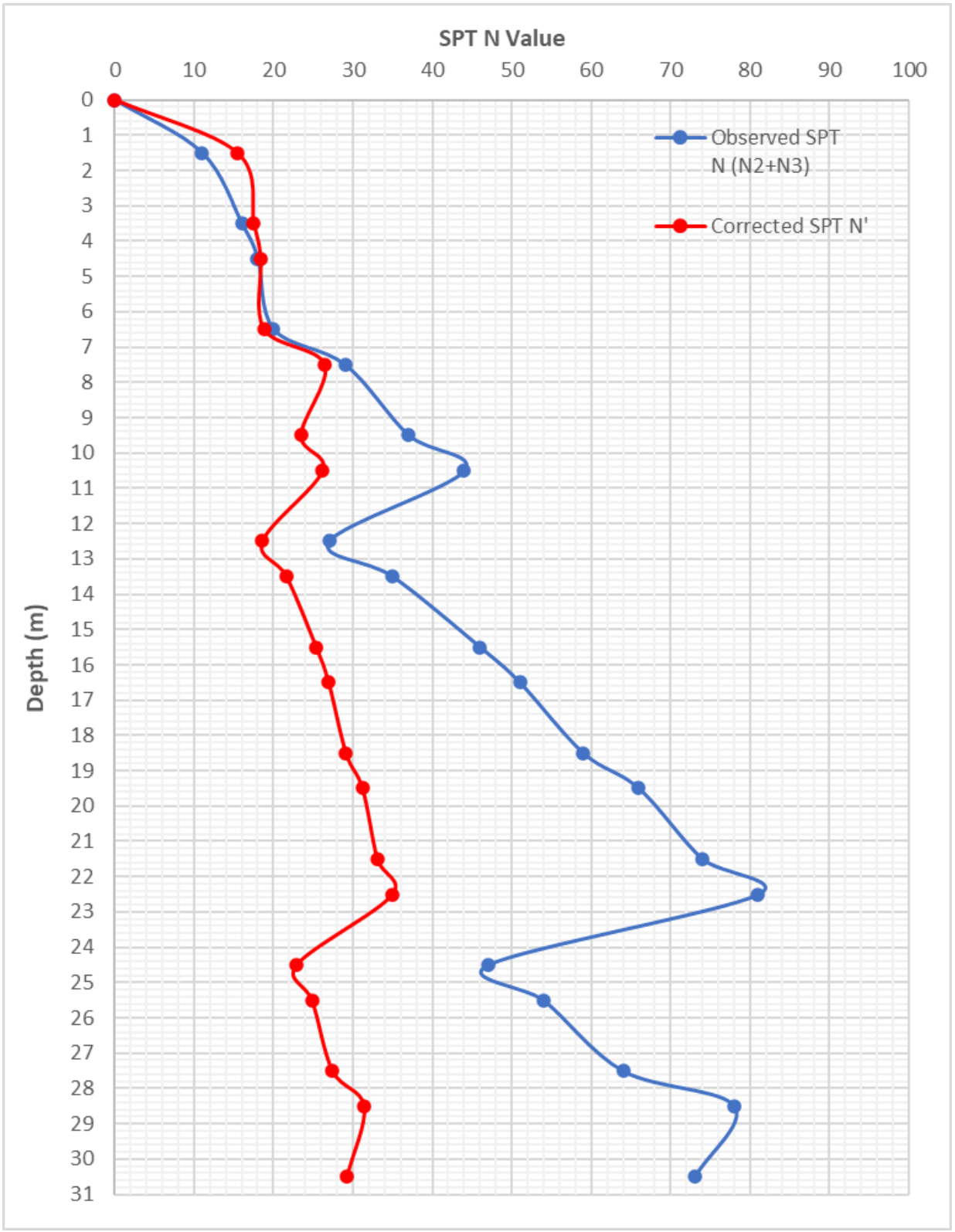
Observed SPT N (N2+N3)
Corrected SPT N'

BH-67


SPT N Value
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Depth (m)
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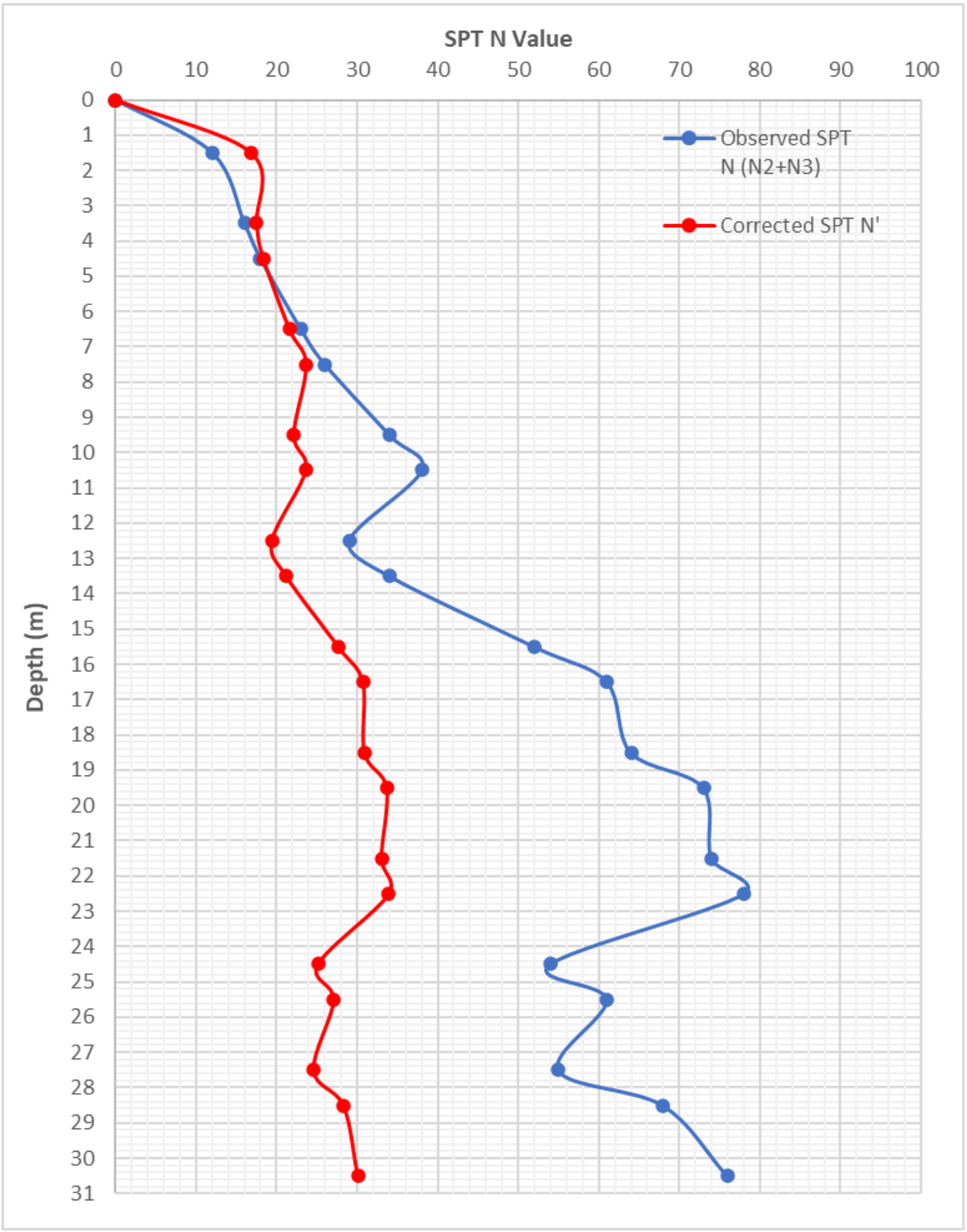
Observed SPT N (N2+N3)
Corrected SPT N'

BH-68


SPT N Value
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Depth (m)
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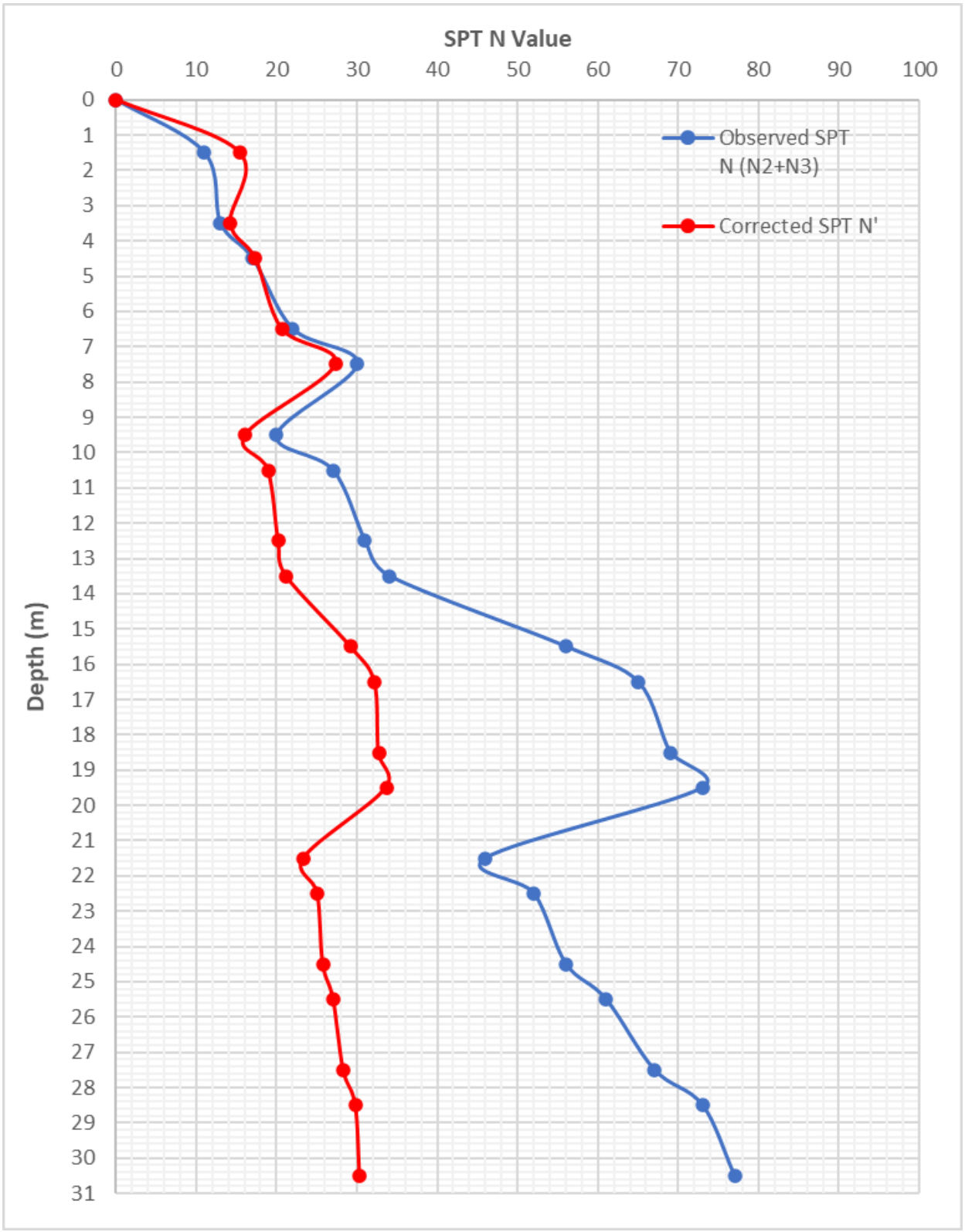
Observed SPT N (N2+N3)
Corrected SPT N'

BH-69


SPT N Value
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Depth (m)
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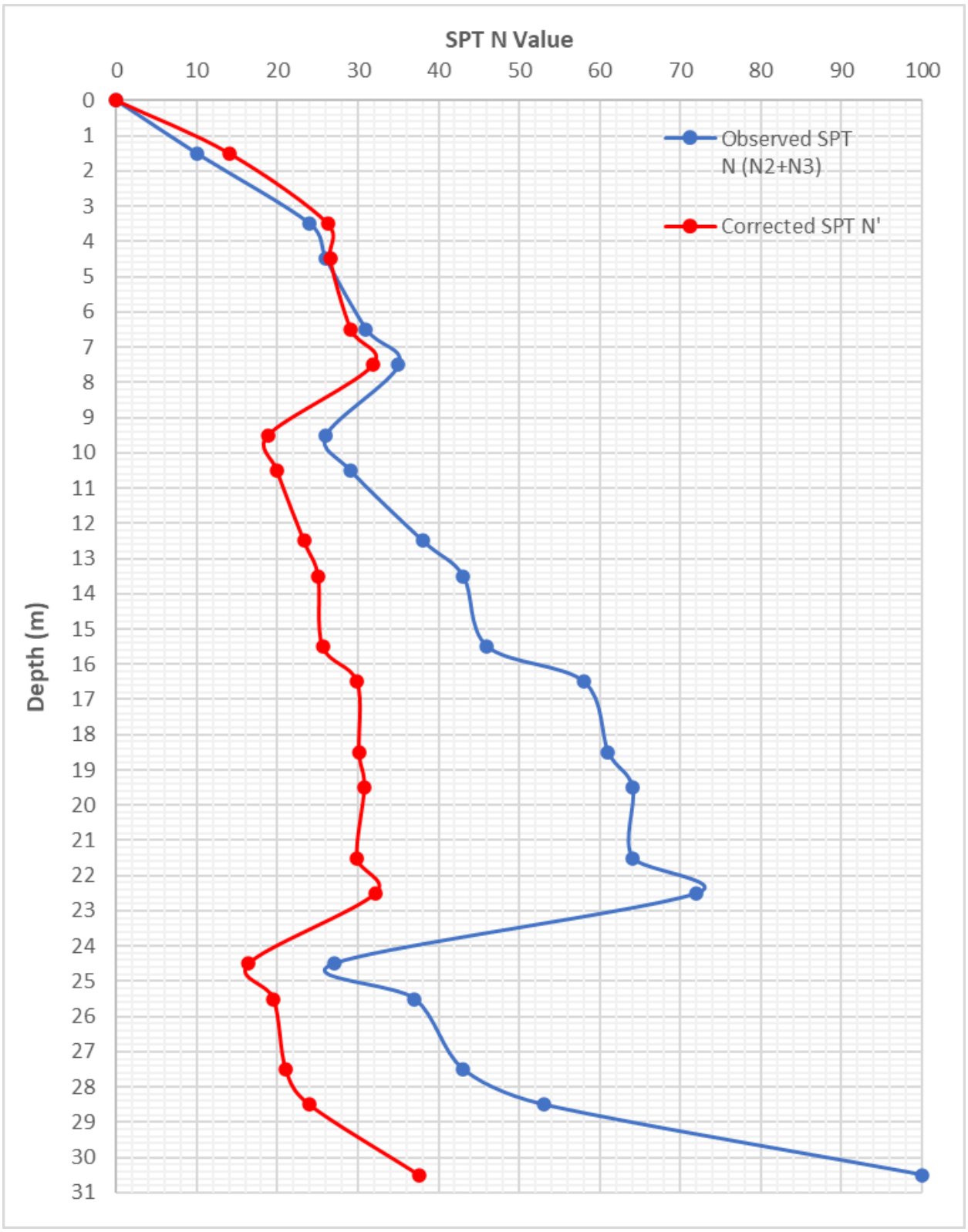
Observed SPT N (N2+N3)
Corrected SPT N'

BH-69A


SPT N Value
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Depth (m)
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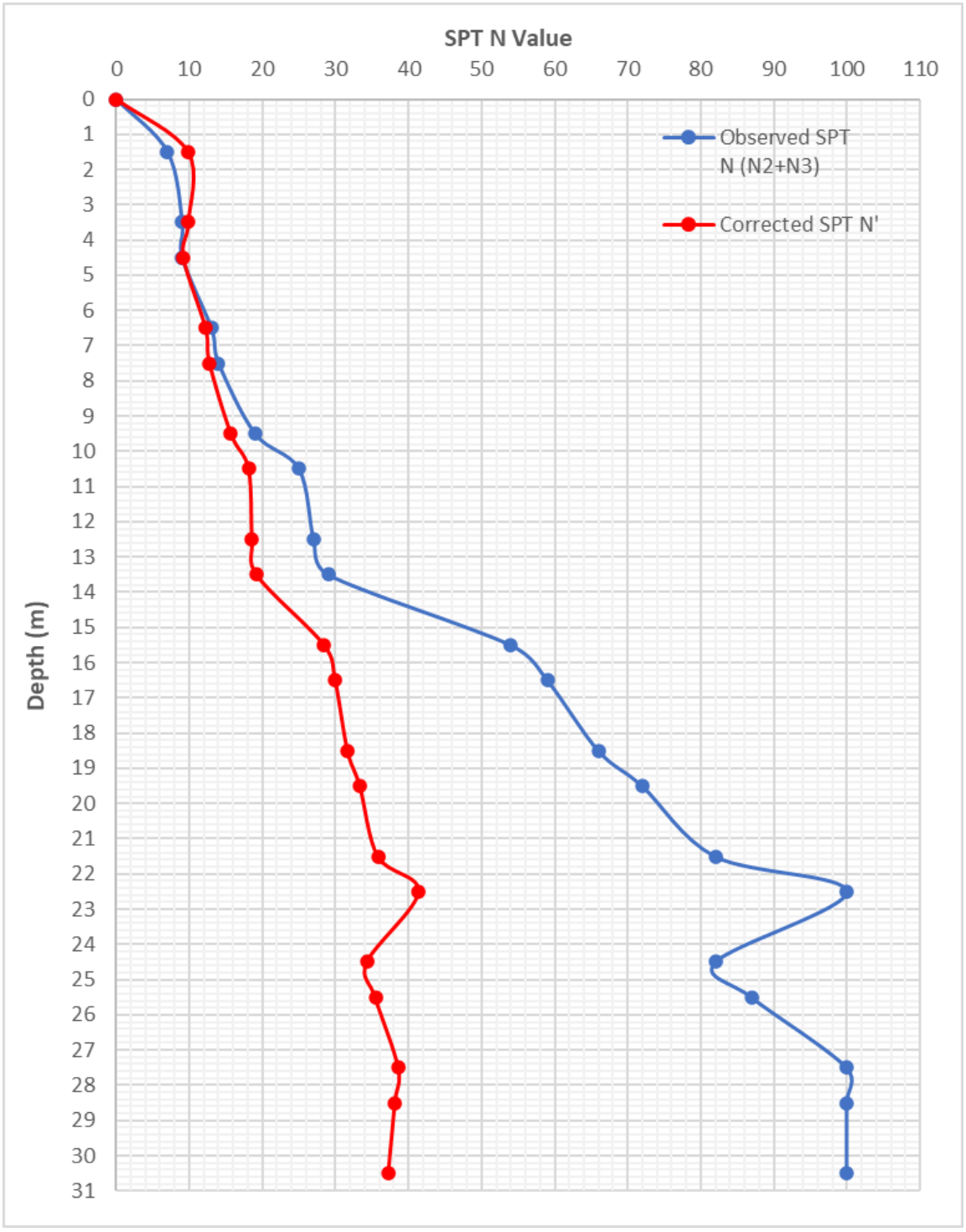
Observed SPT N (N2+N3)
Corrected SPT N'

BH-69B


SPT N Value
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Depth (m)
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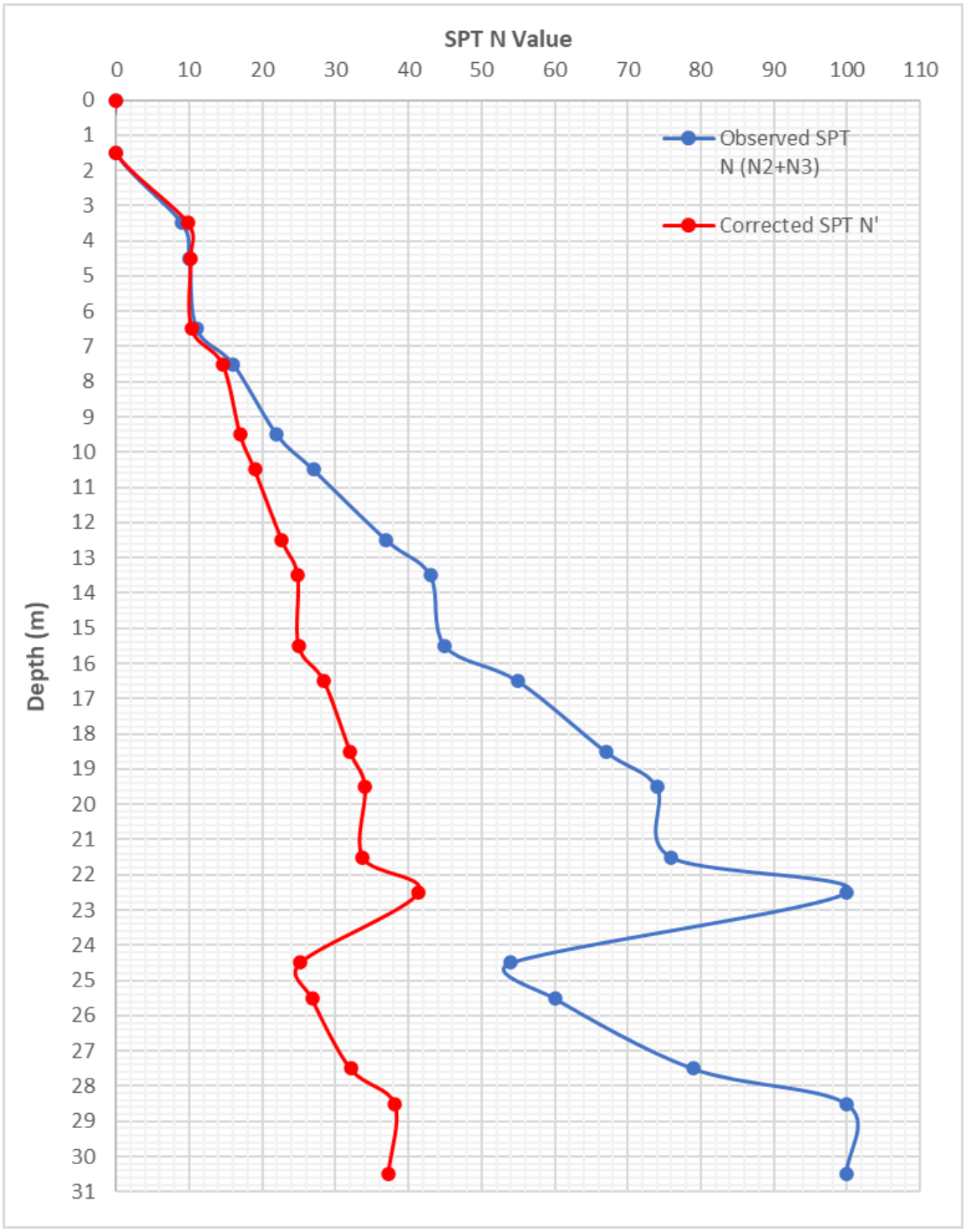
Observed SPT N (N2+N3)
Corrected SPT N'

BH-70


SPT N Value
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Depth (m)
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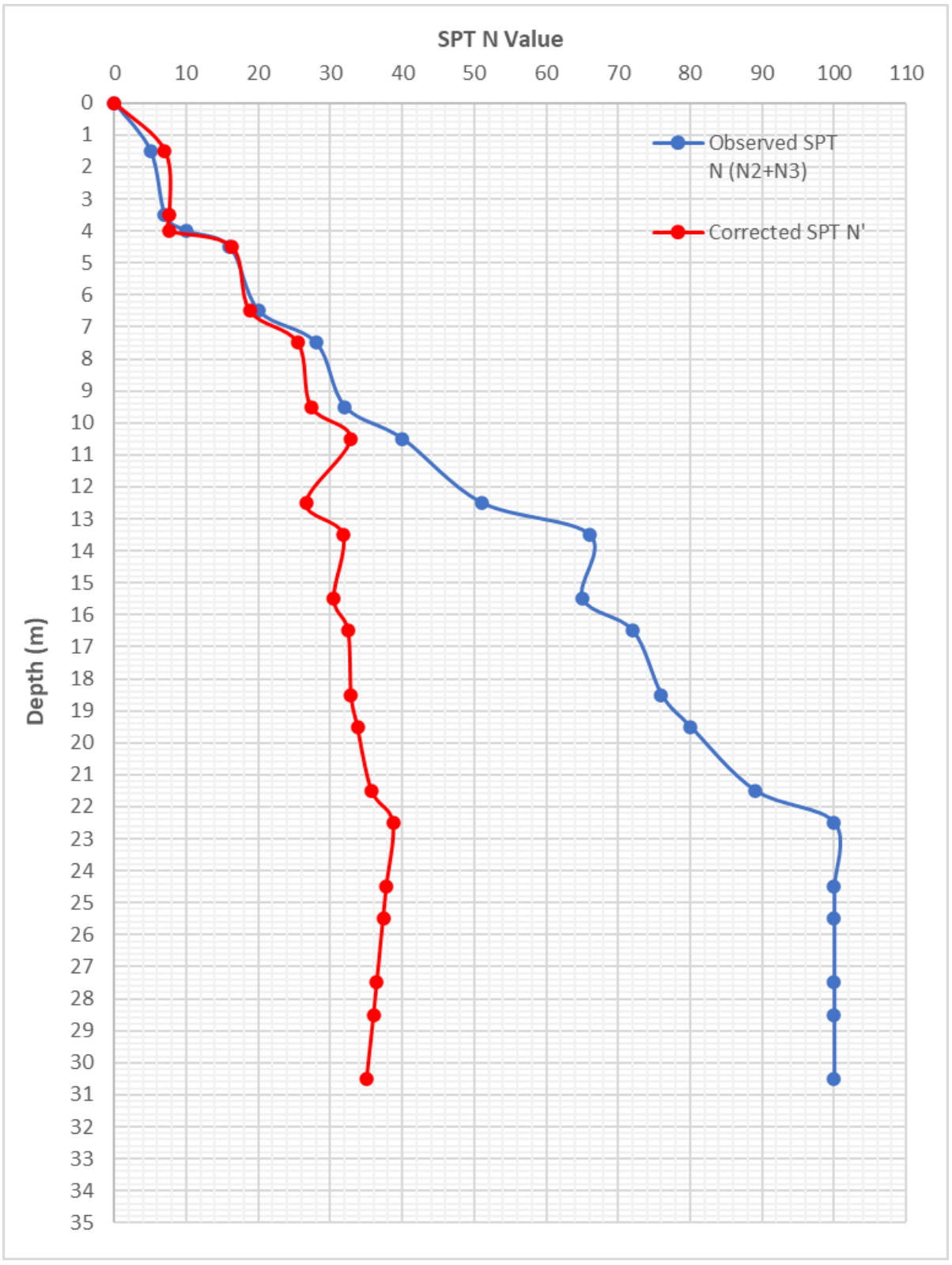
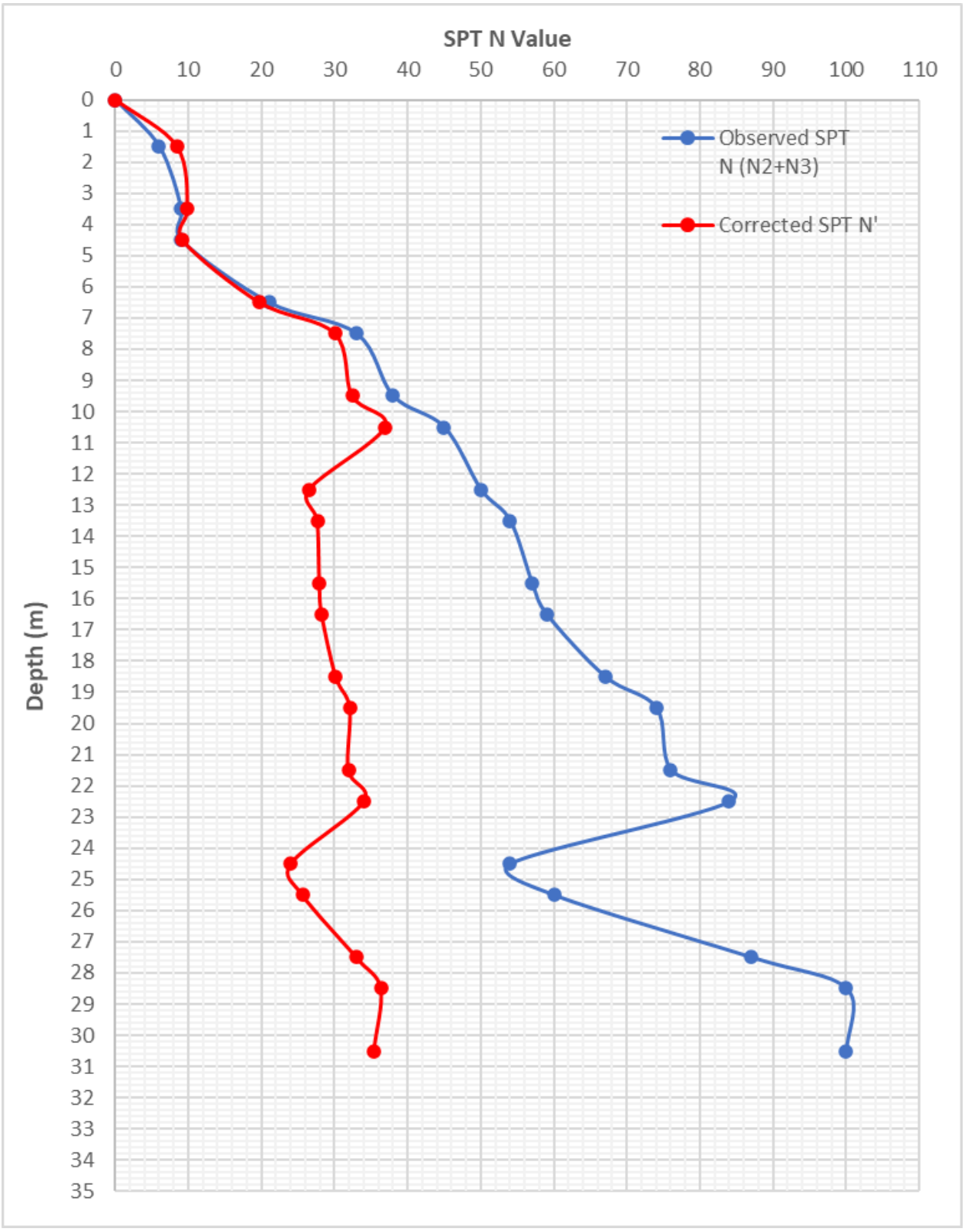
Observed SPT N (N2+N3)
Corrected SPT N'

D.9 Zone 9: CH: 7+490 km to 8+550 km (BH-71 to BH-80)

BH-71



BH-72


SPT N Value
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Depth (m)
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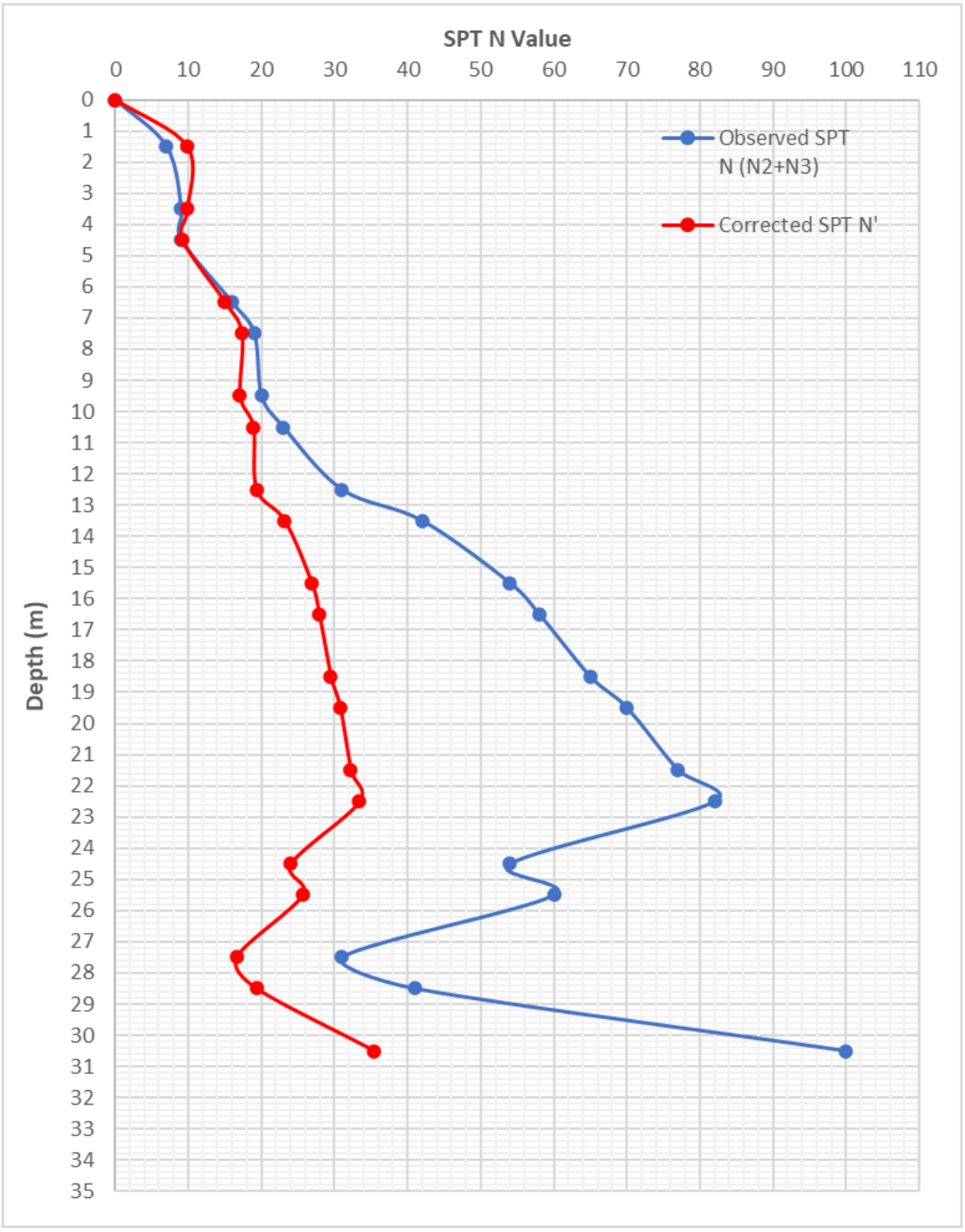
Observed SPT N (N2+N3)
Corrected SPT N'

BH-73


SPT N Value
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Depth (m)
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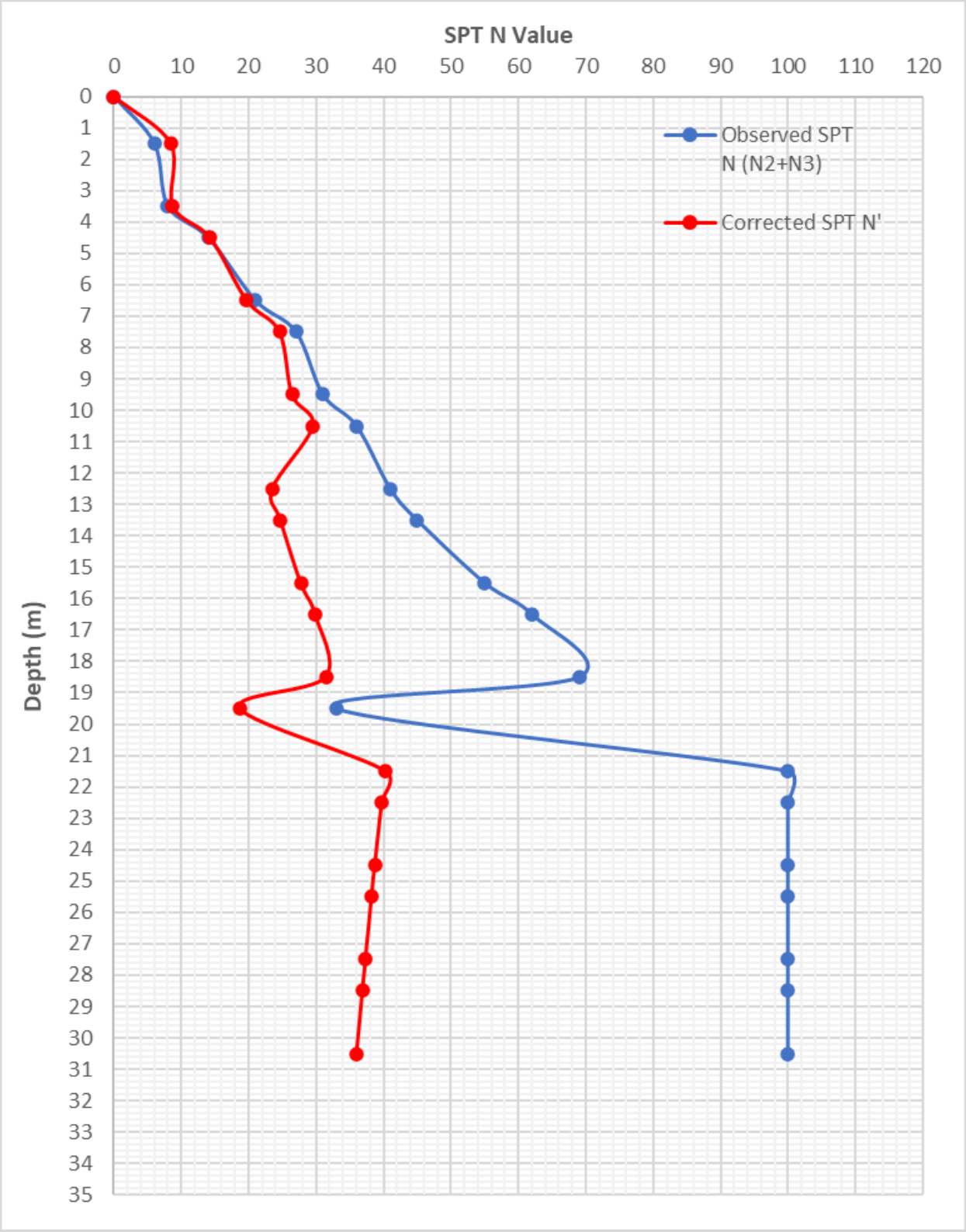
Observed SPT N (N2+N3)
Corrected SPT N'

BH-74


SPT N Value
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120
Depth (m)
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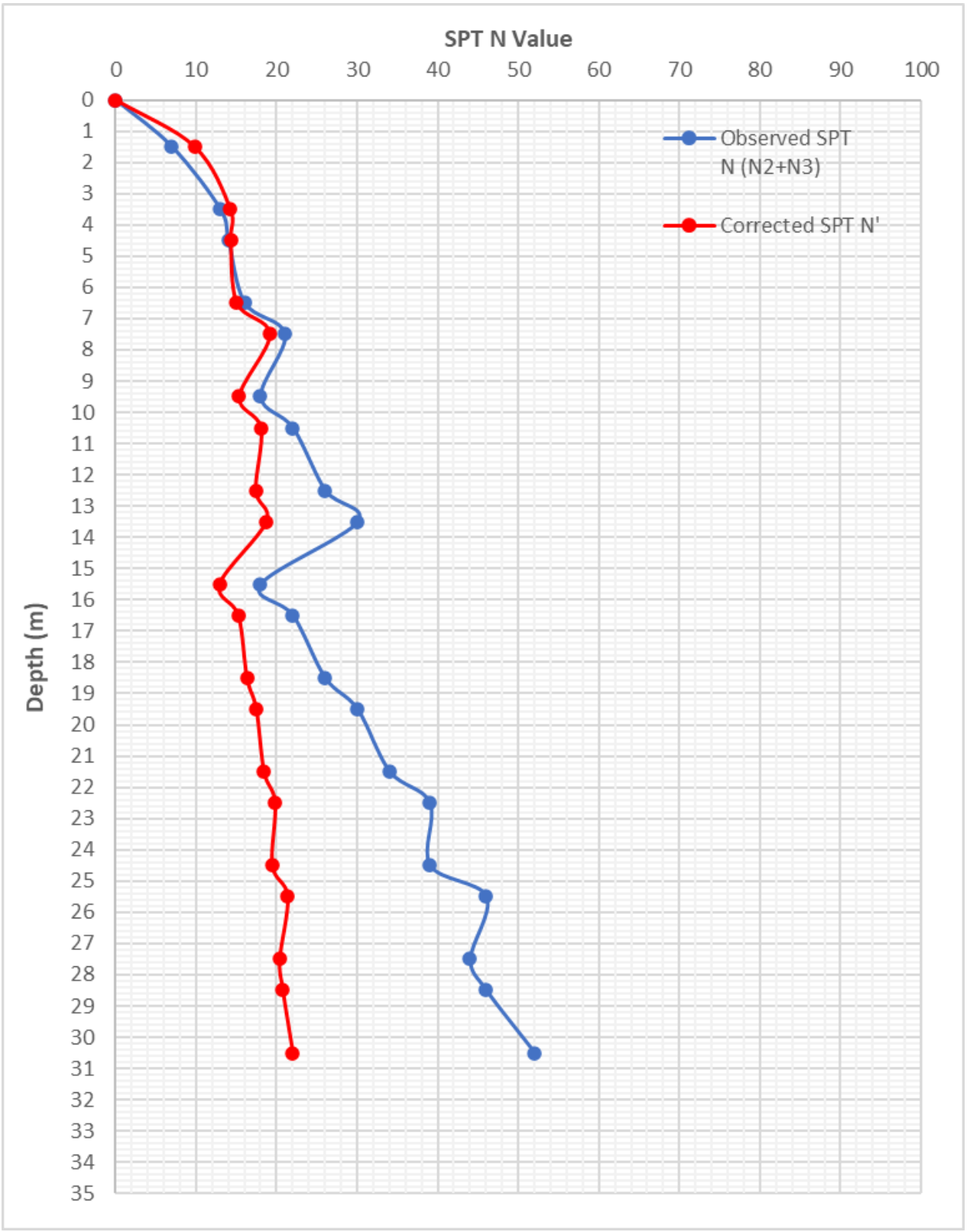
Observed SPT N (N2+N3)
Corrected SPT N'

BH-75


SPT N Value
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Depth (m)
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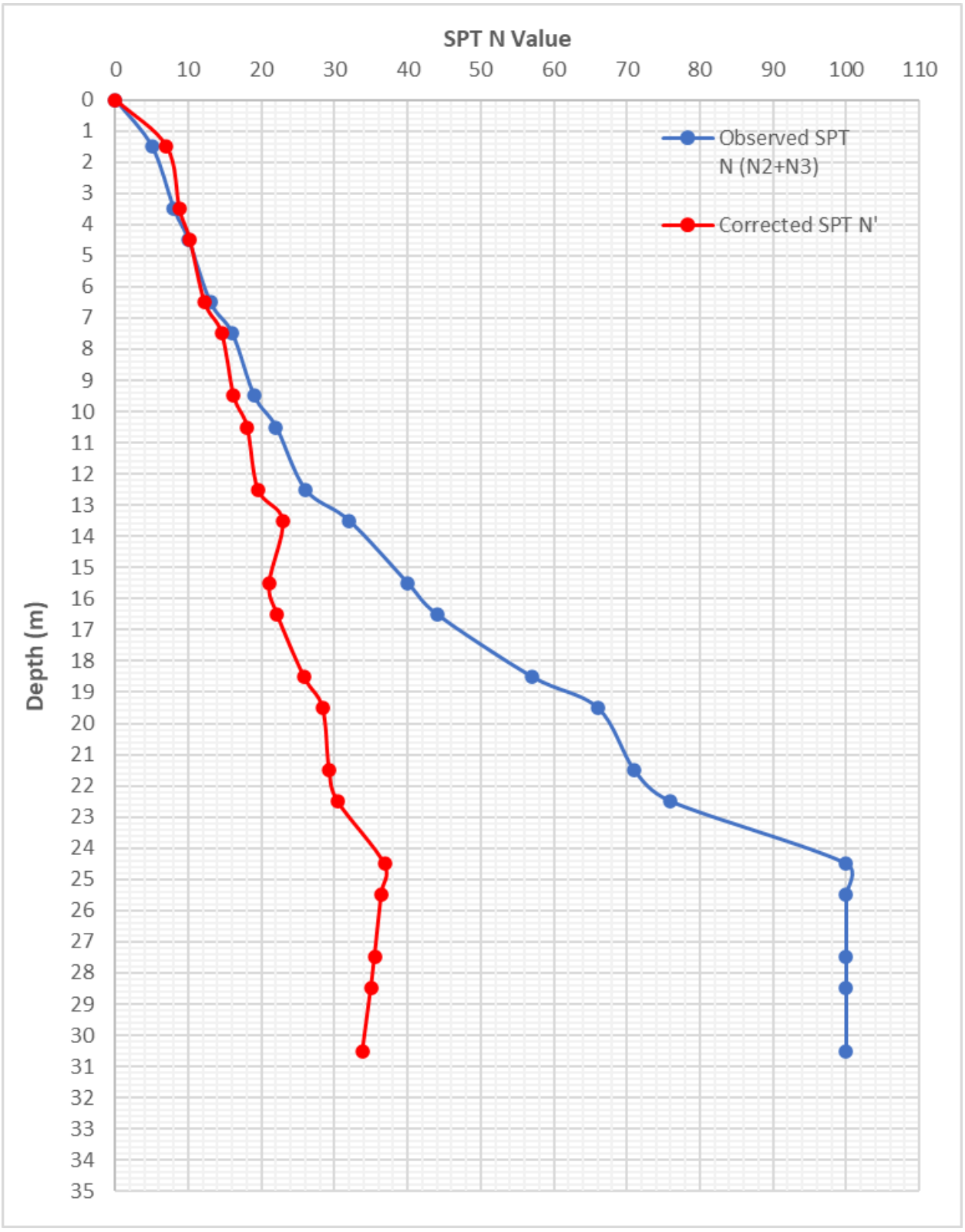
Observed SPT N (N2+N3)
Corrected SPT N'

BH-76


SPT N Value
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110
Depth (m)
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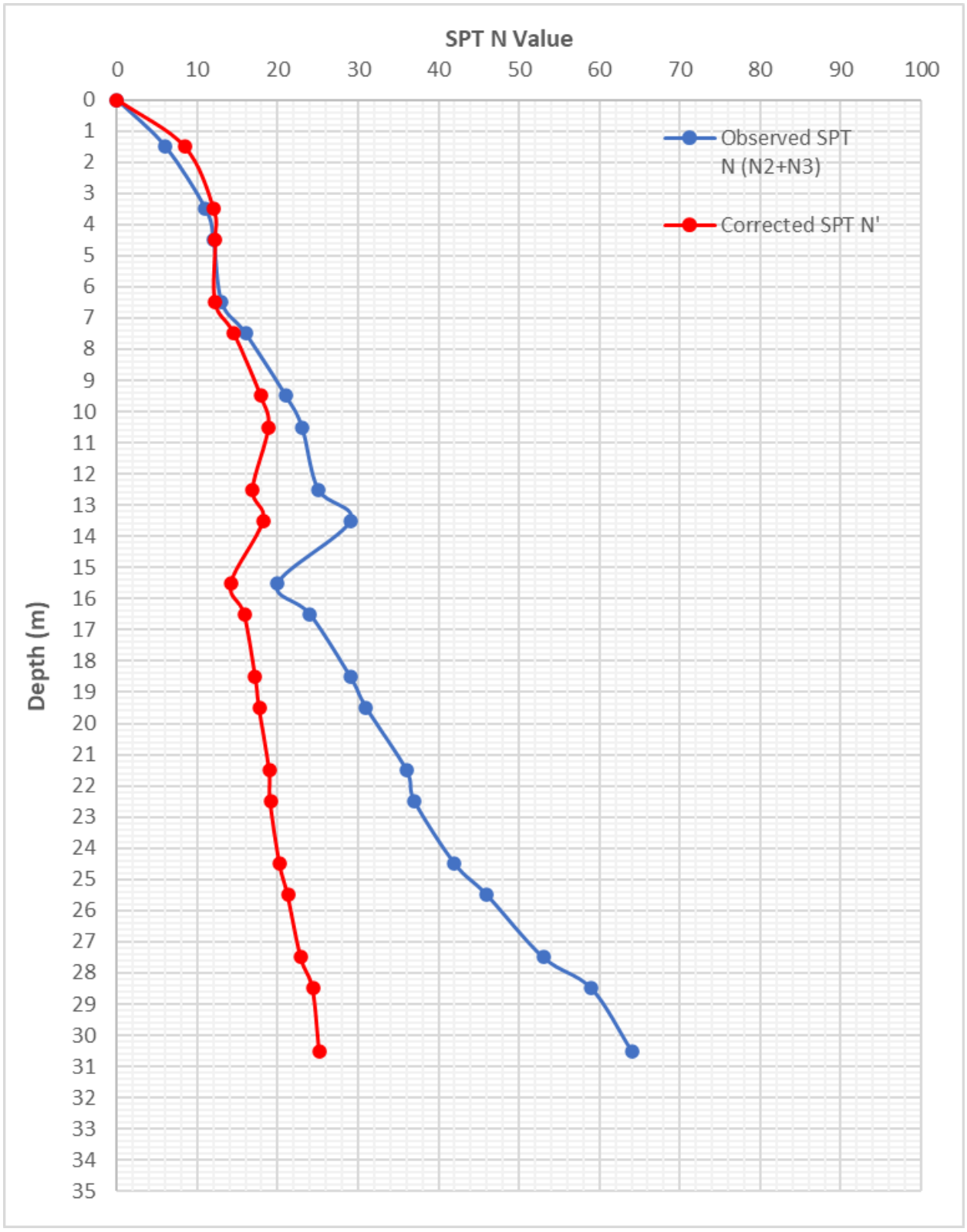
Observed SPT N (N2+N3)
Corrected SPT N'

BH-77


SPT N Value
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100
Depth (m)
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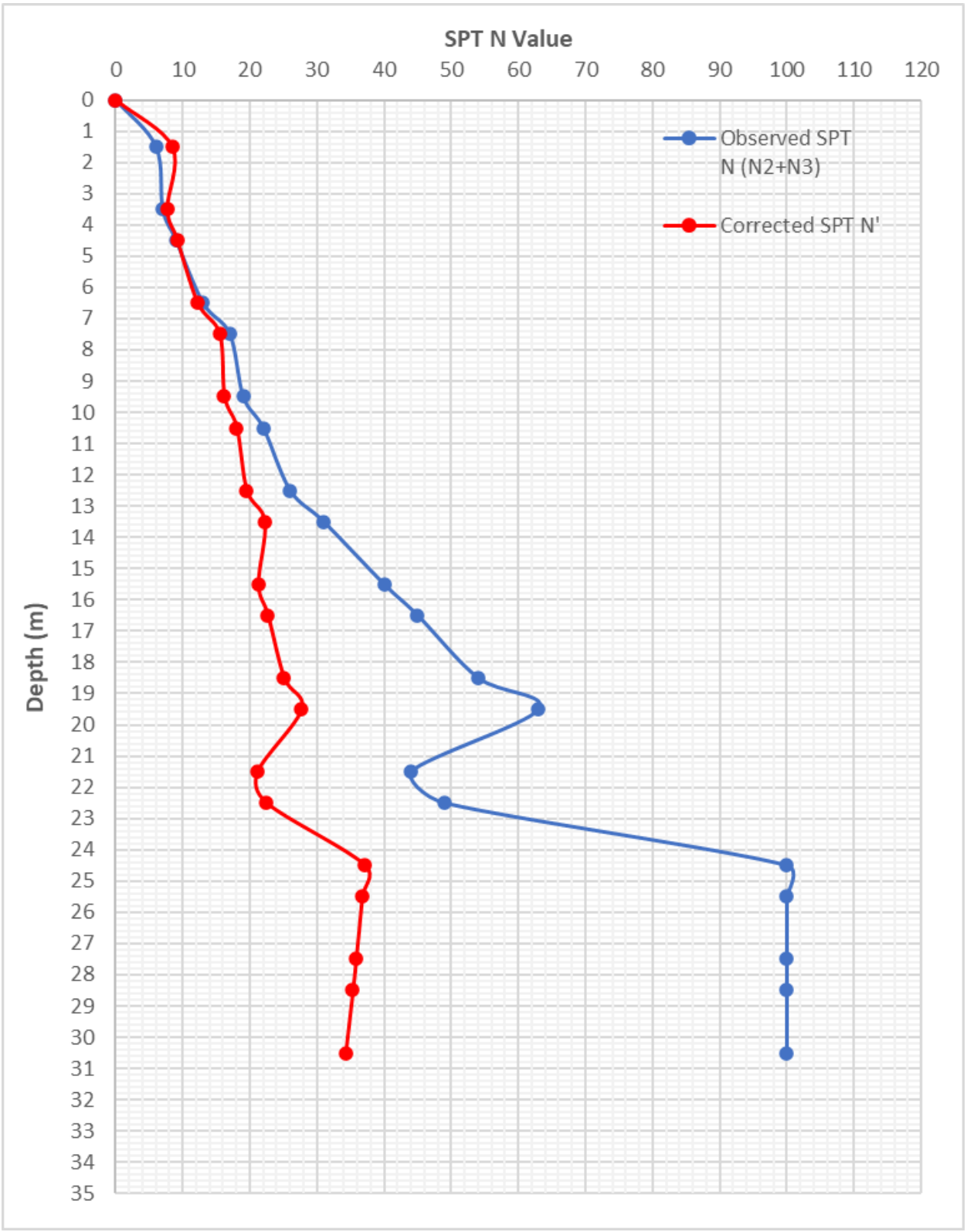
Observed SPT N (N2+N3)
Corrected SPT N'

BH-80


SPT N Value
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100
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120
Depth (m)
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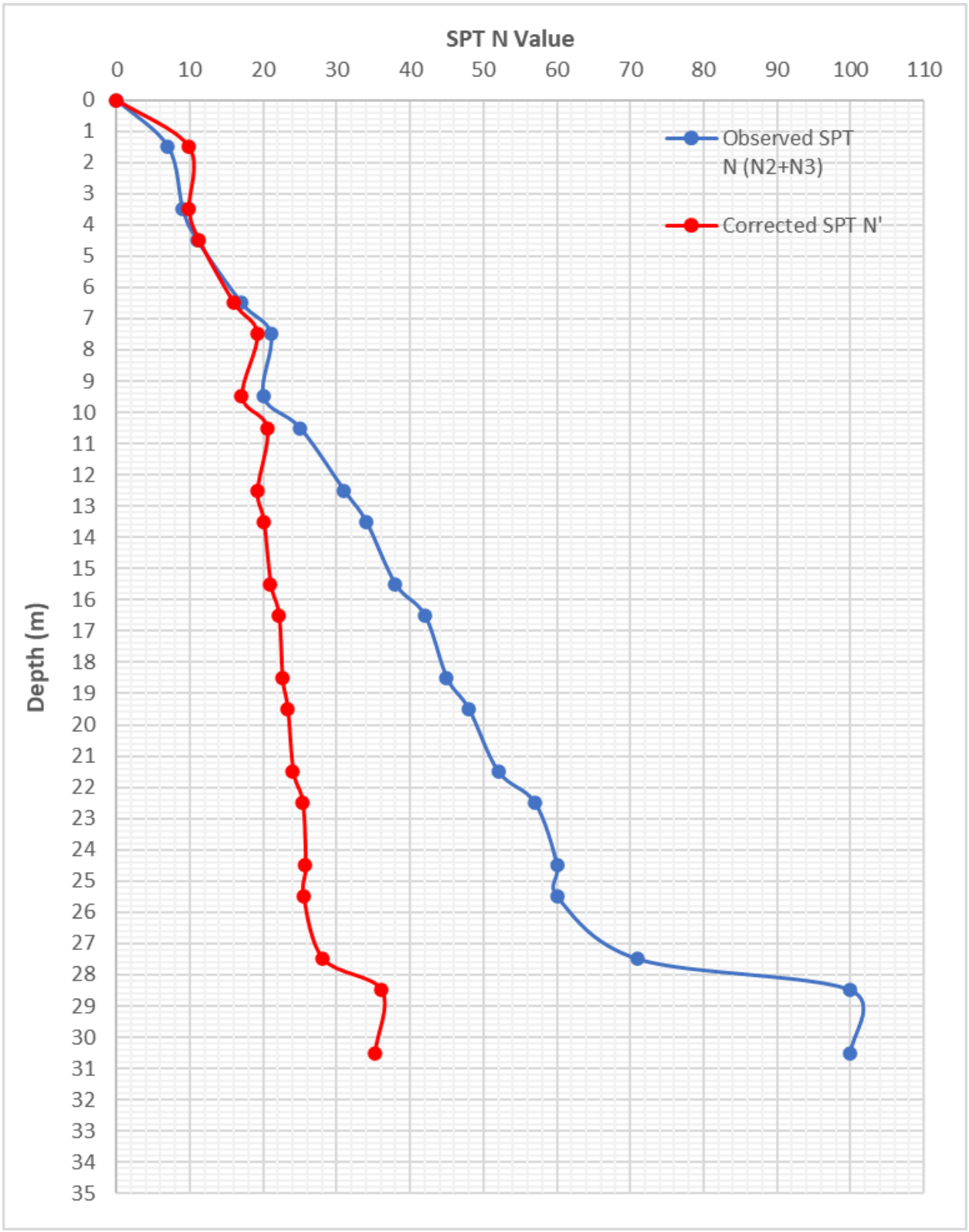
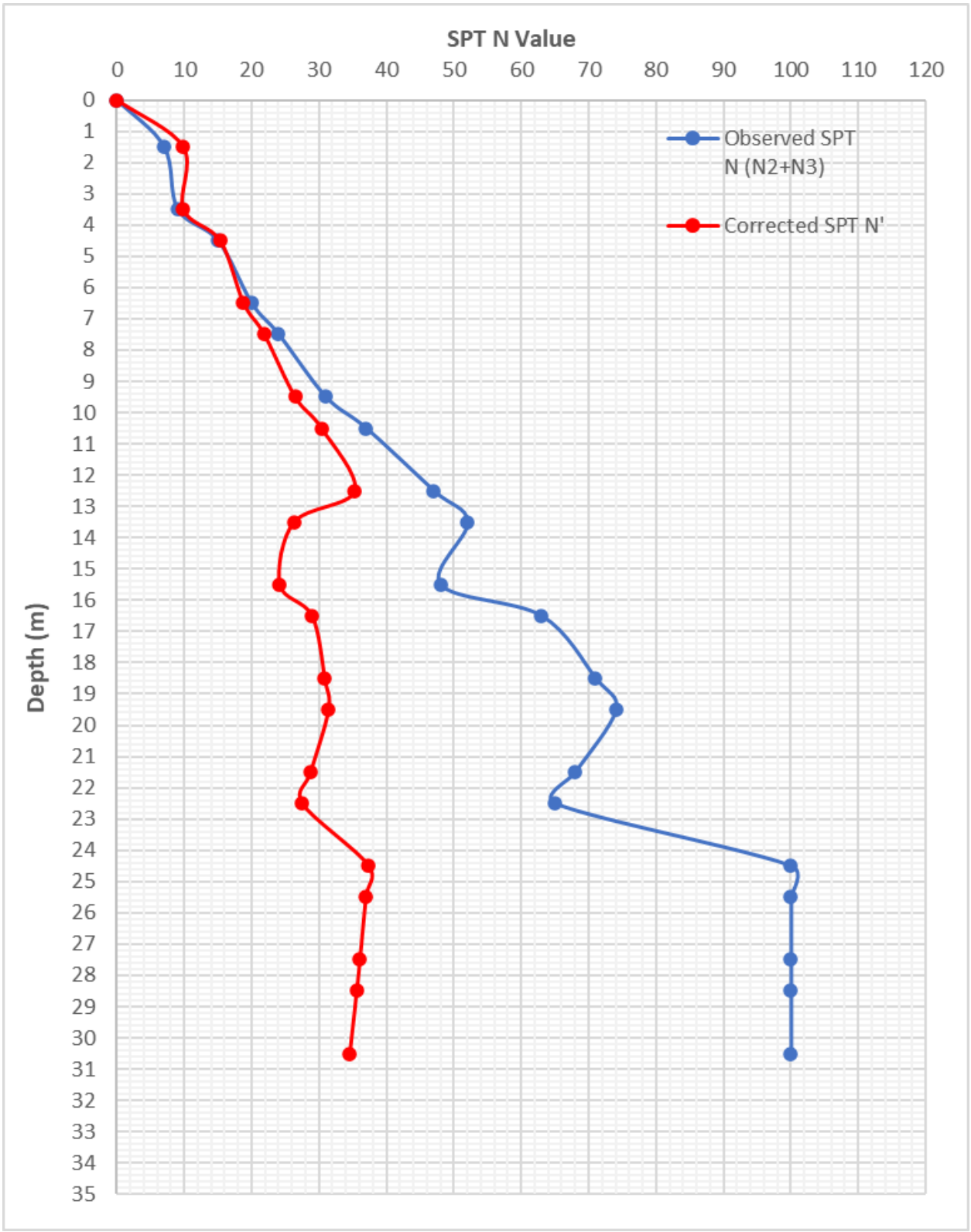
Observed SPT N (N2+N3)
Corrected SPT N'

D.10 Zone 10: CH: 8+550 km to 9+430 km (BH-82 to BH-89)

BH-82



BH-83


SPT N Value
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Depth (m)
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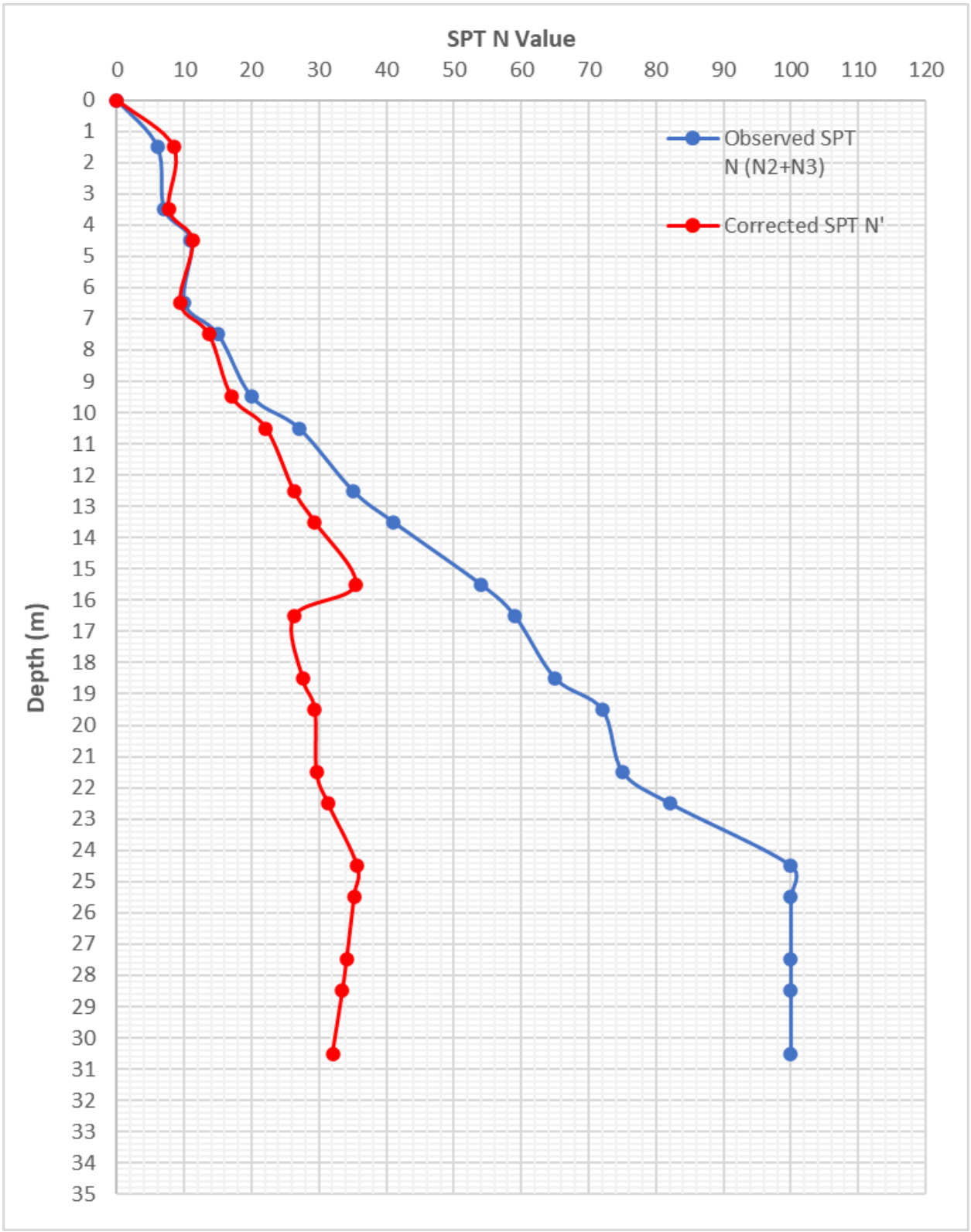
Observed SPT N (N2+N3)
Corrected SPT N'

BH-84


SPT N Value
0
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Depth (m)
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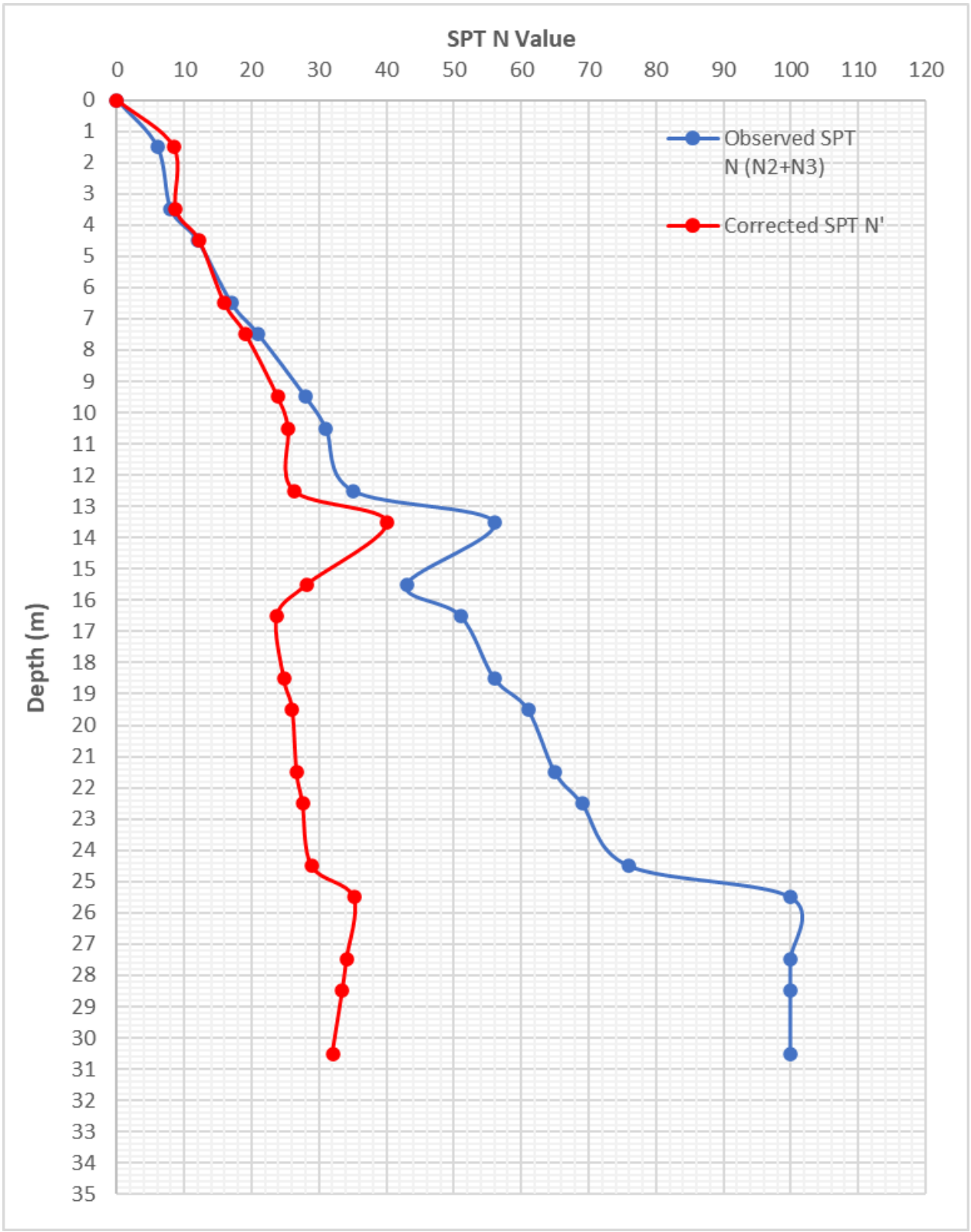
Observed SPT N (N2+N3)
Corrected SPT N'

BH-85


SPT N Value
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Depth (m)
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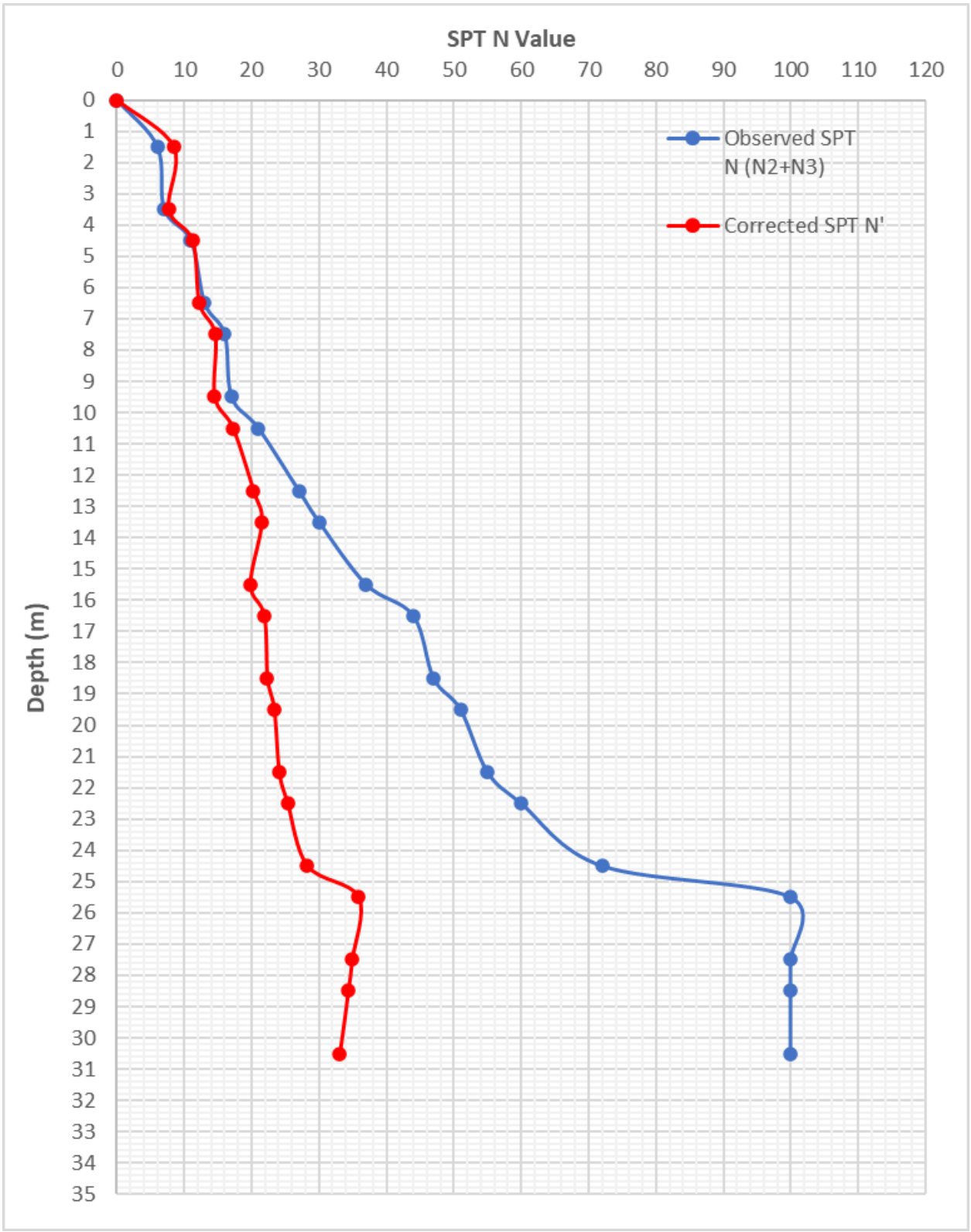
Observed SPT N (N2+N3)
Corrected SPT N'

BH-86


SPT N Value
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Depth (m)
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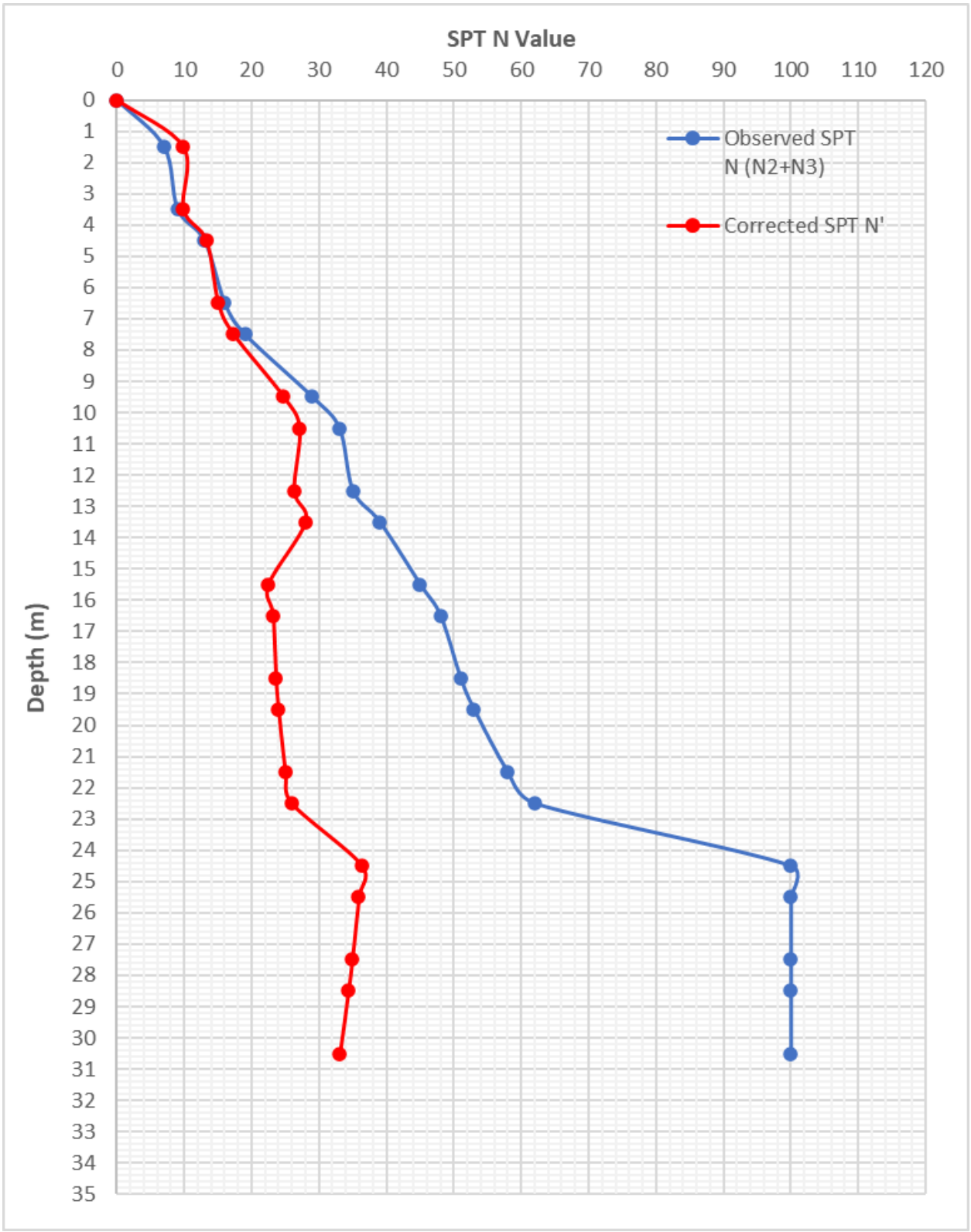
Observed SPT N (N2+N3)
Corrected SPT N'

BH-87


SPT N Value
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Depth (m)
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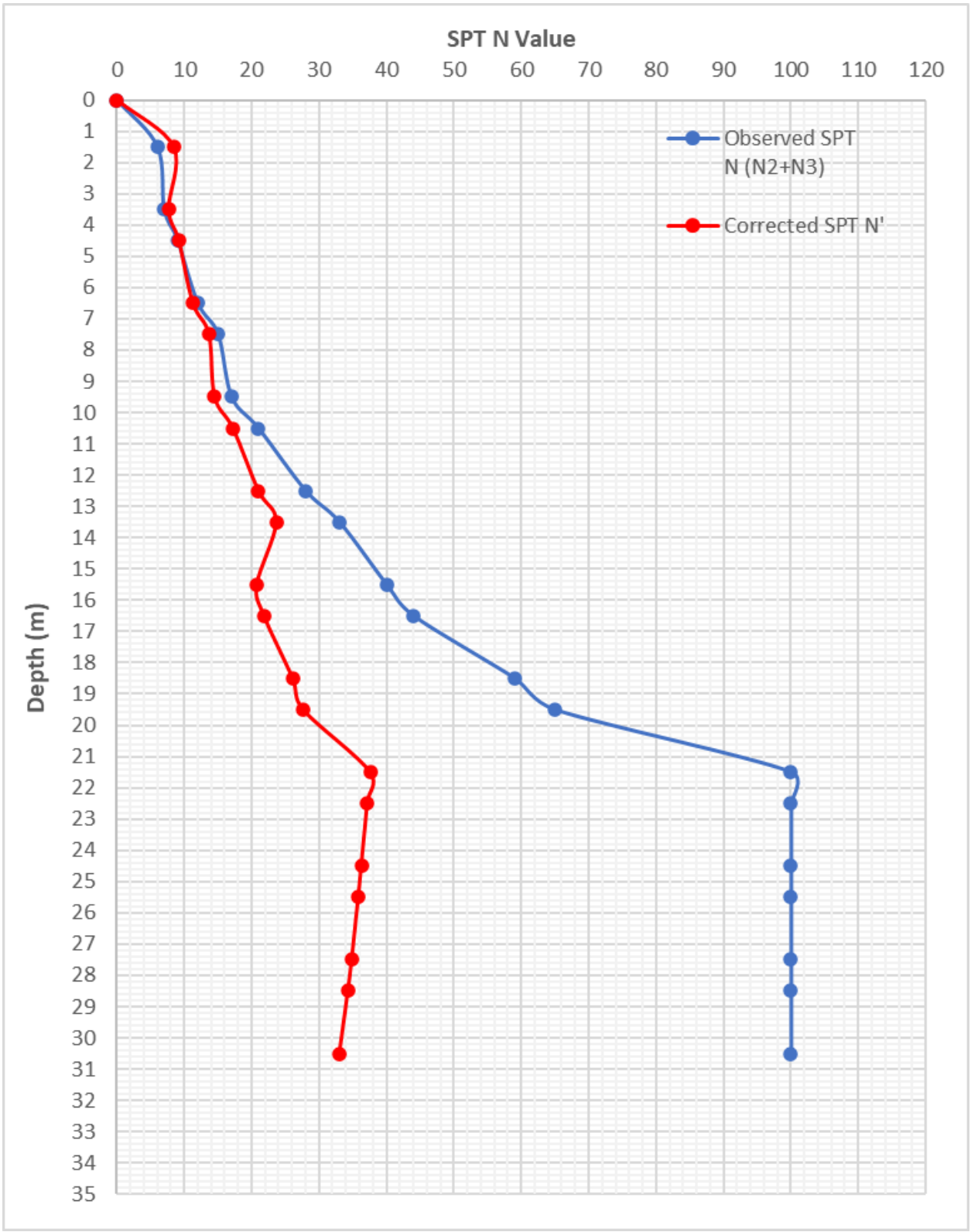
Observed SPT N (N2+N3)
Corrected SPT N'

BH-88


SPT N Value
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Depth (m)
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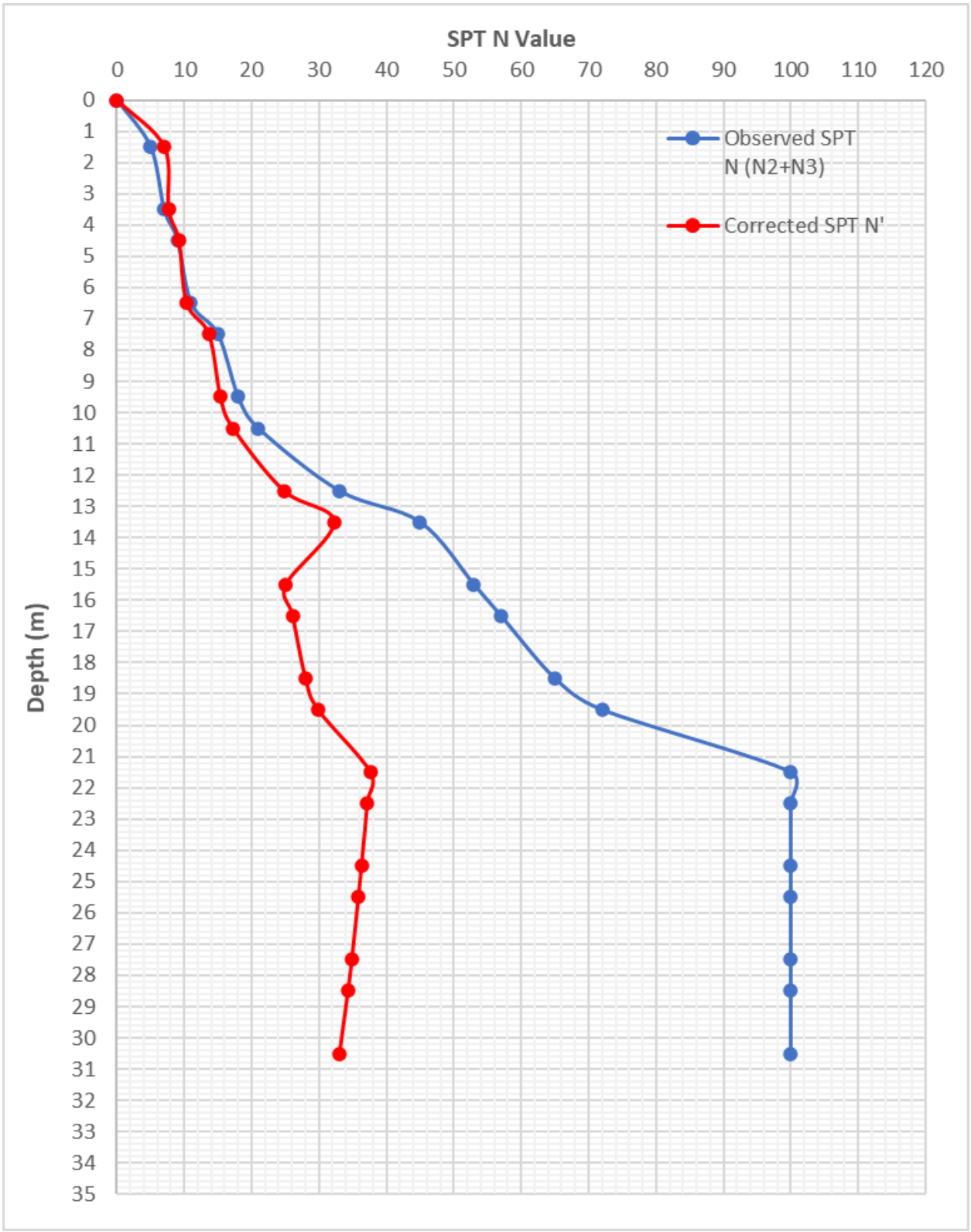
Observed SPT N (N2+N3)
Corrected SPT N'

BH-89


SPT N Value
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Depth (m)
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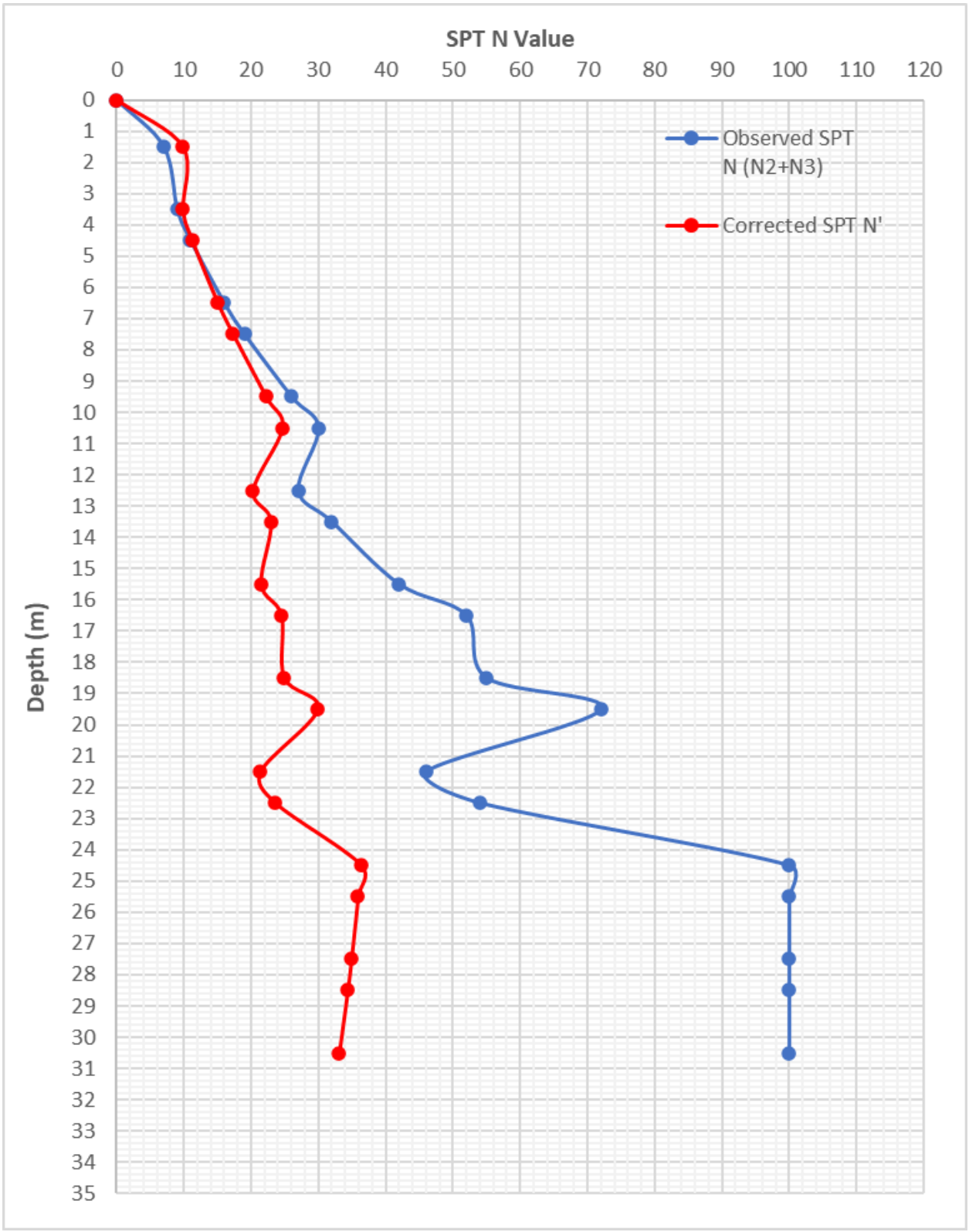
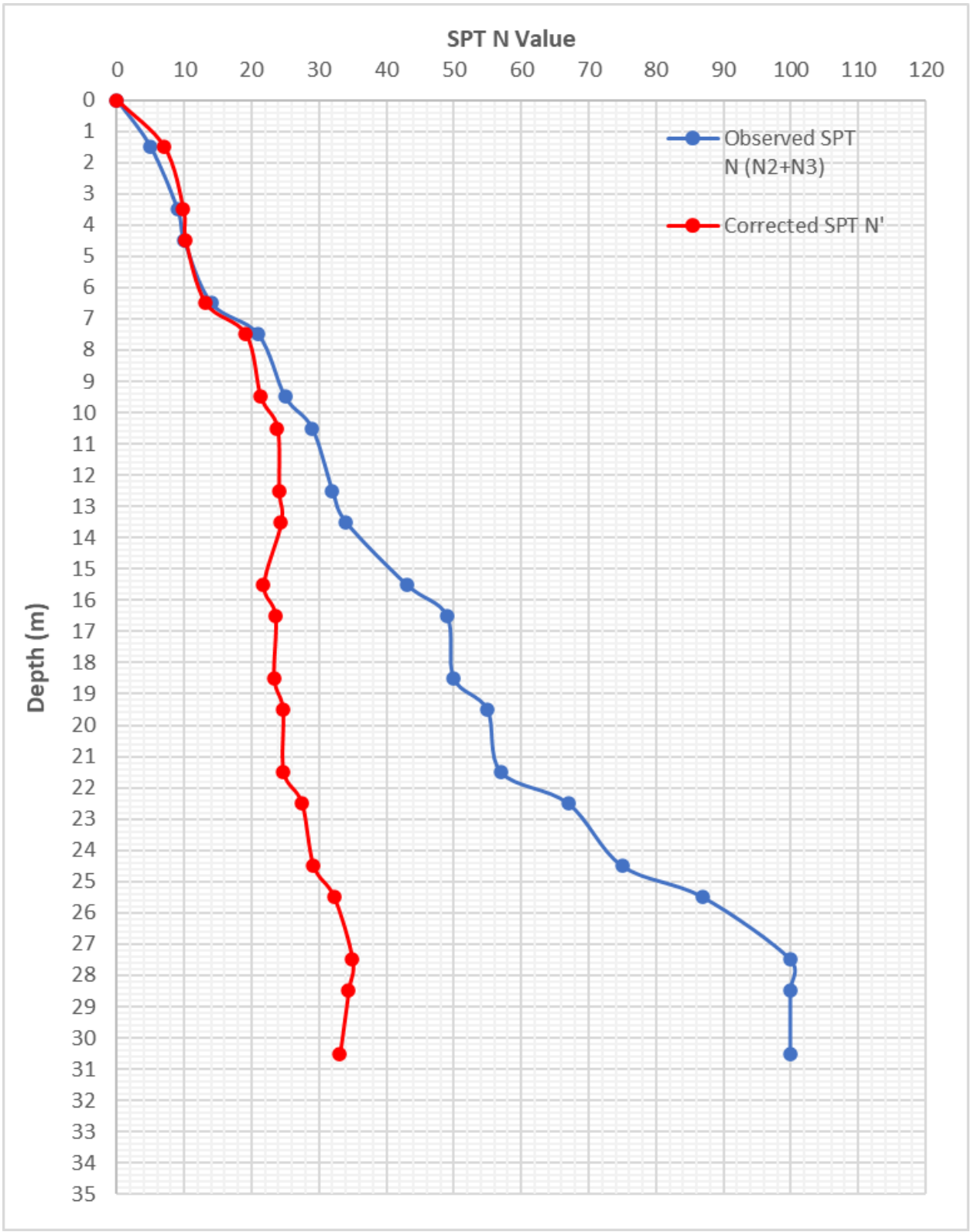
Observed SPT N (N2+N3)
Corrected SPT N'

D.11 Zone 11: CH: 9+430 km to 10+540 km (BH-91 to BH-100)

BH-91



BH-92


SPT N Value
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Depth (m)
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34
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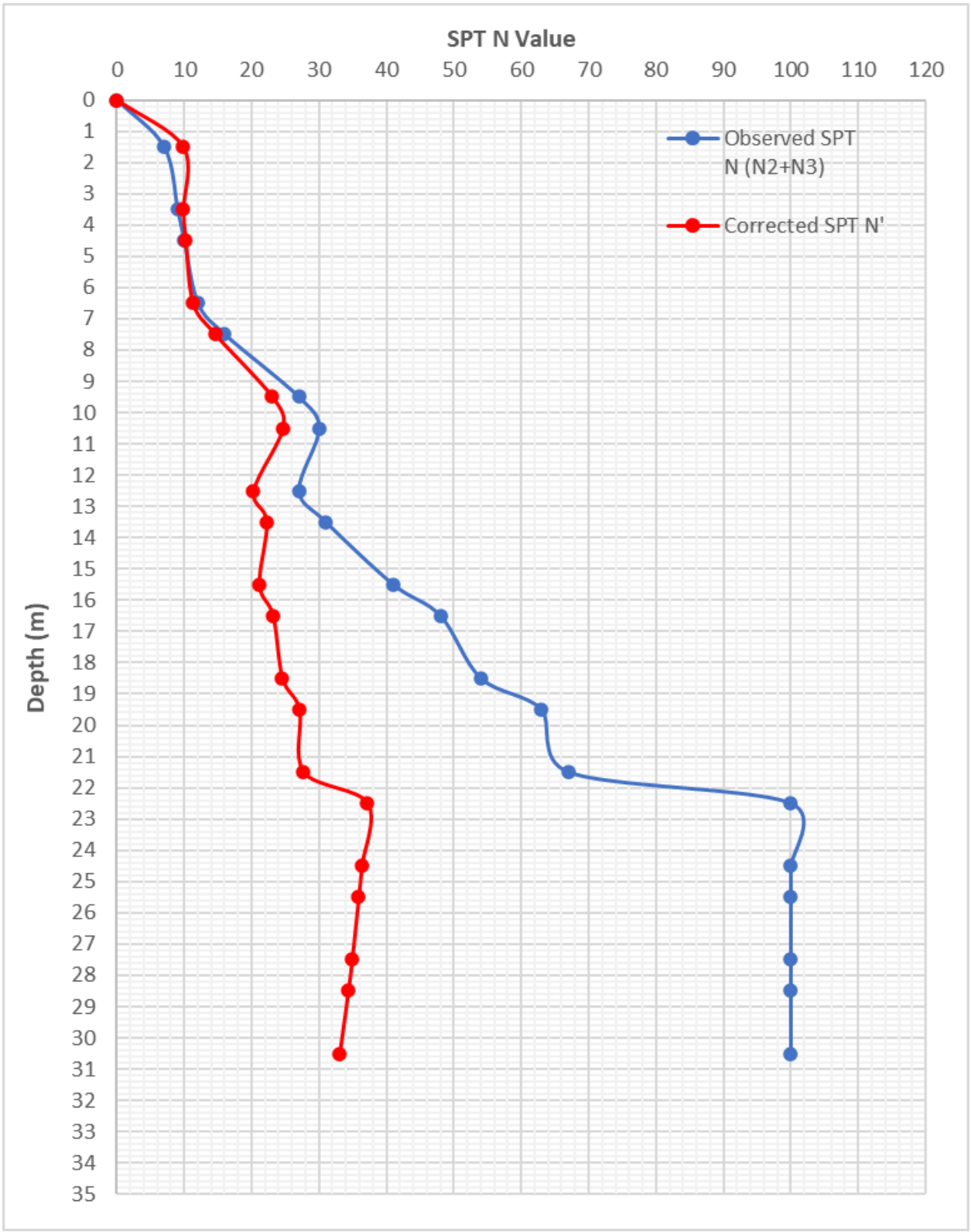
Observed SPT N (N2+N3)
Corrected SPT N'

BH-93


SPT N Value
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Depth (m)
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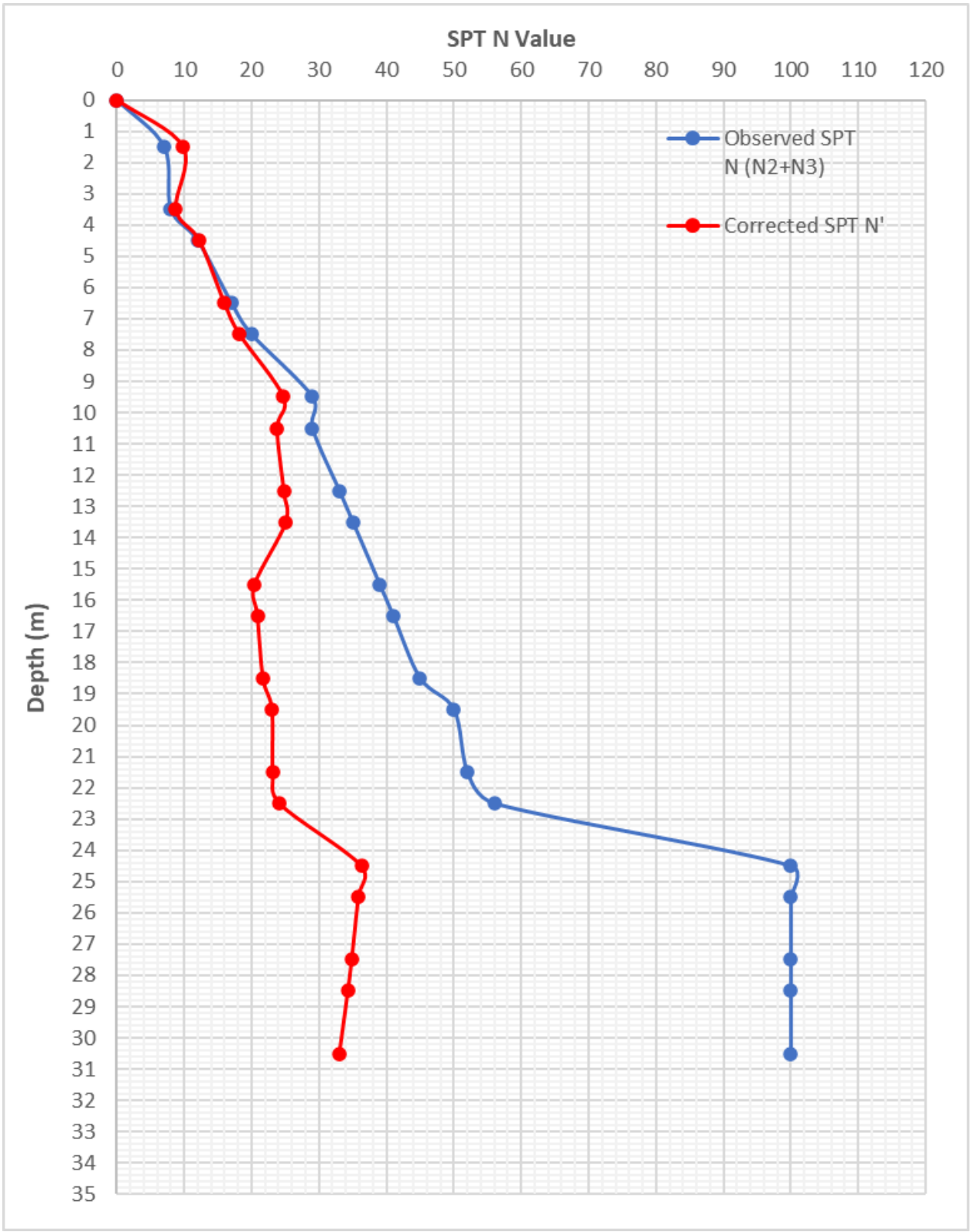
Observed SPT N (N2+N3)
Corrected SPT N'

BH-95


SPT N Value
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Depth (m)
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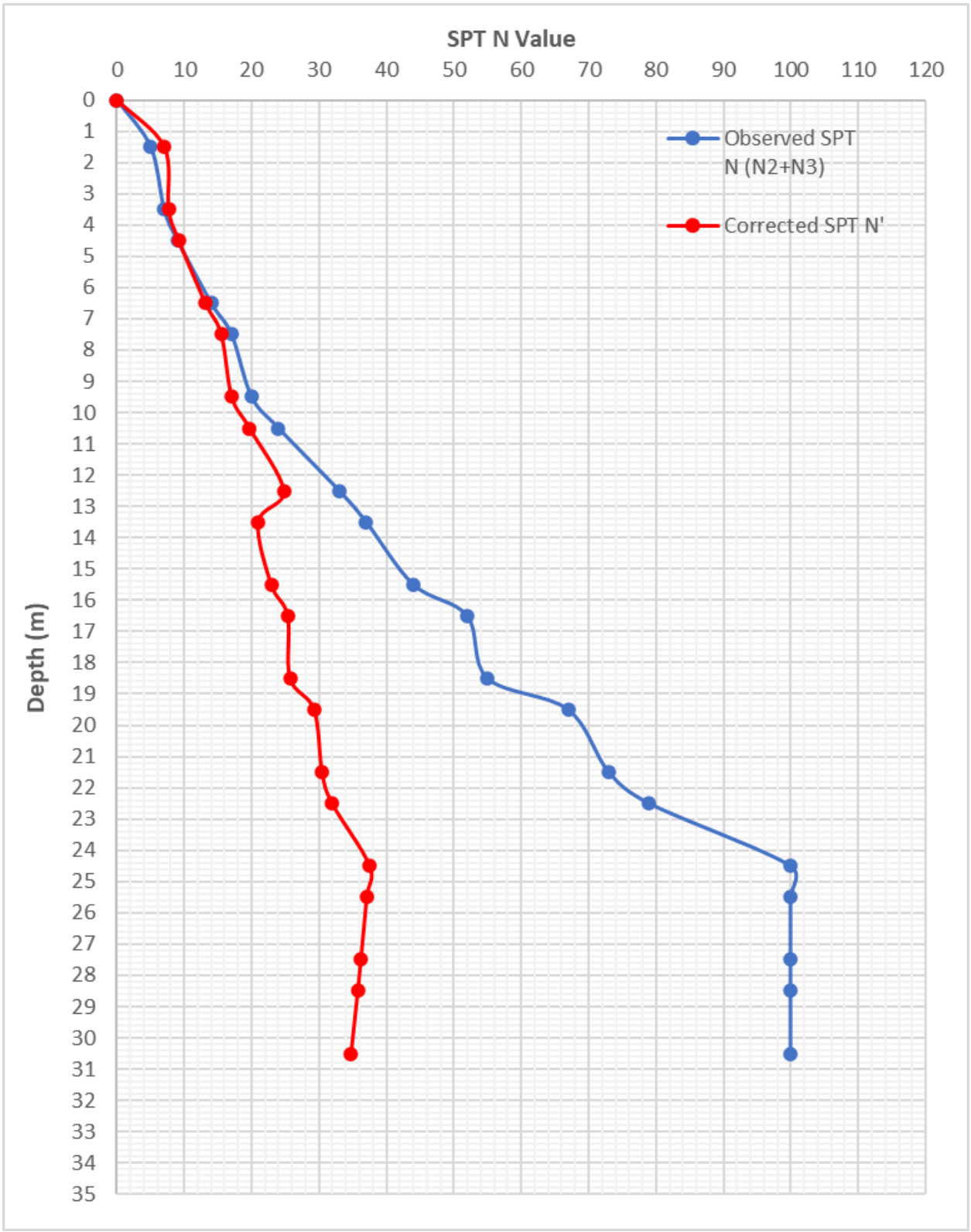
Observed SPT N (N2+N3)
Corrected SPT N'

BH-96


SPT N Value
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Depth (m)
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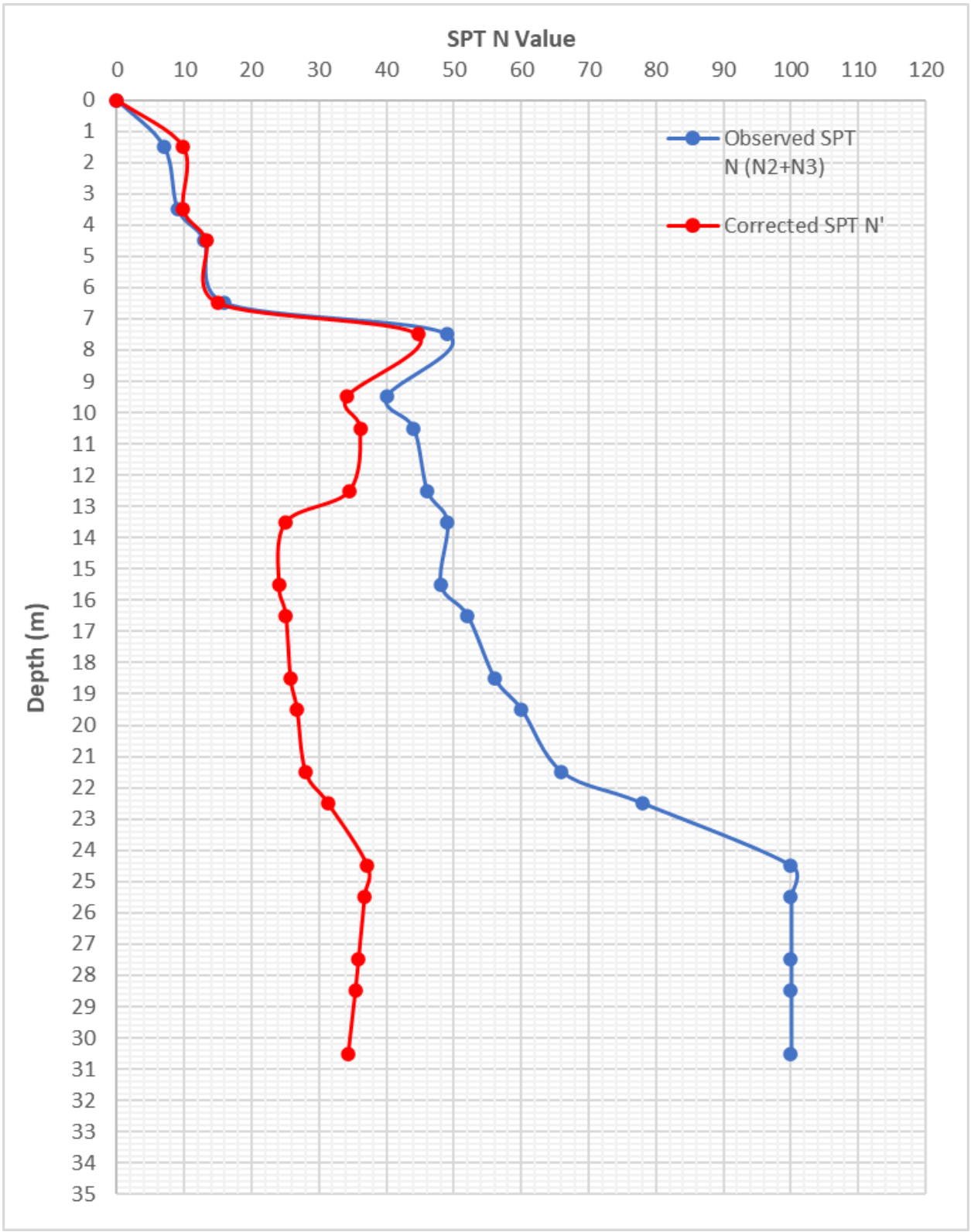
Observed SPT N (N2+N3)
Corrected SPT N'

BH-97


SPT N Value
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Depth (m)
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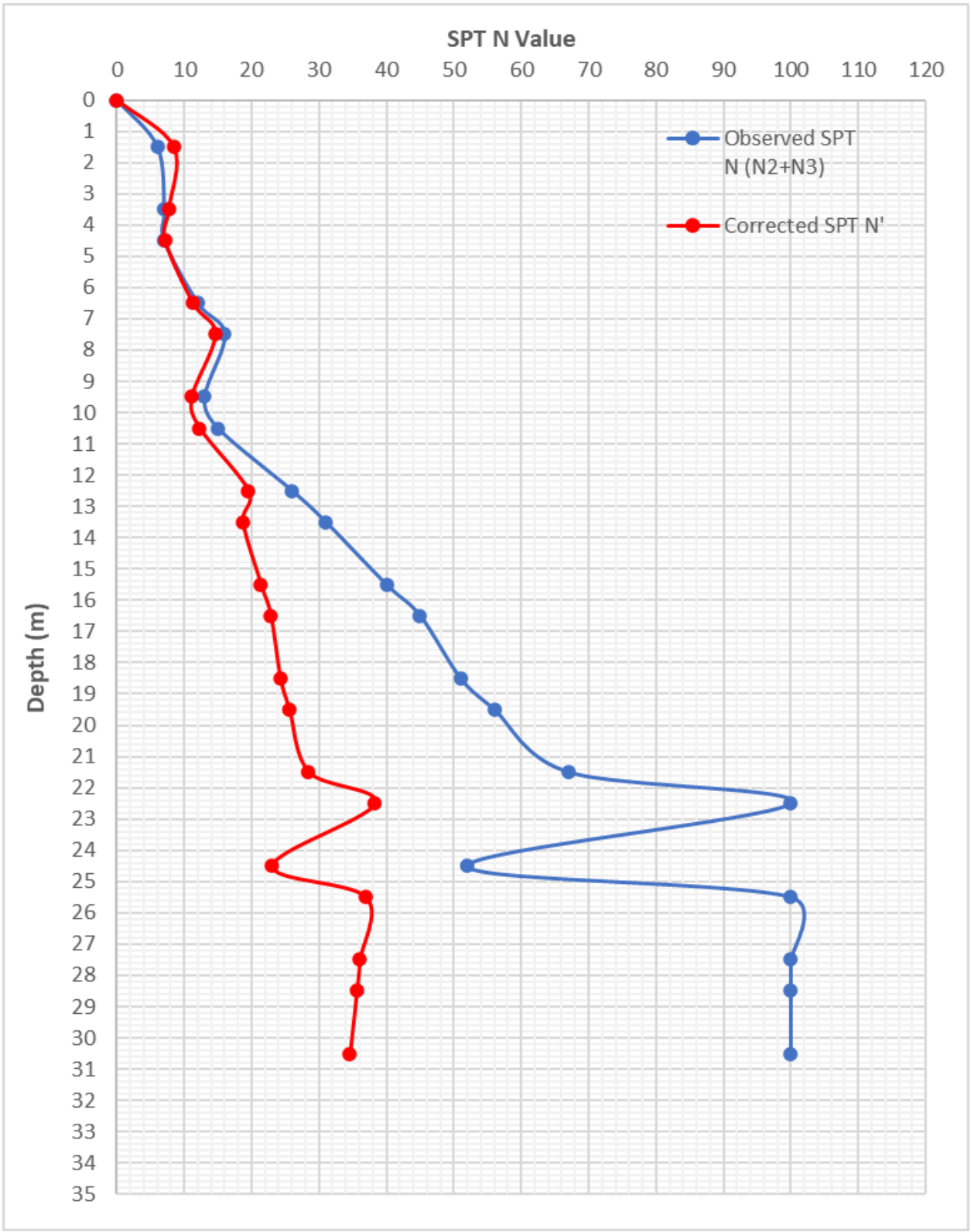
Observed SPT N (N2+N3)
Corrected SPT N'

BH-98


SPT N Value
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Depth (m)
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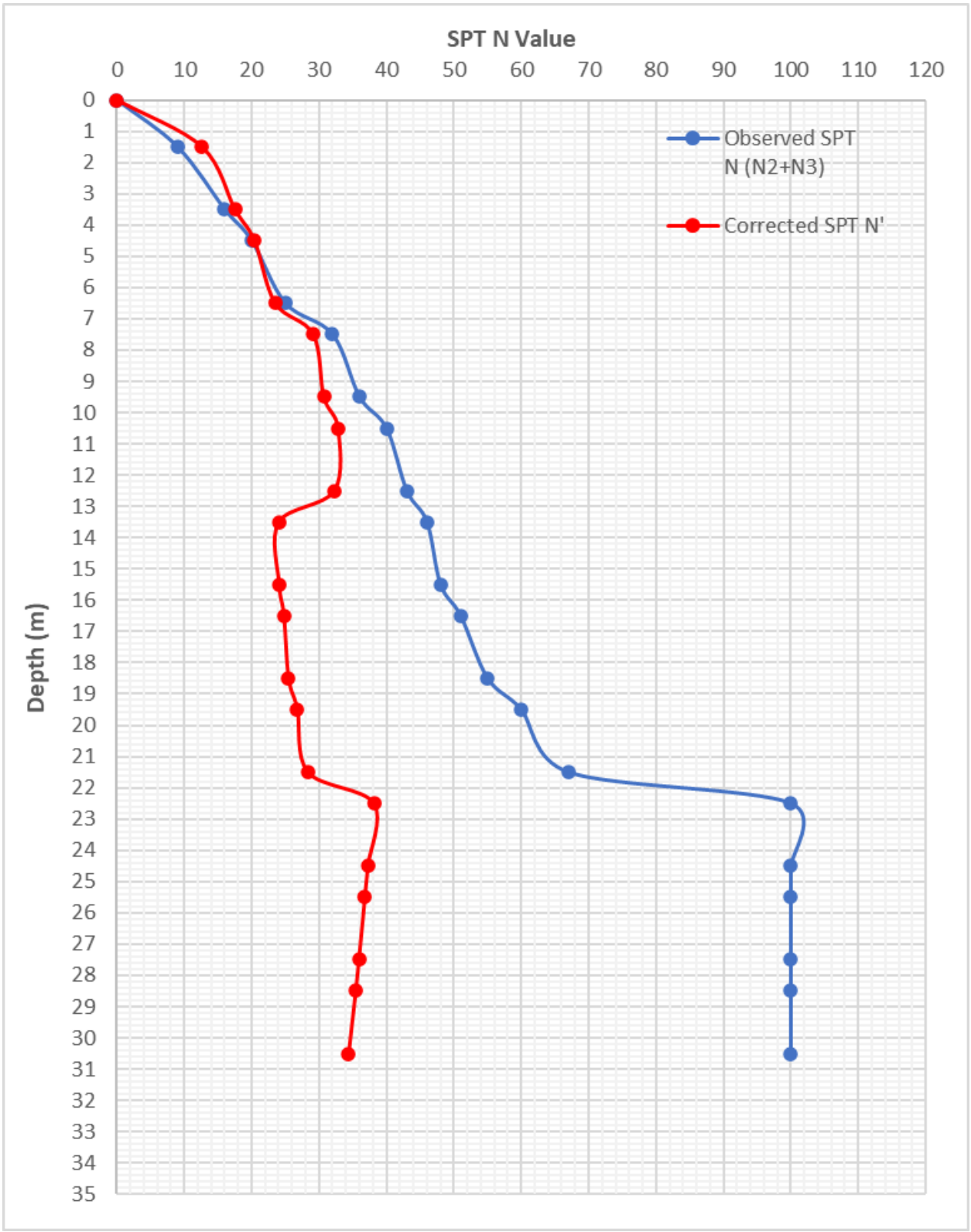
Observed SPT N (N2+N3)
Corrected SPT N'

BH-99


SPT N Value
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Depth (m)
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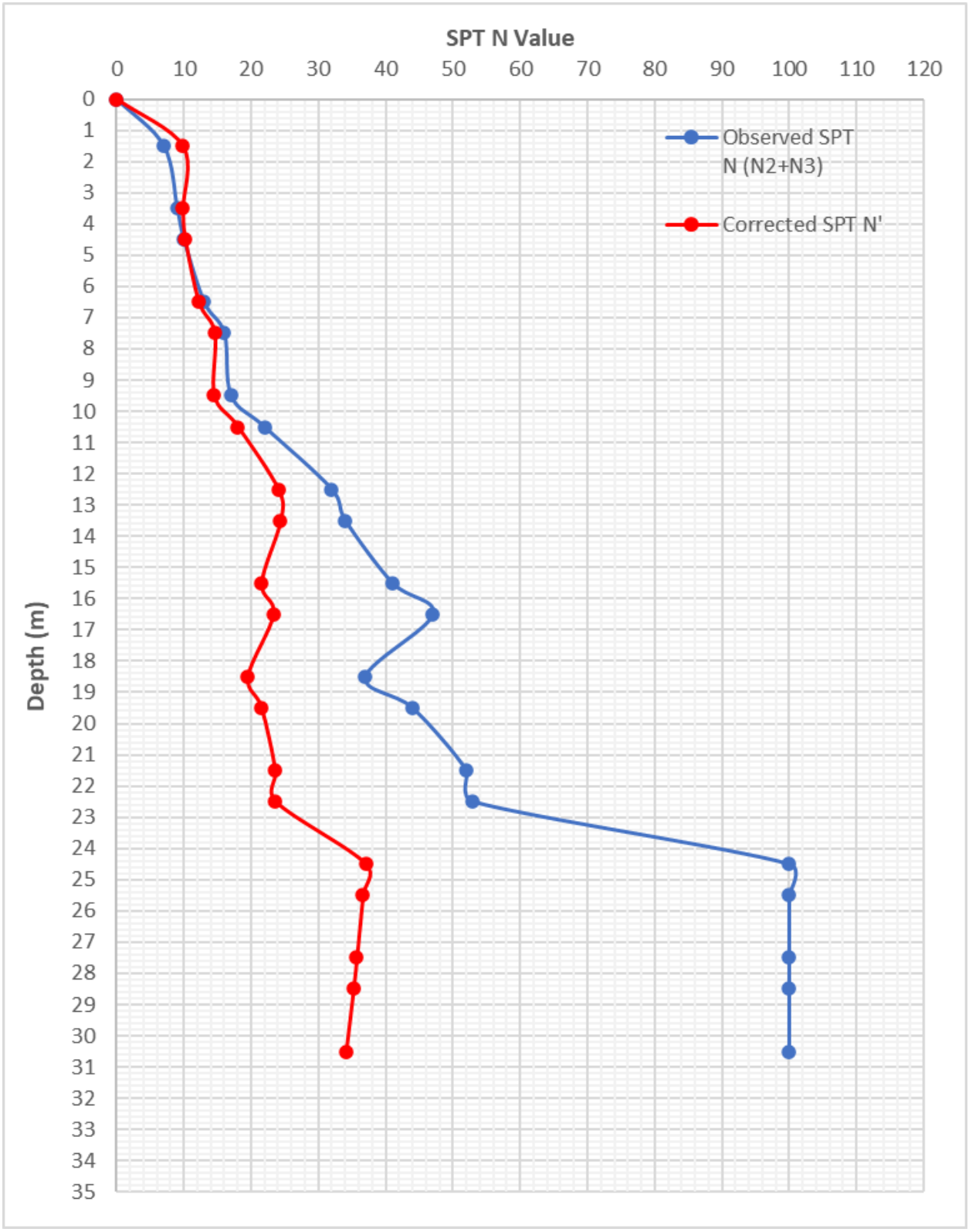
Observed SPT N (N2+N3)
Corrected SPT N'

BH-100


SPT N Value
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Depth (m)
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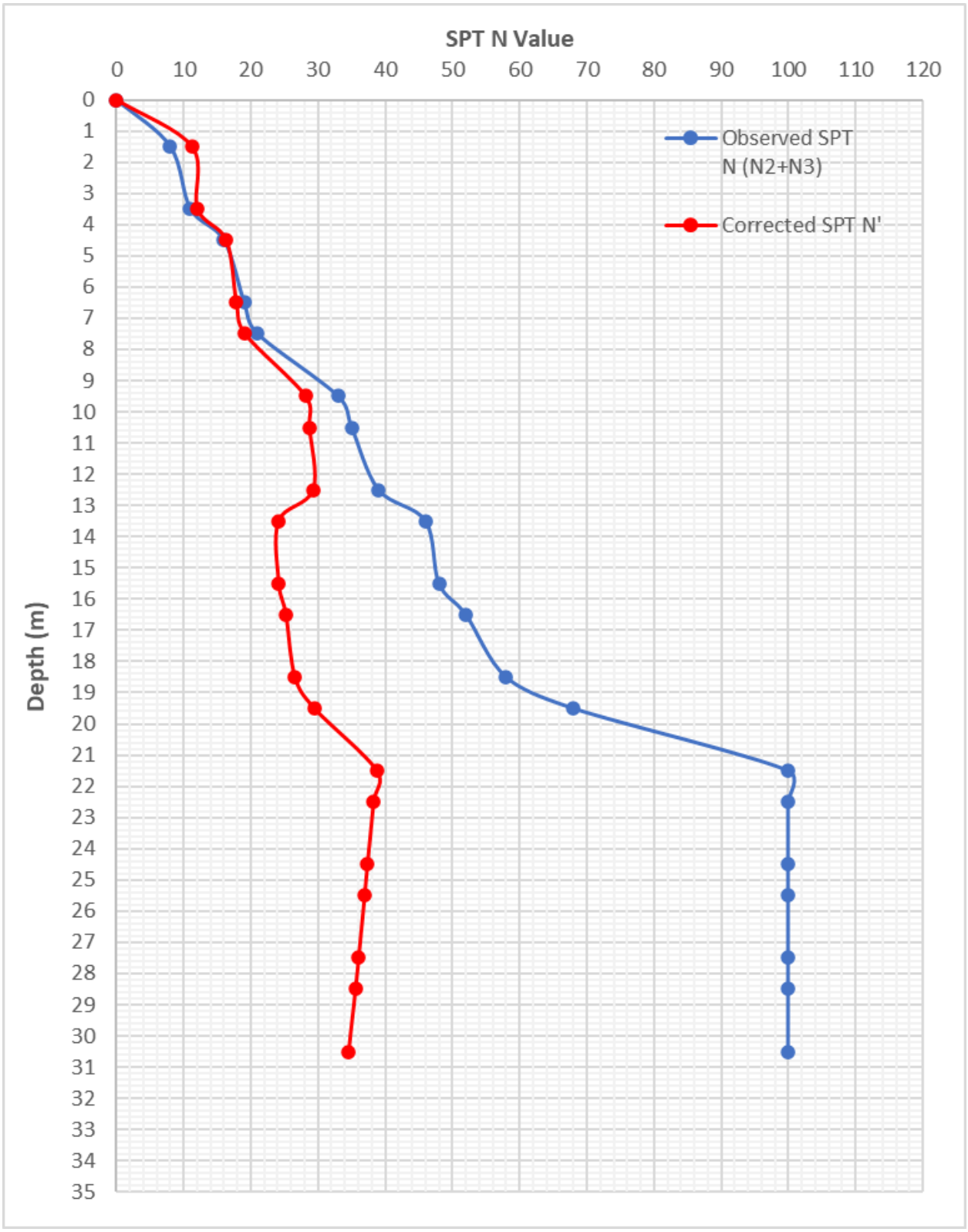
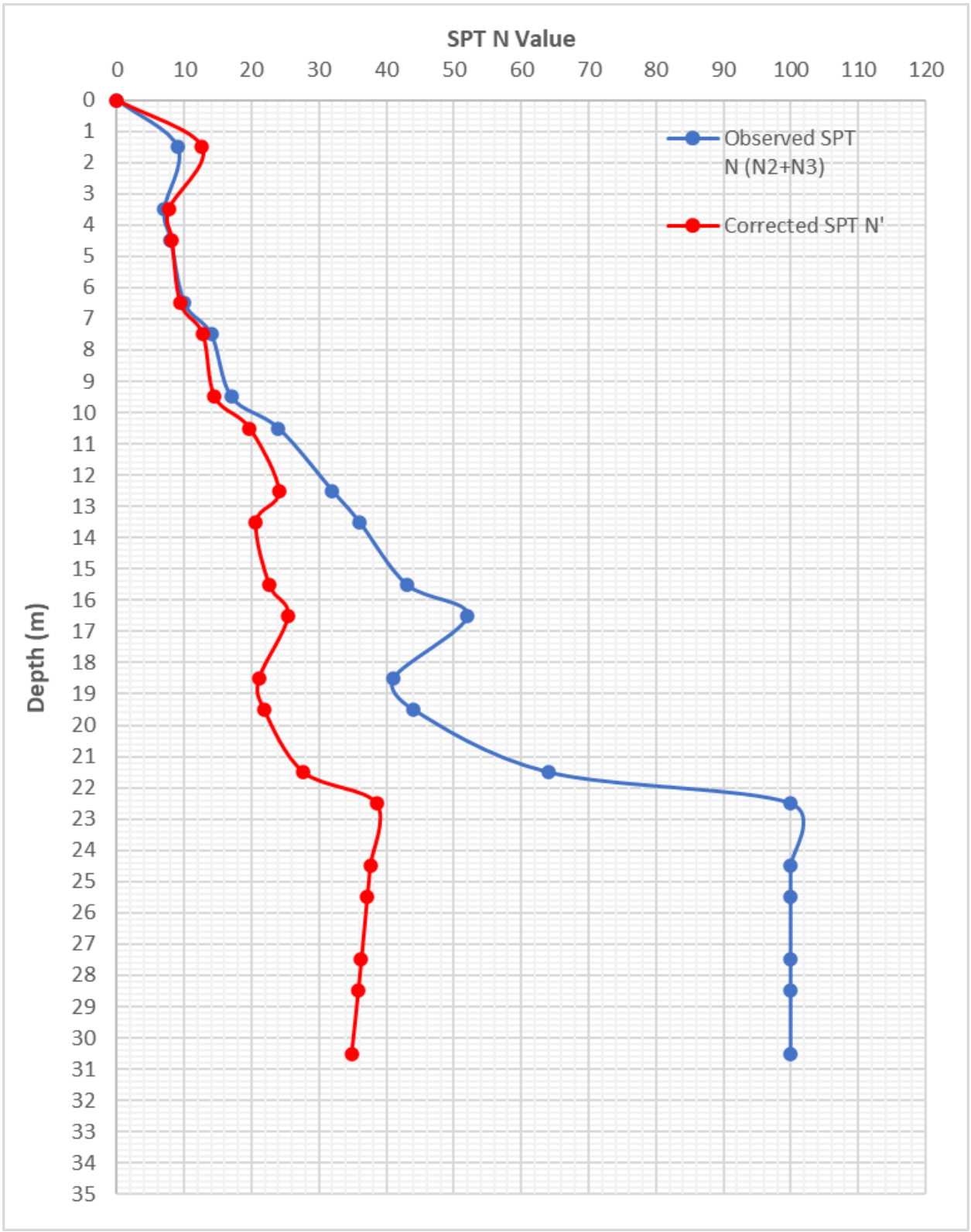
Observed SPT N (N2+N3)
Corrected SPT N'

D.12 Zone 12: CH: 10+540 km to 11+400 km (BH-101 to BH-109)

BH-101



BH-102


SPT N Value
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Depth (m)
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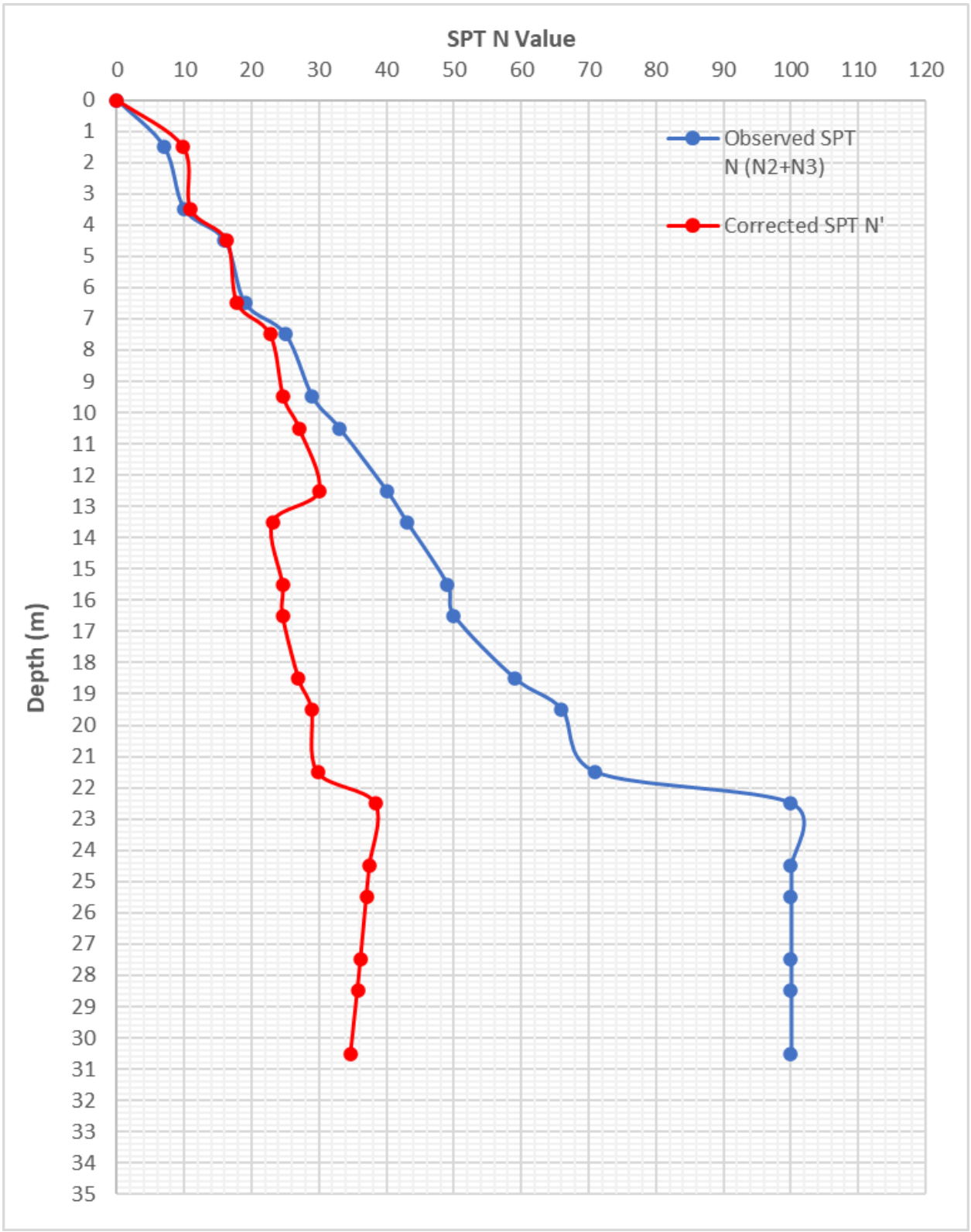
Observed SPT N (N2+N3)
Corrected SPT N'

BH-103


SPT N Value
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Depth (m)
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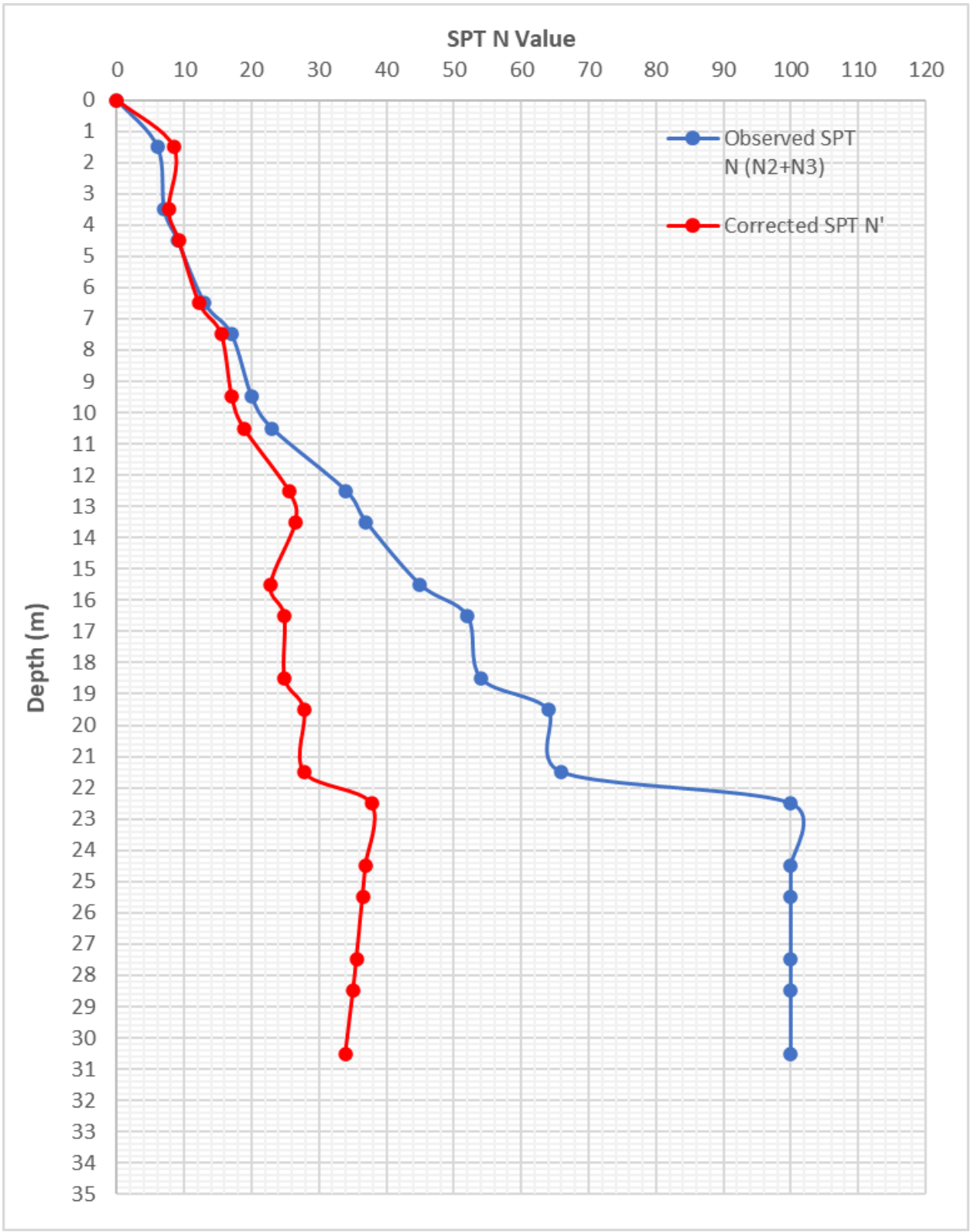
Observed SPT N (N2+N3)
Corrected SPT N'

BH-104


SPT N Value
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Depth (m)
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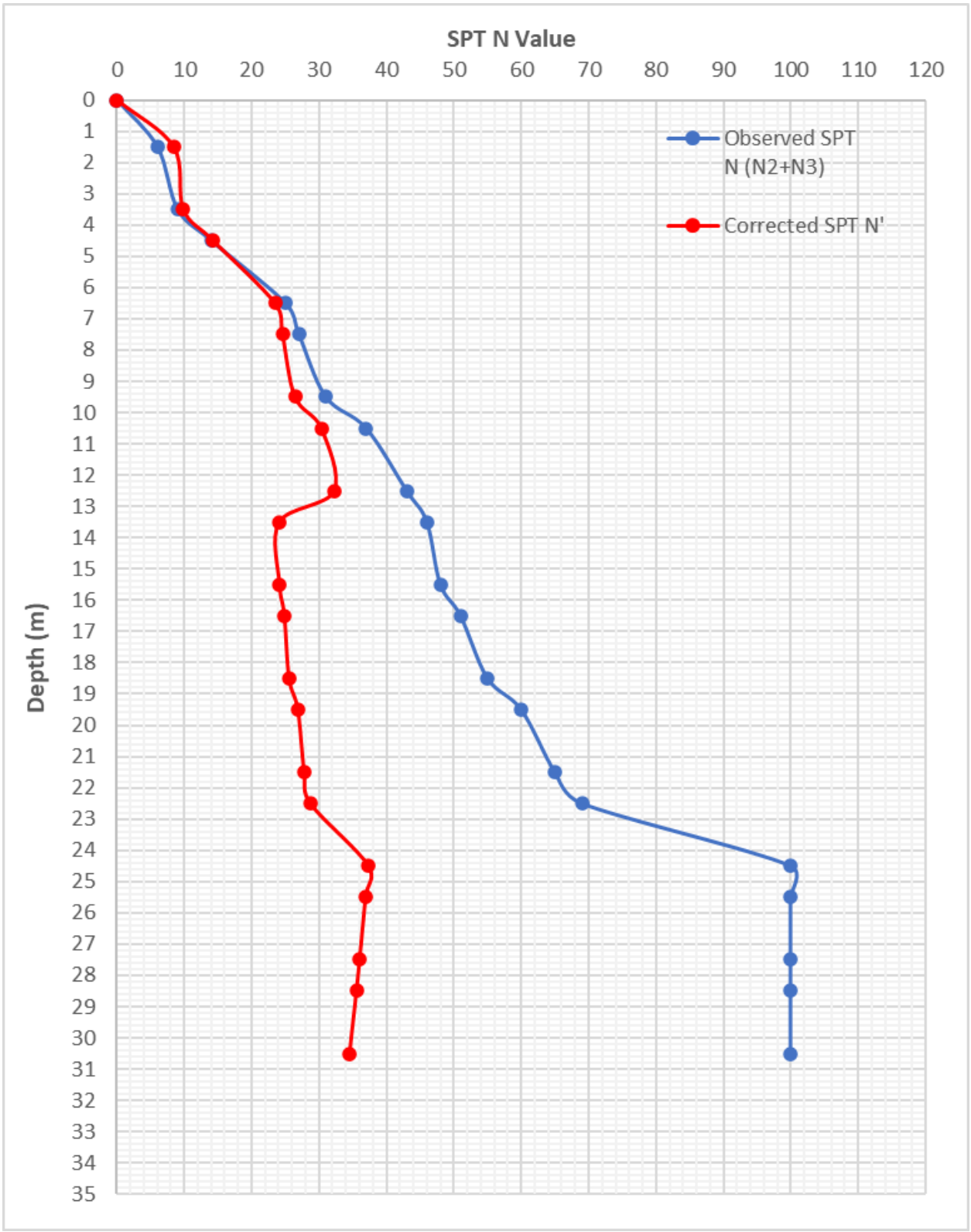
Observed SPT N (N2+N3)
Corrected SPT N'

BH-105


SPT N Value
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Depth (m)
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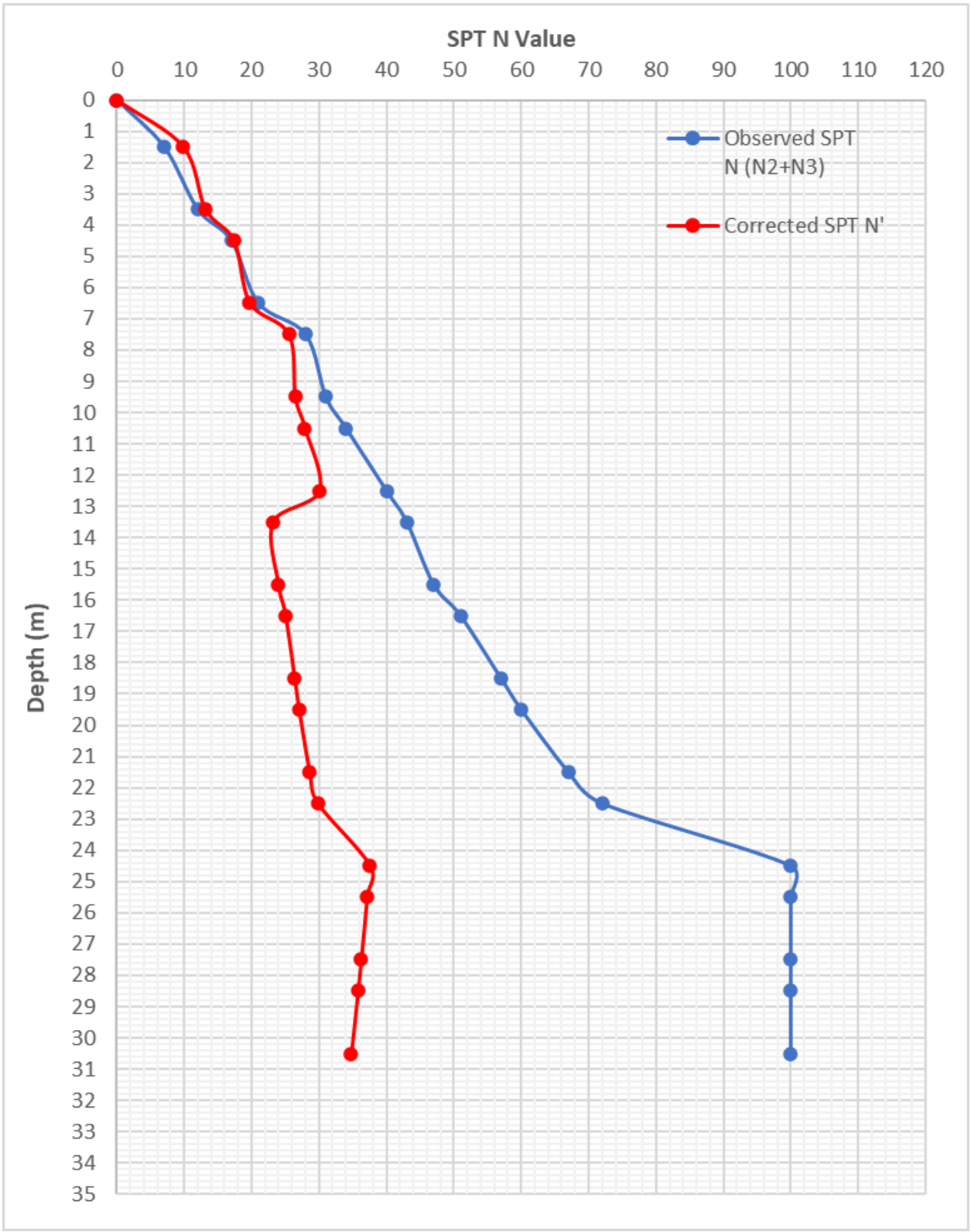
Observed SPT N (N2+N3)
Corrected SPT N'

BH-106


SPT N Value
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Depth (m)
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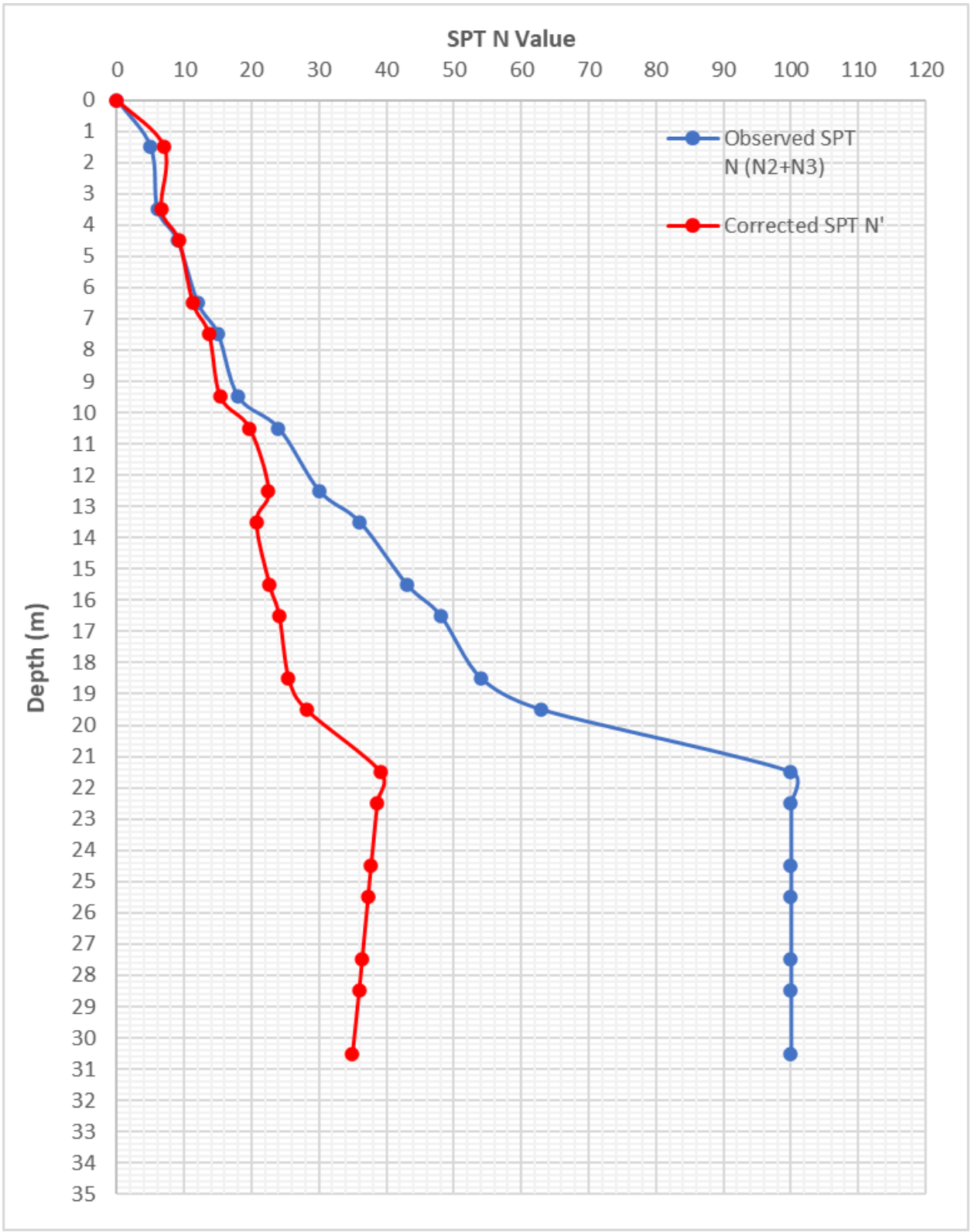
Observed SPT N (N2+N3)
Corrected SPT N'

BH-107


SPT N Value
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Depth (m)
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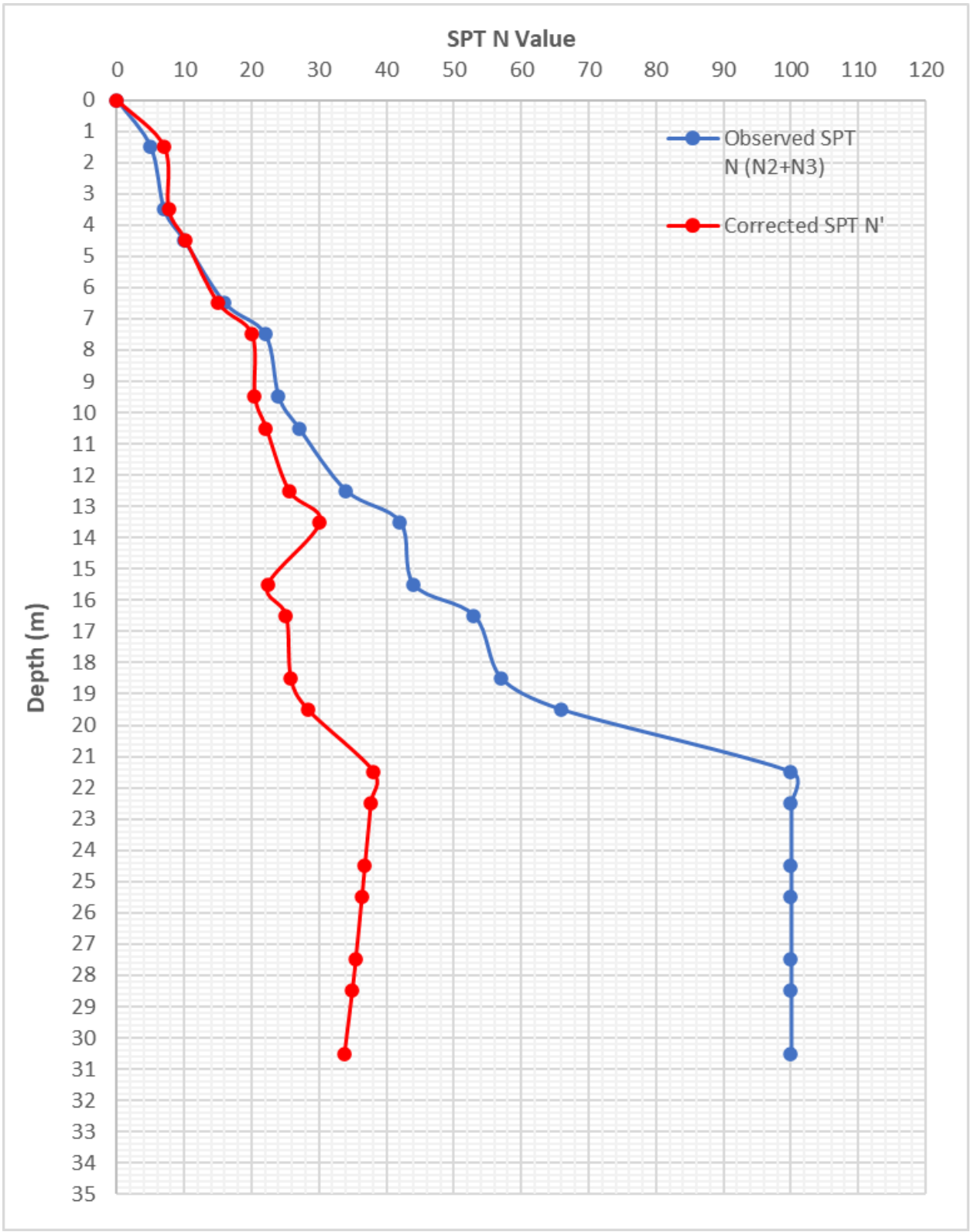
Observed SPT N (N2+N3)
Corrected SPT N'

BH-108


SPT N Value
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Depth (m)
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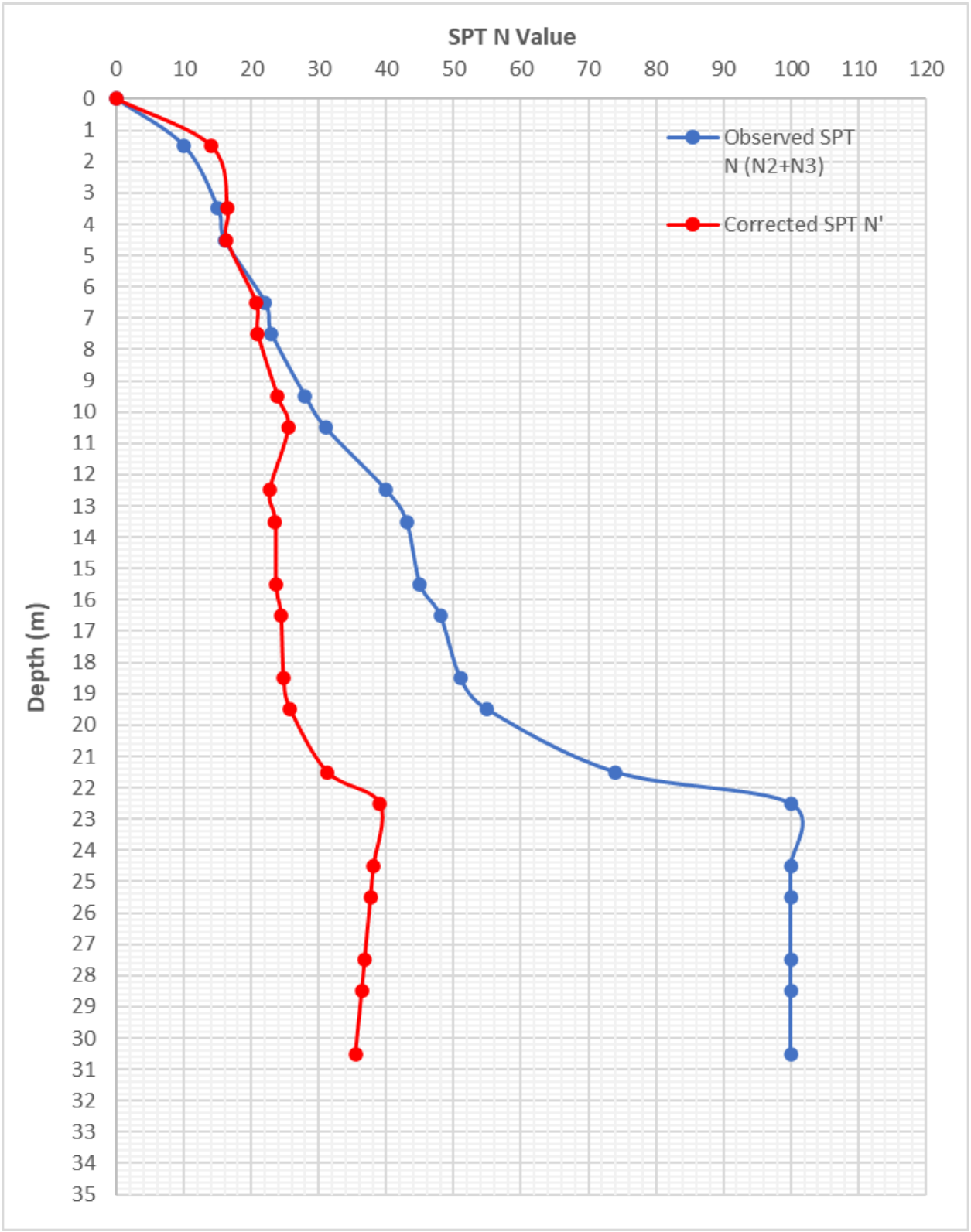
Observed SPT N (N2+N3)
Corrected SPT N'

BH-109


SPT N Value
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Depth (m)
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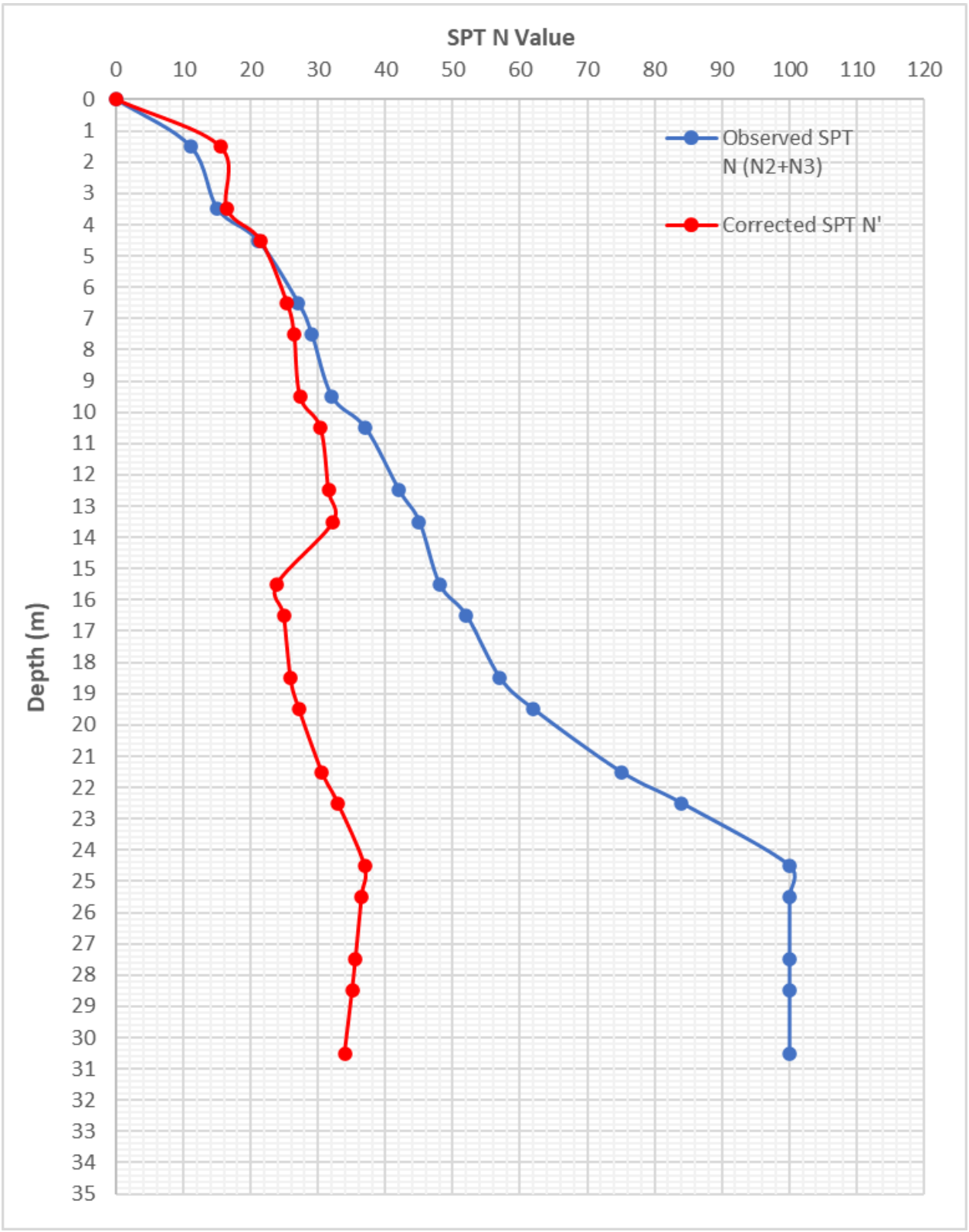
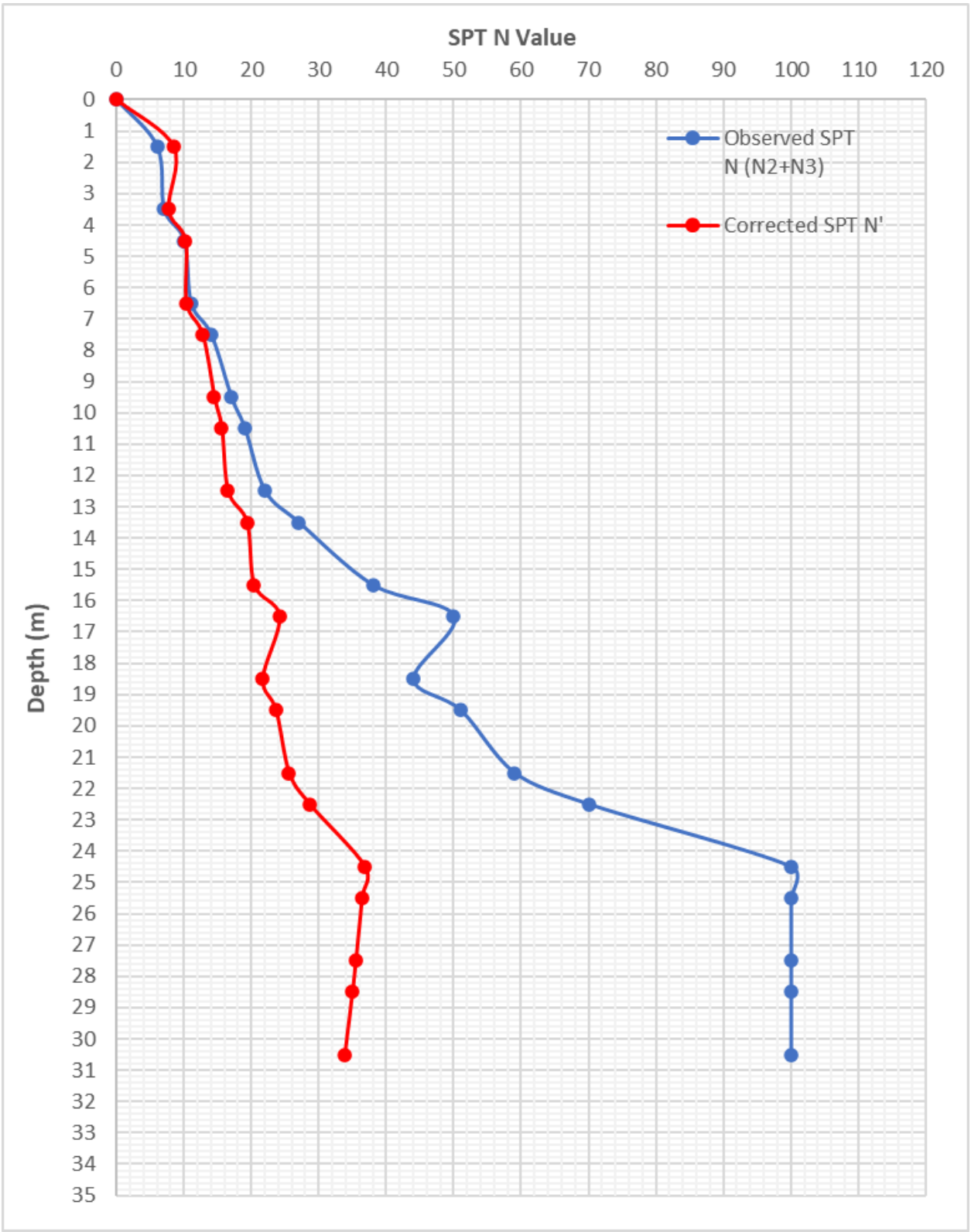
Observed SPT N (N2+N3)
Corrected SPT N'

D.13 Zone 13: CH: 11+400 km to 12+130 km (BH-111 to BH-116)

BH-111



BH-112


SPT N Value
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Depth (m)
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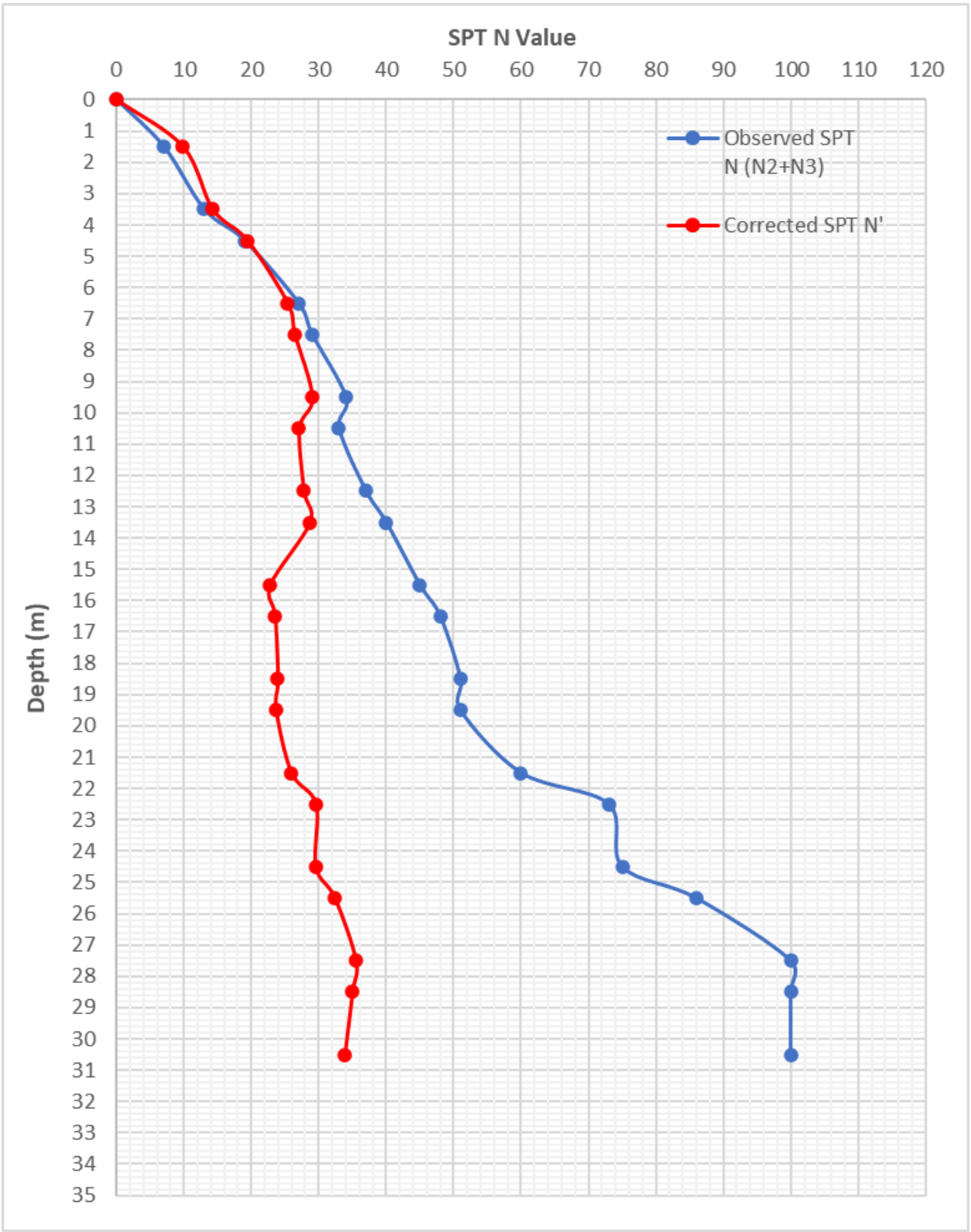
Observed SPT N (N2+N3)
Corrected SPT N'

BH-113


SPT N Value
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Depth (m)
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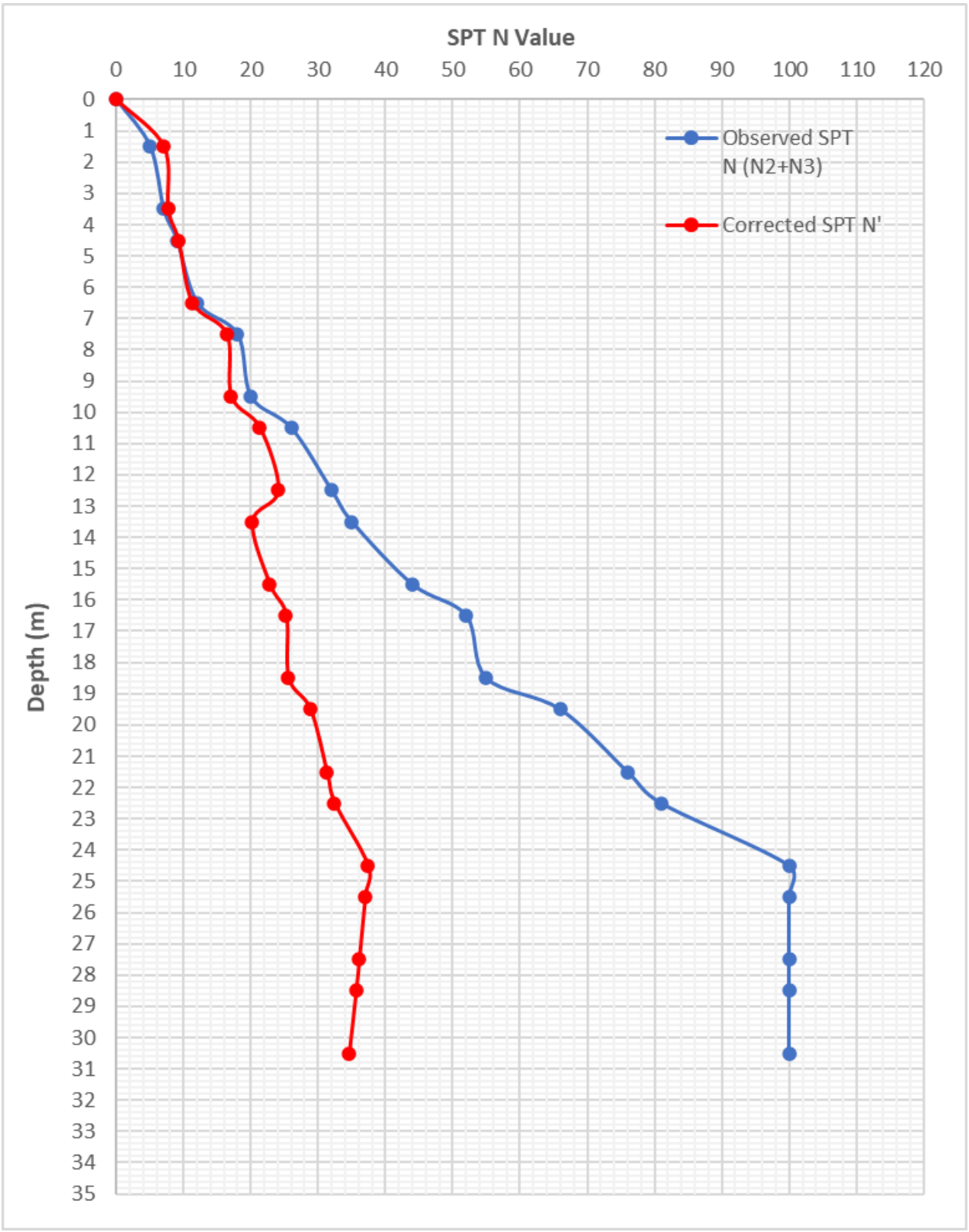
Observed SPT N (N2+N3)
Corrected SPT N'

BH-114


SPT N Value
0
10
20
30
40
50
60
70
80
90
100
110
120
Depth (m)
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1
2
3
4
5
6
7
8
9
10
11
12
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14
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17
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29
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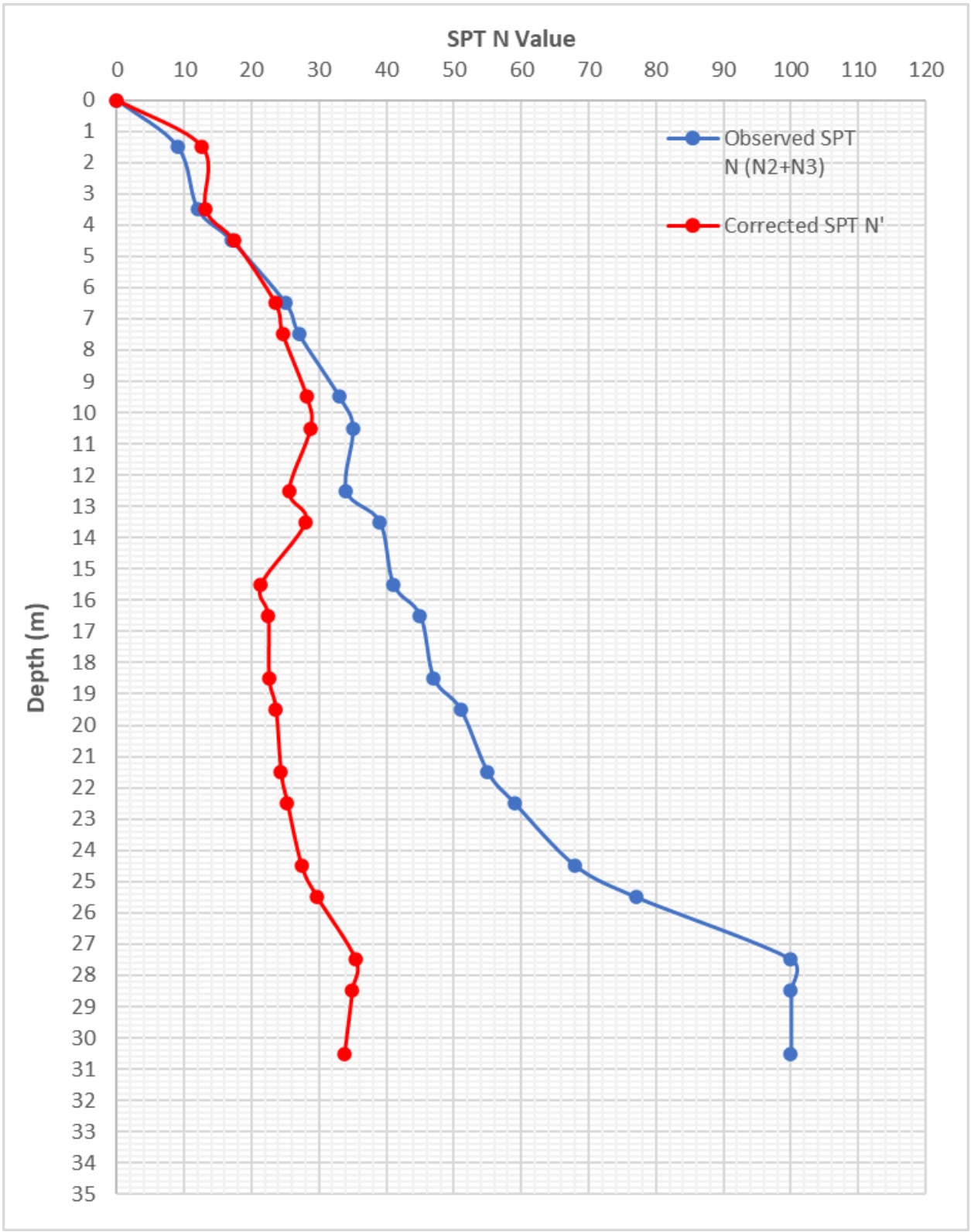
33
34
35
Observed SPT N (N2+N3)
Corrected SPT N'

BH-115


SPT N Value
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30
40
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70
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90
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Depth (m)
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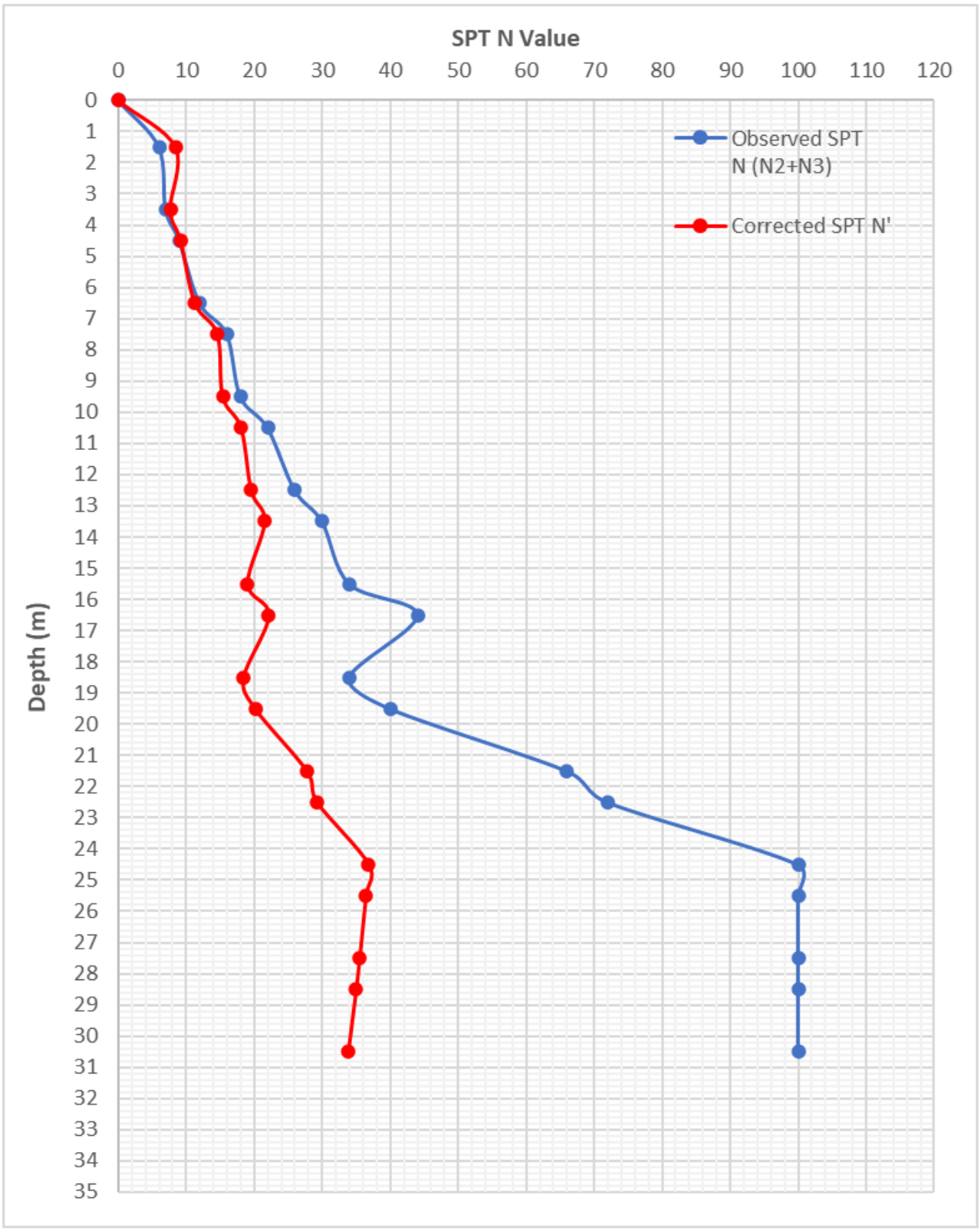
Observed SPT N (N2+N3)
Corrected SPT N'

BH-116


SPT N Value
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20
30
40
50
60
70
80
90
100
110
120
Depth (m)
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Observed SPT N (N2+N3)
Corrected SPT N'

Appendix E Field Permeability Test Results

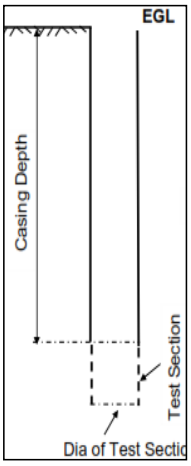
E.1 Zone 1: CH: 0-380 km to 0+500 km (BH-(-02) to BH-(-10))

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-02)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+499
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.805	**t_1 [min]:**	19.00
H_2/H_0:	0.657	**t_2 [min]:**	33.50
H_1/H_2:	1.226		

Coefficient of Permeability (K_t)			1.50E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.816E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	28.00	172.00	0.860	-
6	10.00	52.00	148.00	0.740	-
7	15.00	77.00	123.00	0.615	-
8	30.00	108.00	92.00	0.460	-
9	60.00	143.00	57.00	0.285	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

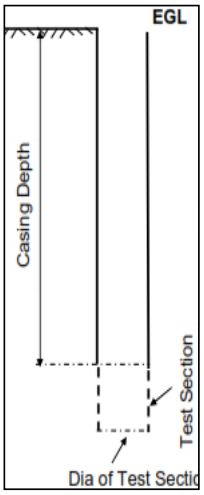
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-03)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+344
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	25.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.815	**t_1 [min]:**	19.00
H_2/H_0:	0.673	**t_2 [min]:**	33.50
H_1/H_2:	1.210		

Coefficient of Permeability (K_t)			1.40E-02		**[cm/min]**
η_t	8.95	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.468E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	13.00	287.00	0.957	-
4	2.00	28.00	272.00	0.907	-
5	5.00	63.00	237.00	0.790	-
6	10.00	94.00	206.00	0.687	-
7	15.00	132.00	168.00	0.560	-
8	30.00	175.00	125.00	0.417	-
9	60.00	220.00	80.00	0.267	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

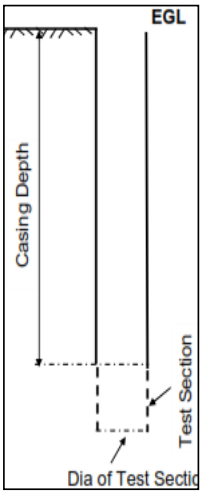
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-05)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+094
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.26

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	26.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.840	**t_1 [min]:**	19.00
H_2/H_0:	0.717	**t_2 [min]:**	33.50
H_1/H_2:	1.170		

Coefficient of Permeability (K_t)			1.16E-02		**[cm/min]**
η_t	8.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.185E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	12.00	188.00	0.940	-
5	5.00	24.00	176.00	0.880	-
6	10.00	38.00	162.00	0.810	-
7	15.00	53.00	147.00	0.735	-
8	30.00	71.00	129.00	0.645	-
9	60.00	109.00	91.00	0.455	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

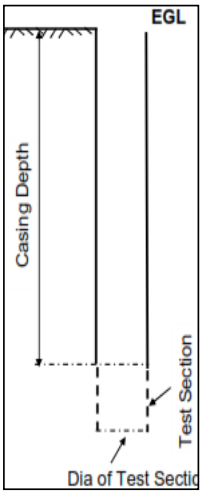
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-06)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0-015
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	23.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.824	**t_1 [min]:**	19.00
H_2/H_0:	0.689	**t_2 [min]:**	33.50
H_1/H_2:	1.195		

Coefficient of Permeability (K_t)			1.31E-02		**[cm/min]**
η_t	9.38	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.441E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	25.00	275.00	0.917	-
5	5.00	57.00	243.00	0.810	-
6	10.00	88.00	212.00	0.707	-
7	15.00	119.00	181.00	0.603	-
8	30.00	157.00	143.00	0.477	-
9	60.00	205.00	95.00	0.317	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

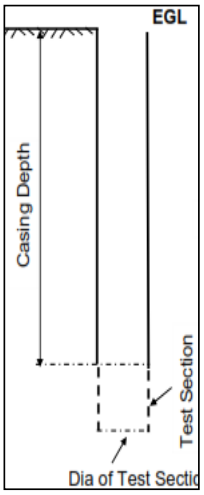
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-08)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0-174
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.65

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	26.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.760	**t_1 [min]:**	19.00
H_2/H_0:	0.577	**t_2 [min]:**	33.50
H_1/H_2:	1.318		

Coefficient of Permeability (K_t)			2.03E-02		**[cm/min]**
η_t	8.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.077E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	40.00	160.00	0.800	-
6	10.00	64.00	136.00	0.680	-
7	15.00	91.00	109.00	0.545	-
8	30.00	125.00	75.00	0.375	-
9	60.00	163.00	37.00	0.185	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

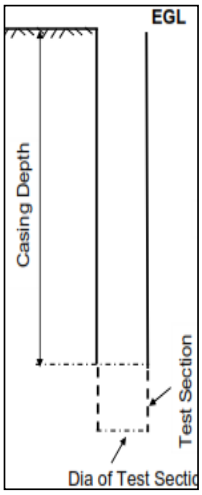
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-09)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0-224
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	22.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.805	**t_1 [min]:**	19.00
H_2/H_0:	0.657	**t_2 [min]:**	33.50
H_1/H_2:	1.226		

Coefficient of Permeability (K_t)			1.50E-02		**[cm/min]**
η_t	9.61	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.688E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	15.00	285.00	0.950	-
4	2.00	29.00	271.00	0.903	-
5	5.00	56.00	244.00	0.813	-
6	10.00	90.00	210.00	0.700	-
7	15.00	121.00	179.00	0.597	-
8	30.00	163.00	137.00	0.457	-
9	60.00	215.00	85.00	0.283	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

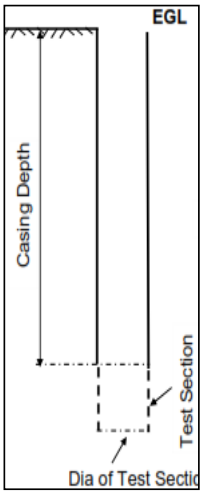
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-(-10)
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0-372
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	23.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.830	**t_1 [min]:**	19.00
H_2/H_0:	0.701	**t_2 [min]:**	33.50
H_1/H_2:	1.185		

Coefficient of Permeability (K_t)			1.25E-02		**[cm/min]**
η_t	9.38	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.369E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	11.00	289.00	0.963	-
4	2.00	23.00	277.00	0.923	-
5	5.00	48.00	252.00	0.840	-
6	10.00	80.00	220.00	0.733	-
7	15.00	113.00	187.00	0.623	-
8	30.00	149.00	151.00	0.503	-
9	60.00	197.00	103.00	0.343	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

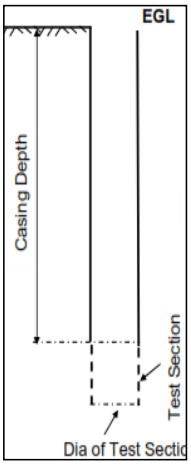
E.2 Zone 2: CH: 0+500 km to 1+450 km (BH-01 to BH-09)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-01
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+571
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	22.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.849	**t_1 [min]:**	19.00
H_2/H_0:	0.734	**t_2 [min]:**	33.50
H_1/H_2:	1.157		

Coefficient of Permeability (K_t)			1.07E-02		**[cm/min]**
η_t	9.61	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.207E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	5.00	295.00	0.983	-
3	1.00	9.00	291.00	0.970	-
4	2.00	19.00	281.00	0.937	-
5	5.00	43.00	257.00	0.857	-
6	10.00	68.00	232.00	0.773	-
7	15.00	96.00	204.00	0.680	-
8	30.00	127.00	173.00	0.577	-
9	60.00	176.00	124.00	0.413	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

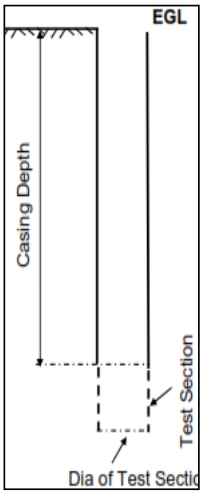
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-02
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+674
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	24.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.778	**t_1 [min]:**	19.00
H_2/H_0:	0.609	**t_2 [min]:**	33.50
H_1/H_2:	1.278		

Coefficient of Permeability (K_t)			1.80E-02		**[cm/min]**
η_t	9.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.932E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	14.00	186.00	0.930	-
4	2.00	20.00	180.00	0.900	-
5	5.00	36.00	164.00	0.820	-
6	10.00	51.00	149.00	0.745	-
7	15.00	70.00	130.00	0.650	-
8	30.00	94.00	106.00	0.530	-
9	60.00	142.00	58.00	0.290	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

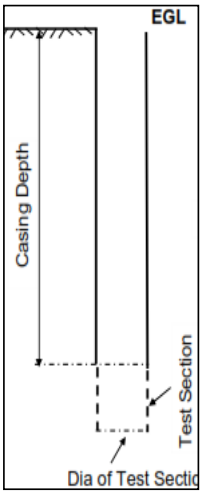
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-03
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+892
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	22.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.727	**t_1 [min]:**	19.00
H_2/H_0:	0.519	**t_2 [min]:**	33.50
H_1/H_2:	1.402		

Coefficient of Permeability (K_t)			2.48E-02		**[cm/min]**
η_t	9.61	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.793E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	10.00	190.00	0.950	-
4	2.00	20.00	180.00	0.900	-
5	5.00	46.00	154.00	0.770	-
6	10.00	71.00	129.00	0.645	-
7	15.00	98.00	102.00	0.510	-
8	30.00	127.00	73.00	0.365	-
9	60.00	173.00	27.00	0.135	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

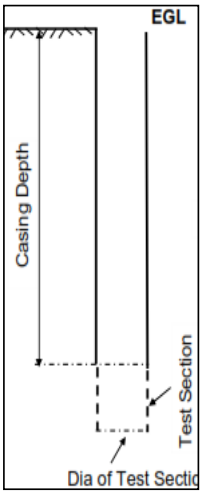
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-04
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	0+996
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	21.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.703	**t_1 [min]:**	19.00
H_2/H_0:	0.476	**t_2 [min]:**	33.50
H_1/H_2:	1.477		

Coefficient of Permeability (K_t)			2.87E-02		**[cm/min]**
η_t	9.84	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.303E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	18.00	182.00	0.910	-
5	5.00	42.00	158.00	0.790	-
6	10.00	76.00	124.00	0.620	-
7	15.00	108.00	92.00	0.460	-
8	30.00	139.00	61.00	0.305	-
9	60.00	185.00	15.00	0.075	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

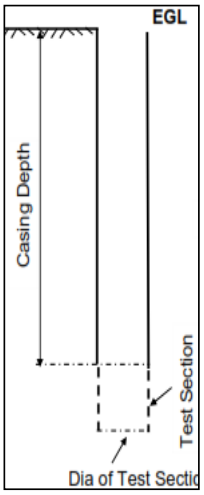
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-05
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+088
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	21.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.697	**t_1 [min]:**	19.00
H_2/H_0:	0.466	**t_2 [min]:**	33.50
H_1/H_2:	1.497		

Coefficient of Permeability (K_t)			2.97E-02		**[cm/min]**
η_t	9.84	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.415E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	6.00	194.00	0.970	-
3	1.00	12.00	188.00	0.940	-
4	2.00	23.00	177.00	0.885	-
5	5.00	51.00	149.00	0.745	-
6	10.00	75.00	125.00	0.625	-
7	15.00	108.00	92.00	0.460	-
8	30.00	142.00	58.00	0.290	-
9	60.00	188.00	12.00	0.060	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

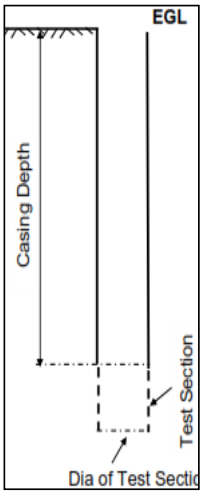
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-06
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+192
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.775	**t_1 [min]:**	19.00
H_2/H_0:	0.602	**t_2 [min]:**	33.50
H_1/H_2:	1.286		

Coefficient of Permeability (K_t)			1.85E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.236E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	11.00	189.00	0.945	-
4	2.00	20.00	180.00	0.900	-
5	5.00	32.00	168.00	0.840	-
6	10.00	47.00	153.00	0.765	-
7	15.00	59.00	141.00	0.705	-
8	30.00	80.00	120.00	0.600	-
9	60.00	136.00	64.00	0.320	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

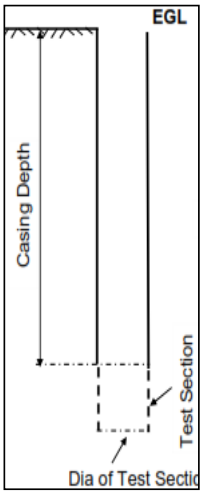
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-07
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+277
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.730	**t_1 [min]:**	19.00
H_2/H_0:	0.524	**t_2 [min]:**	33.50
H_1/H_2:	1.394		

Coefficient of Permeability (K_t)			2.44E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.954E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	6.00	194.00	0.970	-
3	1.00	12.00	188.00	0.940	-
4	2.00	22.00	178.00	0.890	-
5	5.00	38.00	162.00	0.810	-
6	10.00	71.00	129.00	0.645	-
7	15.00	98.00	102.00	0.510	-
8	30.00	126.00	74.00	0.370	-
9	60.00	172.00	28.00	0.140	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

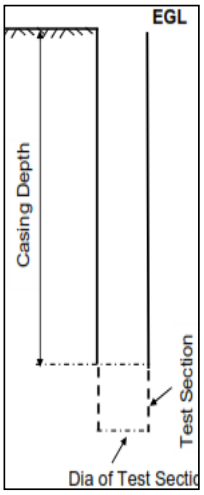
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-08
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+388
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	20.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.822	**t_1 [min]:**	19.00
H_2/H_0:	0.687	**t_2 [min]:**	33.50
H_1/H_2:	1.197		

Coefficient of Permeability (K_t)			1.33E-02		**[cm/min]**
η_t	10.09	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.565E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	9.00	191.00	0.955	-
4	2.00	15.00	185.00	0.925	-
5	5.00	22.00	178.00	0.890	-
6	10.00	40.00	160.00	0.800	-
7	15.00	62.00	138.00	0.690	-
8	30.00	77.00	123.00	0.615	-
9	60.00	119.00	81.00	0.405	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

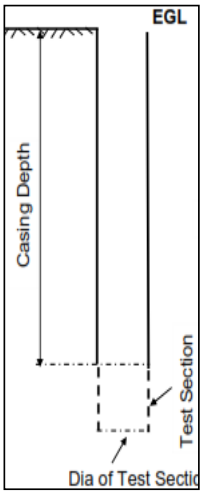
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-09
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+449
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.753	**t_1 [min]:**	19.00
H_2/H_0:	0.565	**t_2 [min]:**	33.50
H_1/H_2:	1.334		

Coefficient of Permeability (K_t)			2.12E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.564E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	18.00	182.00	0.910	-
5	5.00	33.00	167.00	0.835	-
6	10.00	66.00	134.00	0.670	-
7	15.00	90.00	110.00	0.550	-
8	30.00	119.00	81.00	0.405	-
9	60.00	162.00	38.00	0.190	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

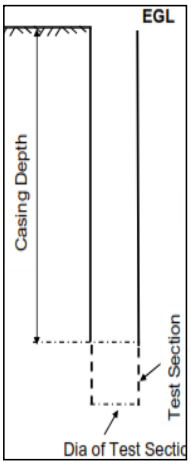
E.3 Zone 3: CH: 1+450 km to 2+515 km (BH-11 to BH-20A)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-11
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+610
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.768	**t_1 [min]:**	19.00
H_2/H_0:	0.591	**t_2 [min]:**	33.50
H_1/H_2:	1.299		

Coefficient of Permeability (K_t)			1.93E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.329E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	17.00	183.00	0.915	-
5	5.00	35.00	165.00	0.825	-
6	10.00	62.00	138.00	0.690	-
7	15.00	85.00	115.00	0.575	-
8	30.00	113.00	87.00	0.435	-
9	60.00	155.00	45.00	0.225	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

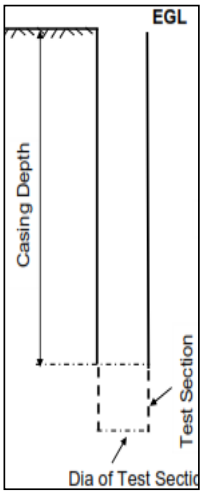
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-12
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+745
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.797	**t_1 [min]:**	19.00
H_2/H_0:	0.643	**t_2 [min]:**	33.50
H_1/H_2:	1.241		

Coefficient of Permeability (K_t)			1.59E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.020E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	15.00	185.00	0.925	-
5	5.00	26.00	174.00	0.870	-
6	10.00	43.00	157.00	0.785	-
7	15.00	60.00	140.00	0.700	-
8	30.00	79.00	121.00	0.605	-
9	60.00	127.00	73.00	0.365	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

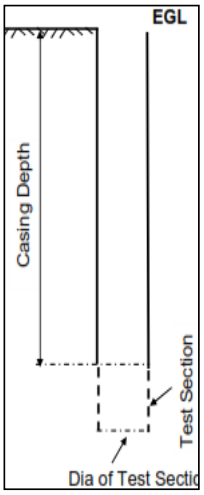
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-13
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+859
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.745	**t_1 [min]:**	19.00
H_2/H_0:	0.551	**t_2 [min]:**	33.50
H_1/H_2:	1.353		

Coefficient of Permeability (K_t)			2.22E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.688E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	20.00	180.00	0.900	-
5	5.00	38.00	162.00	0.810	-
6	10.00	66.00	134.00	0.670	-
7	15.00	92.00	108.00	0.540	-
8	30.00	119.00	81.00	0.405	-
9	60.00	164.00	36.00	0.180	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

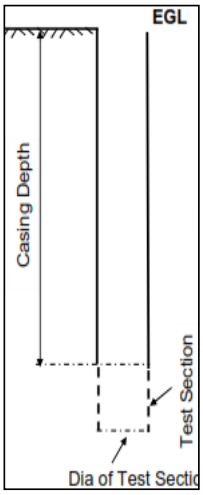
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-14
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	1+952
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.730	**t_1 [min]:**	19.00
H_2/H_0:	0.523	**t_2 [min]:**	33.50
H_1/H_2:	1.394		

Coefficient of Permeability (K_t)			2.45E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.960E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	6.00	194.00	0.970	-
3	1.00	12.00	188.00	0.940	-
4	2.00	22.00	178.00	0.890	-
5	5.00	41.00	159.00	0.795	-
6	10.00	68.00	132.00	0.660	-
7	15.00	93.00	107.00	0.535	-
8	30.00	122.00	78.00	0.390	-
9	60.00	170.00	30.00	0.150	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

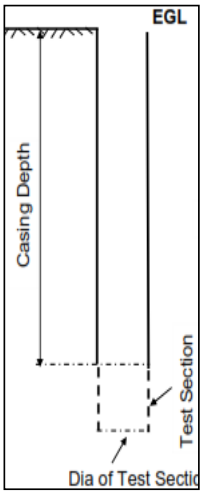
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-15
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+035
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.858	**t_1 [min]:**	19.00
H_2/H_0:	0.749	**t_2 [min]:**	33.50
H_1/H_2:	1.145		

Coefficient of Permeability (K_t)			9.98E-03		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.207E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	6.00	194.00	0.970	-
3	1.00	11.00	189.00	0.945	-
4	2.00	19.00	181.00	0.905	-
5	5.00	36.00	164.00	0.820	-
6	10.00	62.00	138.00	0.690	-
7	15.00	85.00	115.00	0.575	-
8	30.00	112.00	88.00	0.440	-
9	60.00	152.00	48.00	0.240	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

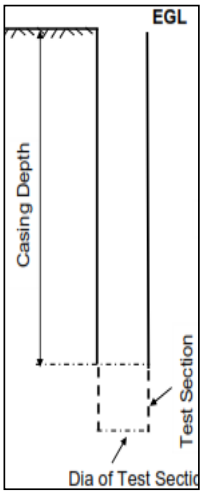
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-16
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+135
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.768	**t_1 [min]:**	19.00
H_2/H_0:	0.591	**t_2 [min]:**	33.50
H_1/H_2:	1.299		

Coefficient of Permeability (K_t)			1.93E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.388E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	13.00	187.00	0.935	-
5	5.00	26.00	174.00	0.870	-
6	10.00	45.00	155.00	0.775	-
7	15.00	70.00	130.00	0.650	-
8	30.00	98.00	102.00	0.510	-
9	60.00	147.00	53.00	0.265	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

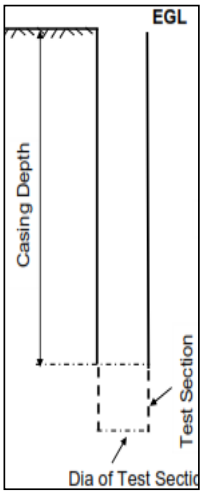
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-17
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+230
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.793	**t_1 [min]:**	19.00
H_2/H_0:	0.635	**t_2 [min]:**	33.50
H_1/H_2:	1.249		

Coefficient of Permeability (K_t)			1.64E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.979E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	10.00	190.00	0.950	-
4	2.00	18.00	182.00	0.910	-
5	5.00	32.00	168.00	0.840	-
6	10.00	57.00	143.00	0.715	-
7	15.00	79.00	121.00	0.605	-
8	30.00	104.00	96.00	0.480	-
9	60.00	144.00	56.00	0.280	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

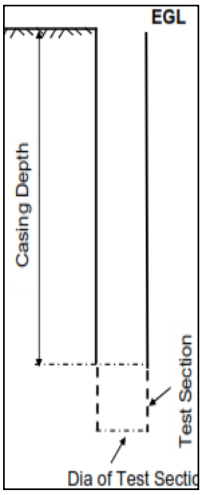
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-18
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+567
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	16.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.733	**t_1 [min]:**	19.00
H_2/H_0:	0.529	**t_2 [min]:**	33.50
H_1/H_2:	1.385		

Coefficient of Permeability (K_t)			2.40E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.971E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	7.00	193.00	0.965	-
3	1.00	14.00	186.00	0.930	-
4	2.00	25.00	175.00	0.875	-
5	5.00	52.00	148.00	0.740	-
6	10.00	79.00	121.00	0.605	-
7	15.00	102.00	98.00	0.490	-
8	30.00	129.00	71.00	0.355	-
9	60.00	172.00	28.00	0.140	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

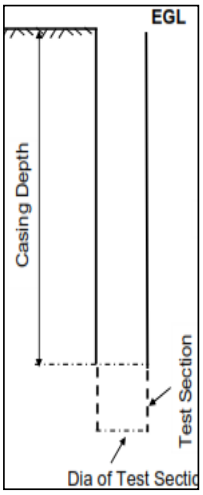
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-18A
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+279
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.806	**t_1 [min]:**	19.00
H_2/H_0:	0.658	**t_2 [min]:**	33.50
H_1/H_2:	1.225		

Coefficient of Permeability (K_t)			1.49E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.898E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	15.00	185.00	0.925	-
5	5.00	24.00	176.00	0.880	-
6	10.00	39.00	161.00	0.805	-
7	15.00	57.00	143.00	0.715	-
8	30.00	81.00	119.00	0.595	-
9	60.00	126.00	74.00	0.370	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

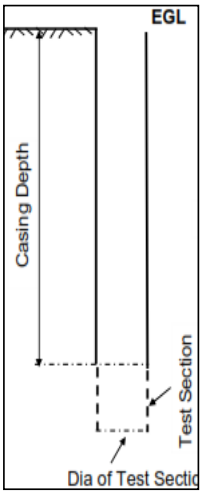
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-19
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+591
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.10

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.822	**t_1 [min]:**	19.00
H_2/H_0:	0.686	**t_2 [min]:**	33.50
H_1/H_2:	1.198		

Coefficient of Permeability (K_t)			1.33E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.735E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	4.00	296.00	0.987	-
3	1.00	9.00	291.00	0.970	-
4	2.00	14.00	286.00	0.953	-
5	5.00	28.00	272.00	0.907	-
6	10.00	47.00	253.00	0.843	-
7	15.00	79.00	221.00	0.737	-
8	30.00	131.00	169.00	0.563	-
9	60.00	188.00	112.00	0.373	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

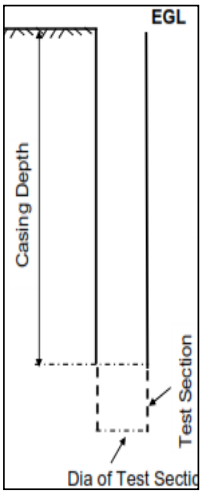
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-19A
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+420
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.805	**t_1 [min]:**	19.00
H_2/H_0:	0.656	**t_2 [min]:**	33.50
H_1/H_2:	1.227		

Coefficient of Permeability (K_t)			1.50E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.866E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	8.00	192.00	0.960	-
4	2.00	16.00	184.00	0.920	-
5	5.00	33.00	167.00	0.835	-
6	10.00	58.00	142.00	0.710	-
7	15.00	78.00	122.00	0.610	-
8	30.00	105.00	95.00	0.475	-
9	60.00	141.00	59.00	0.295	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

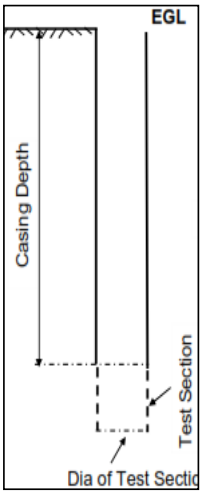
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-20
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+541
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	-

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.836	**t_1 [min]:**	19.00
H_2/H_0:	0.711	**t_2 [min]:**	33.50
H_1/H_2:	1.176		

Coefficient of Permeability (K_t)			1.19E-02		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.641E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	1.00	299.00	1.000	-
2	0.30	4.00	296.00	0.990	-
3	1.00	9.00	291.00	0.973	-
4	2.00	18.00	282.00	0.943	-
5	5.00	29.00	271.00	0.906	-
6	10.00	52.00	248.00	0.829	-
7	15.00	94.00	206.00	0.689	-
8	30.00	137.00	163.00	0.545	-
9	60.00	187.00	113.00	0.378	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

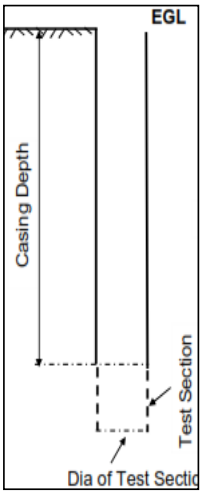
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-20A
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+514
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.90

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.825	**t_1 [min]:**	19.00
H_2/H_0:	0.691	**t_2 [min]:**	33.50
H_1/H_2:	1.193		

Coefficient of Permeability (K_t)			1.30E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.573E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	8.00	192.00	0.960	-
4	2.00	14.00	186.00	0.930	-
5	5.00	21.00	179.00	0.895	-
6	10.00	36.00	164.00	0.820	-
7	15.00	52.00	148.00	0.740	-
8	30.00	76.00	124.00	0.620	-
9	60.00	117.00	83.00	0.415	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

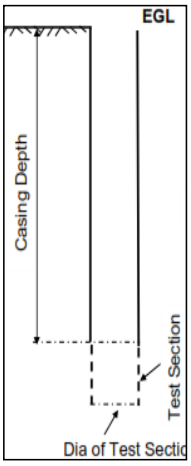
E.4 Zone 4: CH: 2+515 km to 3+515 km (BH-21 to BH-30)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-21
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+605
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.736	**t_1 [min]:**	19.00
H_2/H_0:	0.534	**t_2 [min]:**	33.50
H_1/H_2:	1.377		

Coefficient of Permeability (K_t)			2.36E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.920E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	14.00	286.00	0.953	-
4	2.00	22.00	278.00	0.927	-
5	5.00	36.00	264.00	0.880	-
6	10.00	60.00	240.00	0.800	-
7	15.00	82.00	218.00	0.727	-
8	30.00	140.00	160.00	0.533	-
9	60.00	235.00	65.00	0.217	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

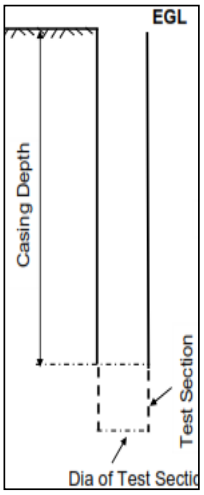
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-22
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+719
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.20

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.736	**t_1 [min]:**	19.00
H_2/H_0:	0.535	**t_2 [min]:**	33.50
H_1/H_2:	1.376		

Coefficient of Permeability (K_t)			2.35E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.914E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	16.00	284.00	0.947	-
4	2.00	31.00	269.00	0.897	-
5	5.00	60.00	240.00	0.800	-
6	10.00	110.00	190.00	0.633	-
7	15.00	155.00	145.00	0.483	-
8	30.00	196.00	104.00	0.347	-
9	60.00	258.00	42.00	0.140	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

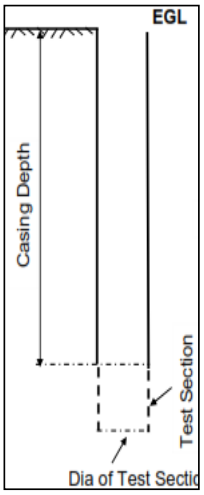
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-23
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+823
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	10.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.728	**t_1 [min]:**	19.00
H_2/H_0:	0.520	**t_2 [min]:**	33.50
H_1/H_2:	1.400		

Coefficient of Permeability (K_t)			2.48E-02		**[cm/min]**
η_t	13.1	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.793E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	16.00	284.00	0.947	-
4	2.00	33.00	267.00	0.890	-
5	5.00	61.00	239.00	0.797	-
6	10.00	98.00	202.00	0.673	-
7	15.00	142.00	158.00	0.527	-
8	30.00	197.00	103.00	0.343	-
9	60.00	262.00	38.00	0.127	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

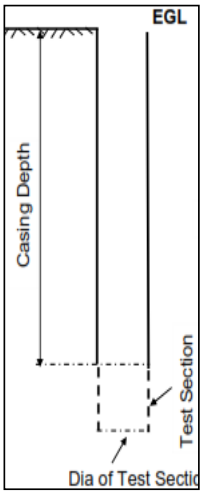
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-24
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	2+920
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.20

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	10.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.805	**t_1 [min]:**	19.00
H_2/H_0:	0.656	**t_2 [min]:**	33.50
H_1/H_2:	1.227		

Coefficient of Permeability (K_t)			1.50E-02		**[cm/min]**
η_t	13.1	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.306E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	15.00	285.00	0.950	-
4	2.00	31.00	269.00	0.897	-
5	5.00	58.00	242.00	0.807	-
6	10.00	92.00	208.00	0.693	-
7	15.00	124.00	176.00	0.587	-
8	30.00	149.00	151.00	0.503	-
9	60.00	206.00	94.00	0.313	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

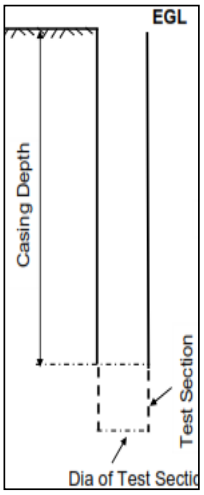
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-25
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+033
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	16.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.728	**t_1 [min]:**	19.00
H_2/H_0:	0.520	**t_2 [min]:**	33.50
H_1/H_2:	1.400		

Coefficient of Permeability (K_t)			2.48E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.069E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	25.00	275.00	0.917	-
5	5.00	56.00	244.00	0.813	-
6	10.00	93.00	207.00	0.690	-
7	15.00	147.00	153.00	0.510	-
8	30.00	208.00	92.00	0.307	-
9	60.00	265.00	35.00	0.117	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

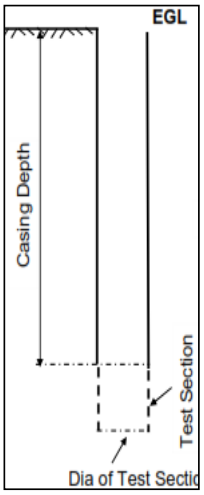
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-26
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+122
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	11.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.768	**t_1 [min]:**	19.00
H_2/H_0:	0.591	**t_2 [min]:**	33.50
H_1/H_2:	1.300		

Coefficient of Permeability (K_t)			1.93E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.519E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	9.00	291.00	0.970	-
3	1.00	17.00	283.00	0.943	-
4	2.00	30.00	270.00	0.900	-
5	5.00	61.00	239.00	0.797	-
6	10.00	92.00	208.00	0.693	-
7	15.00	120.00	180.00	0.600	-
8	30.00	168.00	132.00	0.440	-
9	60.00	232.00	68.00	0.227	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

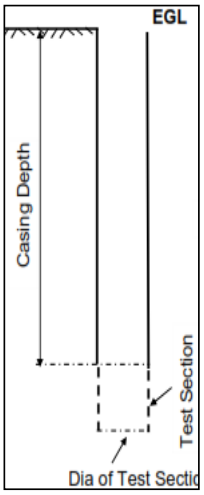
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-27
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+205
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.30

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.737	**t_1 [min]:**	19.00
H_2/H_0:	0.537	**t_2 [min]:**	33.50
H_1/H_2:	1.374		

Coefficient of Permeability (K_t)			2.34E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.051E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	16.00	284.00	0.947	-
4	2.00	33.00	267.00	0.890	-
5	5.00	63.00	237.00	0.790	-
6	10.00	107.00	193.00	0.643	-
7	15.00	156.00	144.00	0.480	-
8	30.00	206.00	94.00	0.313	-
9	60.00	262.00	38.00	0.127	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

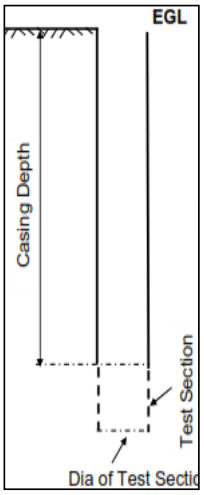
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-28
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+304
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.10

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	20.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.759	**t_1 [min]:**	19.00
H_2/H_0:	0.576	**t_2 [min]:**	33.50
H_1/H_2:	1.319		

Coefficient of Permeability (K_t)			2.04E-02		**[cm/min]**
η_t	10.09	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.405E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	16.00	284.00	0.947	-
4	2.00	23.00	277.00	0.923	-
5	5.00	52.00	248.00	0.827	-
6	10.00	78.00	222.00	0.740	-
7	15.00	108.00	192.00	0.640	-
8	30.00	152.00	148.00	0.493	-
9	60.00	227.00	73.00	0.243	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

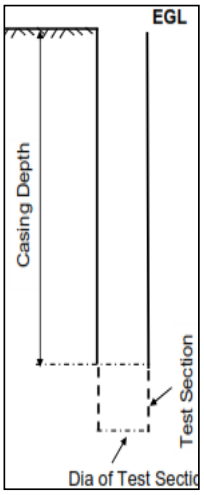
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-28A
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+367
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.70

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.817	**t_1 [min]:**	19.00
H_2/H_0:	0.678	**t_2 [min]:**	33.50
H_1/H_2:	1.206		

Coefficient of Permeability (K_t)			1.38E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.752E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	5.00	195.00	0.975	-
4	2.00	9.00	191.00	0.955	-
5	5.00	16.00	184.00	0.920	-
6	10.00	31.00	169.00	0.845	-
7	15.00	56.00	144.00	0.720	-
8	30.00	78.00	122.00	0.610	-
9	60.00	121.00	79.00	0.395	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

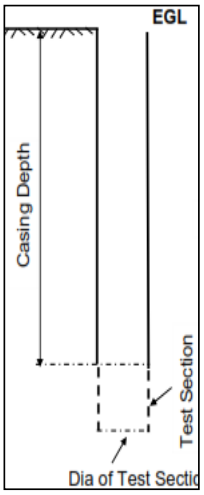
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-29
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+391
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.60

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.794	**t_1 [min]:**	19.00
H_2/H_0:	0.637	**t_2 [min]:**	33.50
H_1/H_2:	1.247		

Coefficient of Permeability (K_t)			1.62E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.172E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	4.00	296.00	0.987	-
3	1.00	9.00	291.00	0.970	-
4	2.00	16.00	284.00	0.947	-
5	5.00	31.00	269.00	0.897	-
6	10.00	56.00	244.00	0.813	-
7	15.00	88.00	212.00	0.707	-
8	30.00	120.00	180.00	0.600	-
9	60.00	194.00	106.00	0.353	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

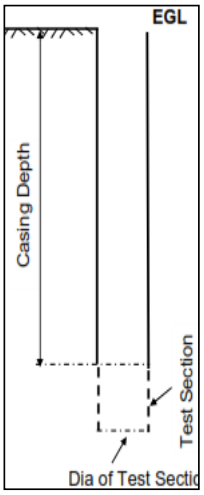
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-30
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+514
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.55

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.844	**t_1 [min]:**	19.00
H_2/H_0:	0.724	**t_2 [min]:**	33.50
H_1/H_2:	1.165		

Coefficient of Permeability (K_t)			1.12E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.358E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	4.00	296.00	0.987	-
3	1.00	6.00	294.00	0.980	-
4	2.00	9.00	291.00	0.970	-
5	5.00	13.00	287.00	0.957	-
6	10.00	30.00	270.00	0.900	-
7	15.00	42.00	258.00	0.860	-
8	30.00	81.00	219.00	0.730	-
9	60.00	145.00	155.00	0.517	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

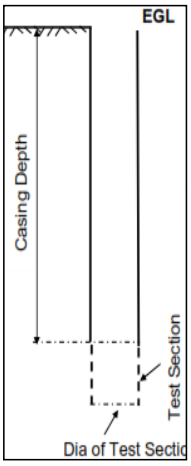
E.5 Zone 5: CH: CH: 3+515 km to 4+520 km (BH-31 to BH-40)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-31
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+643
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	16.10

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.843	**t_1 [min]:**	19.00
H_2/H_0:	0.723	**t_2 [min]:**	33.50
H_1/H_2:	1.166		

Coefficient of Permeability (K_t)			1.13E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.516E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	11.00	289.00	0.963	-
3	1.00	21.00	279.00	0.930	-
4	2.00	38.00	262.00	0.873	-
5	5.00	82.00	218.00	0.727	-
6	10.00	144.00	156.00	0.520	-
7	15.00	191.00	109.00	0.363	-
8	30.00	203.00	97.00	0.323	-
9	60.00	231.00	69.00	0.230	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

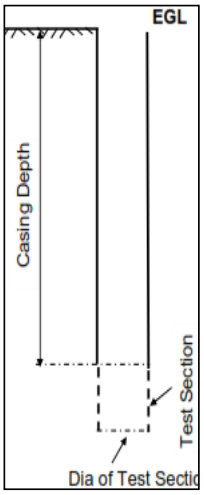
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-32
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+730
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.60

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	13.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.816	**t_1 [min]:**	19.00
H_2/H_0:	0.676	**t_2 [min]:**	33.50
H_1/H_2:	1.207		

Coefficient of Permeability (K_t)			1.39E-02		**[cm/min]**
η_t	12.06	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.956E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	2.00	298.00	0.993	-
3	1.00	7.00	293.00	0.977	-
4	2.00	14.00	286.00	0.953	-
5	5.00	26.00	274.00	0.913	-
6	10.00	49.00	251.00	0.837	-
7	15.00	72.00	228.00	0.760	-
8	30.00	104.00	196.00	0.653	-
9	60.00	173.00	127.00	0.423	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

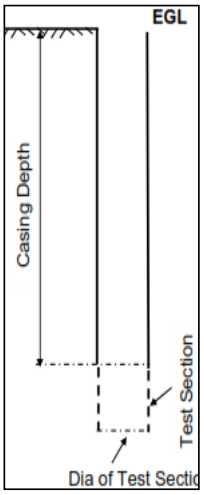
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-33
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+792
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.748	**t_1 [min]:**	19.00
H_2/H_0:	0.555	**t_2 [min]:**	33.50
H_1/H_2:	1.347		

Coefficient of Permeability (K_t)			2.19E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.790E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	7.00	193.00	0.965	-
3	1.00	15.00	185.00	0.925	-
4	2.00	28.00	172.00	0.860	-
5	5.00	57.00	143.00	0.715	-
6	10.00	82.00	118.00	0.590	-
7	15.00	110.00	90.00	0.450	-
8	30.00	147.00	53.00	0.265	-
9	60.00	176.00	24.00	0.120	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

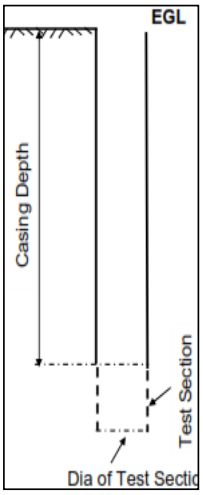
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-34
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	3+883
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.65

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.738	**t_1 [min]:**	19.00
H_2/H_0:	0.538	**t_2 [min]:**	33.50
H_1/H_2:	1.371		

Coefficient of Permeability (K_t)			2.32E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.810E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	18.00	182.00	0.910	-
5	5.00	30.00	170.00	0.850	-
6	10.00	47.00	153.00	0.765	-
7	15.00	69.00	131.00	0.655	-
8	30.00	95.00	105.00	0.525	-
9	60.00	156.00	44.00	0.220	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

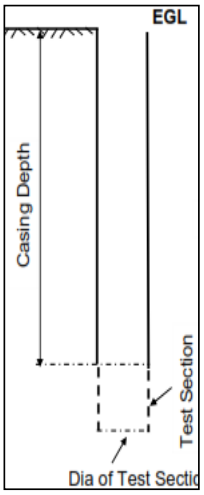
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-35
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+014
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.800	**t_1 [min]:**	19.00
H_2/H_0:	0.647	**t_2 [min]:**	33.50
H_1/H_2:	1.237		

Coefficient of Permeability (K_t)			1.56E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.093E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	32.00	168.00	0.840	-
6	10.00	48.00	152.00	0.760	-
7	15.00	69.00	131.00	0.655	-
8	30.00	96.00	104.00	0.520	-
9	60.00	138.00	62.00	0.310	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

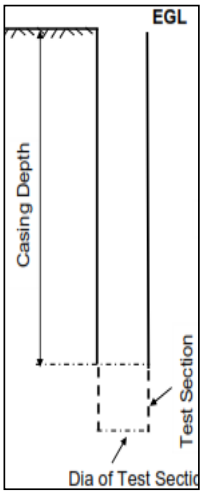
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-36
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+093
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.814	**t_1 [min]:**	19.00
H_2/H_0:	0.673	**t_2 [min]:**	33.50
H_1/H_2:	1.210		

Coefficient of Permeability (K_t)			1.41E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.789E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	29.00	171.00	0.855	-
6	10.00	48.00	152.00	0.760	-
7	15.00	68.00	132.00	0.660	-
8	30.00	87.00	113.00	0.565	-
9	60.00	128.00	72.00	0.360	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

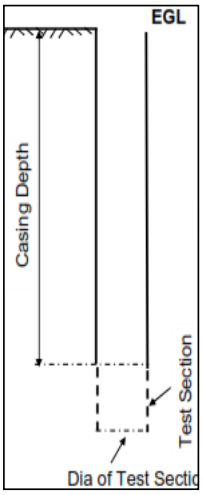
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-37
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+210
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.30

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.908	**t_1 [min]:**	19.00
H_2/H_0:	0.838	**t_2 [min]:**	33.50
H_1/H_2:	1.084		

Coefficient of Permeability (K_t)			5.91E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			7.521E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	3.00	197.00	0.985	-
4	2.00	4.00	196.00	0.980	-
5	5.00	9.00	191.00	0.955	-
6	10.00	15.00	185.00	0.925	-
7	15.00	21.00	179.00	0.895	-
8	30.00	32.00	168.00	0.840	-
9	60.00	59.00	141.00	0.705	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

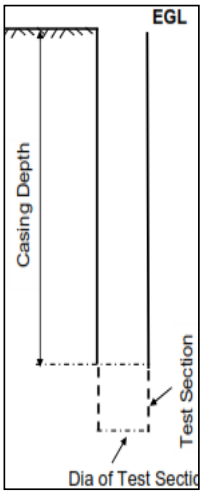
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-38
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+334
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.75

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	9.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.915	**t_1 [min]:**	19.00
H_2/H_0:	0.850	**t_2 [min]:**	33.50
H_1/H_2:	1.076		

Coefficient of Permeability (K_t)			5.40E-03		**[cm/min]**
η_t	13.48	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.517E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	3.00	197.00	0.985	-
4	2.00	7.00	193.00	0.965	-
5	5.00	10.00	190.00	0.950	-
6	10.00	19.00	181.00	0.905	-
7	15.00	26.00	174.00	0.870	-
8	30.00	38.00	162.00	0.810	-
9	60.00	62.00	138.00	0.690	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

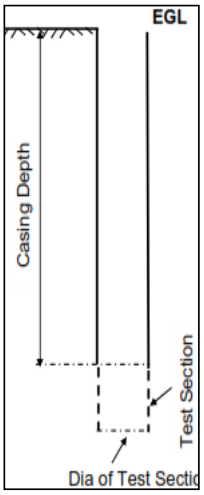
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-39
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+425
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.906	**t_1 [min]:**	19.00
H_2/H_0:	0.835	**t_2 [min]:**	33.50
H_1/H_2:	1.086		

Coefficient of Permeability (K_t)			6.05E-03		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.316E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	4.00	196.00	0.980	-
4	2.00	9.00	191.00	0.955	-
5	5.00	13.00	187.00	0.935	-
6	10.00	21.00	179.00	0.895	-
7	15.00	34.00	166.00	0.830	-
8	30.00	46.00	154.00	0.770	-
9	60.00	71.00	129.00	0.645	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

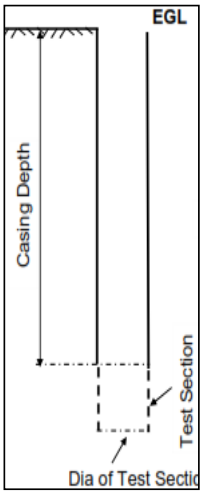
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-40
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+518
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.70

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.750	**t_1 [min]:**	19.00
H_2/H_0:	0.560	**t_2 [min]:**	33.50
H_1/H_2:	1.340		

Coefficient of Permeability (K_t)			2.15E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.741E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	29.00	171.00	0.855	-
6	10.00	48.00	152.00	0.760	-
7	15.00	66.00	134.00	0.670	-
8	30.00	93.00	107.00	0.535	-
9	60.00	151.00	49.00	0.245	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

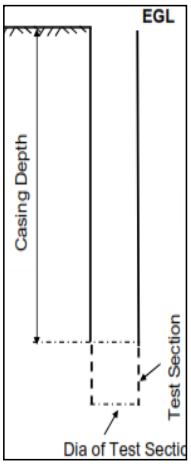
E.6 Zone 6: CH: CH: 4+515 km to 5+530 km (BH-41 to BH-50)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-41
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+617
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.69

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	12.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.755	**t_1 [min]:**	19.00
H_2/H_0:	0.568	**t_2 [min]:**	33.50
H_1/H_2:	1.329		

Coefficient of Permeability (K_t)			2.09E-02		**[cm/min]**
η_t	12.39	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.031E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	14.00	186.00	0.930	-
5	5.00	26.00	174.00	0.870	-
6	10.00	48.00	152.00	0.760	-
7	15.00	64.00	136.00	0.680	-
8	30.00	82.00	118.00	0.590	-
9	60.00	144.00	56.00	0.280	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

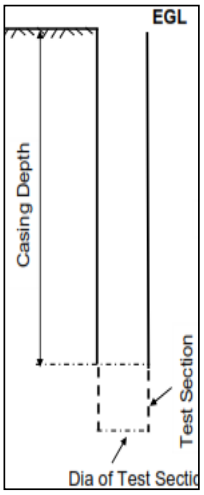
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-42
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+751
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.70

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	13.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.850	**t_1 [min]:**	19.00
H_2/H_0:	0.735	**t_2 [min]:**	33.50
H_1/H_2:	1.156		

Coefficient of Permeability (K_t)			1.07E-02		**[cm/min]**
η_t	12.06	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.503E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	28.00	172.00	0.860	-
6	10.00	44.00	156.00	0.780	-
7	15.00	56.00	144.00	0.720	-
8	30.00	72.00	128.00	0.640	-
9	60.00	107.00	93.00	0.465	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

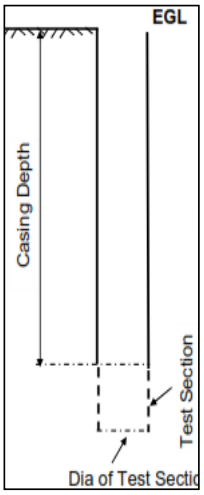
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-43
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+833
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.810	**t_1 [min]:**	19.00
H_2/H_0:	0.666	**t_2 [min]:**	33.50
H_1/H_2:	1.217		

Coefficient of Permeability (K_t)			1.45E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.937E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	15.00	185.00	0.925	-
5	5.00	29.00	171.00	0.855	-
6	10.00	45.00	155.00	0.775	-
7	15.00	68.00	132.00	0.660	-
8	30.00	92.00	108.00	0.540	-
9	60.00	132.00	68.00	0.340	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

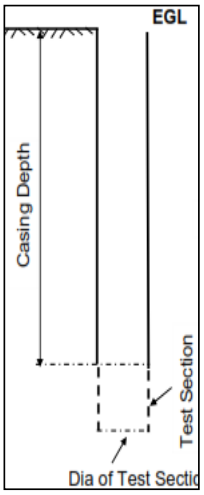
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-44
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	4+910
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.85

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.826	**t_1 [min]:**	19.00
H_2/H_0:	0.694	**t_2 [min]:**	33.50
H_1/H_2:	1.191		

Coefficient of Permeability (K_t)			1.29E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.721E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	27.00	173.00	0.865	-
6	10.00	40.00	160.00	0.800	-
7	15.00	52.00	148.00	0.740	-
8	30.00	68.00	132.00	0.660	-
9	60.00	111.00	89.00	0.445	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

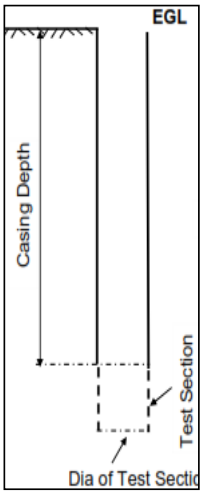
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-45
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+030
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.939	**t_1 [min]:**	19.00
H_2/H_0:	0.892	**t_2 [min]:**	33.50
H_1/H_2:	1.053		

Coefficient of Permeability (K_t)			3.77E-03		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			5.183E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	3.00	197.00	0.985	-
4	2.00	7.00	193.00	0.965	-
5	5.00	14.00	186.00	0.930	-
6	10.00	22.00	178.00	0.890	-
7	15.00	31.00	169.00	0.845	-
8	30.00	47.00	153.00	0.765	-
9	60.00	63.00	137.00	0.685	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

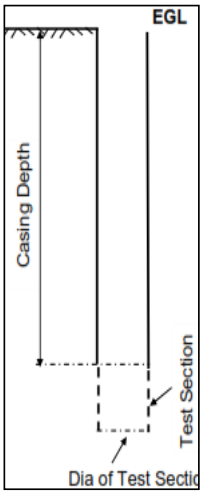
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-45A
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+080
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.771	**t_1 [min]:**	19.00
H_2/H_0:	0.596	**t_2 [min]:**	33.50
H_1/H_2:	1.293		

Coefficient of Permeability (K_t)			1.89E-02		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.599E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	14.00	286.00	0.953	-
4	2.00	22.00	278.00	0.927	-
5	5.00	57.00	243.00	0.810	-
6	10.00	86.00	214.00	0.713	-
7	15.00	127.00	173.00	0.577	-
8	30.00	168.00	132.00	0.440	-
9	60.00	231.00	69.00	0.230	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

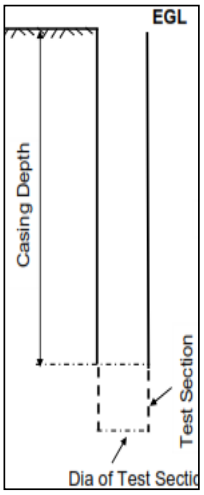
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-46
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+122
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.90

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.896	**t_1 [min]:**	19.00
H_2/H_0:	0.817	**t_2 [min]:**	33.50
H_1/H_2:	1.097		

Coefficient of Permeability (K_t)			6.79E-03		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.865E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	12.00	188.00	0.940	-
5	5.00	21.00	179.00	0.895	-
6	10.00	32.00	168.00	0.840	-
7	15.00	59.00	141.00	0.705	-
8	30.00	74.00	126.00	0.630	-
9	60.00	97.00	103.00	0.515	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

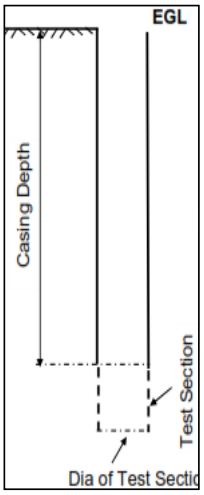
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-48
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+893
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.758	**t_1 [min]:**	19.00
H_2/H_0:	0.574	**t_2 [min]:**	33.50
H_1/H_2:	1.321		

Coefficient of Permeability (K_t)			2.05E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.676E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	27.00	173.00	0.865	-
6	10.00	49.00	151.00	0.755	-
7	15.00	68.00	132.00	0.660	-
8	30.00	89.00	111.00	0.555	-
9	60.00	146.00	54.00	0.270	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

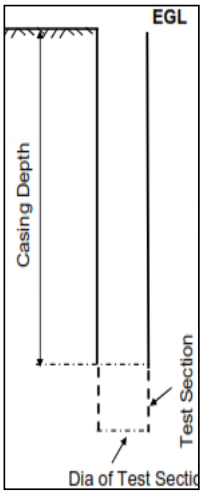
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-49
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+442
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.30

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.899	**t_1 [min]:**	19.00
H_2/H_0:	0.822	**t_2 [min]:**	33.50
H_1/H_2:	1.094		

Coefficient of Permeability (K_t)			6.60E-03		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.612E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	5.00	195.00	0.975	-
4	2.00	11.00	189.00	0.945	-
5	5.00	23.00	177.00	0.885	-
6	10.00	37.00	163.00	0.815	-
7	15.00	48.00	152.00	0.760	-
8	30.00	59.00	141.00	0.705	-
9	60.00	84.00	116.00	0.580	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

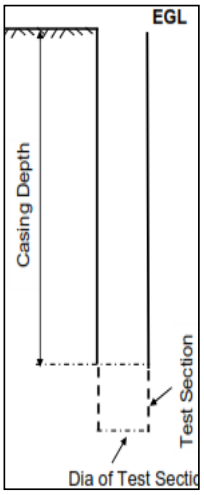
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-50
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+532
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	11.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.876	**t_1 [min]:**	19.00
H_2/H_0:	0.781	**t_2 [min]:**	33.50
H_1/H_2:	1.122		

Coefficient of Permeability (K_t)			8.45E-03		**[cm/min]**
η_t	12.74	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.259E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	2.00	198.00	0.990	-
4	2.00	6.00	194.00	0.970	-
5	5.00	10.00	190.00	0.950	-
6	10.00	17.00	183.00	0.915	-
7	15.00	26.00	174.00	0.870	-
8	30.00	41.00	159.00	0.795	-
9	60.00	76.00	124.00	0.620	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

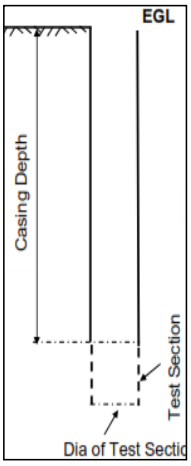
E.7 Zone 7: CH: 5+530 km to 6+490 km (BH-51 to BH-60)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-51
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+596
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.828	**t_1 [min]:**	19.00
H_2/H_0:	0.697	**t_2 [min]:**	33.50
H_1/H_2:	1.188		

Coefficient of Permeability (K_t)			1.27E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.570E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	6.00	194.00	0.970	-
4	2.00	11.00	189.00	0.945	-
5	5.00	23.00	177.00	0.885	-
6	10.00	38.00	162.00	0.810	-
7	15.00	53.00	147.00	0.735	-
8	30.00	85.00	115.00	0.575	-
9	60.00	122.00	78.00	0.390	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

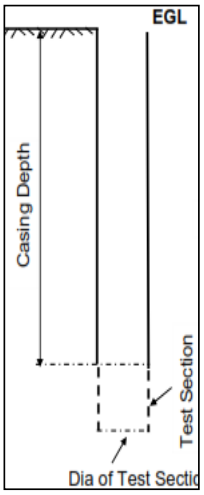
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-52
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+718
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	11.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.913	**t_1 [min]:**	19.00
H_2/H_0:	0.846	**t_2 [min]:**	33.50
H_1/H_2:	1.079		

Coefficient of Permeability (K_t)			5.59E-03		**[cm/min]**
η_t	12.74	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.323E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	5.00	195.00	0.975	-
4	2.00	8.00	192.00	0.960	-
5	5.00	11.00	189.00	0.945	-
6	10.00	17.00	183.00	0.915	-
7	15.00	23.00	177.00	0.885	-
8	30.00	32.00	168.00	0.840	-
9	60.00	57.00	143.00	0.715	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

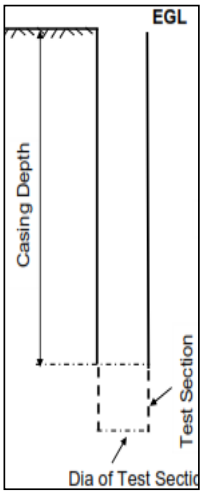
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-53
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+830
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.40

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	10.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.912	**t_1 [min]:**	19.00
H_2/H_0:	0.845	**t_2 [min]:**	33.50
H_1/H_2:	1.080		

Coefficient of Permeability (K_t)			5.63E-03		**[cm/min]**
η_t	13.1	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.629E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	2.00	198.00	0.990	-
4	2.00	4.00	196.00	0.980	-
5	5.00	7.00	193.00	0.965	-
6	10.00	15.00	185.00	0.925	-
7	15.00	24.00	176.00	0.880	-
8	30.00	37.00	163.00	0.815	-
9	60.00	56.00	144.00	0.720	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

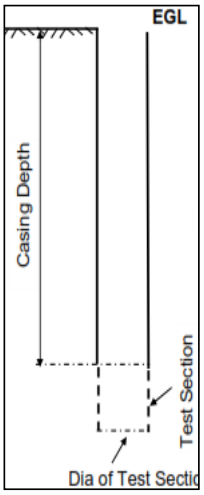
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-54
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	5+939
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.85

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	9.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.787	**t_1 [min]:**	19.00
H_2/H_0:	0.624	**t_2 [min]:**	33.50
H_1/H_2:	1.261		

Coefficient of Permeability (K_t)			1.70E-02		**[cm/min]**
η_t	13.48	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.687E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	16.00	184.00	0.920	-
5	5.00	29.00	171.00	0.855	-
6	10.00	48.00	152.00	0.760	-
7	15.00	69.00	131.00	0.655	-
8	30.00	95.00	105.00	0.525	-
9	60.00	140.00	60.00	0.300	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

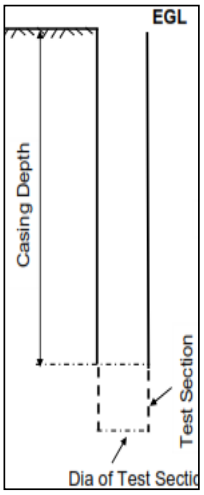
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-56
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+182
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.741	**t_1 [min]:**	19.00
H_2/H_0:	0.544	**t_2 [min]:**	33.50
H_1/H_2:	1.363		

Coefficient of Permeability (K_t)			2.28E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.975E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	5.00	295.00	0.983	-
3	1.00	7.00	293.00	0.977	-
4	2.00	31.00	269.00	0.897	-
5	5.00	53.00	247.00	0.823	-
6	10.00	89.00	211.00	0.703	-
7	15.00	137.00	163.00	0.543	-
8	30.00	189.00	111.00	0.370	-
9	60.00	253.00	47.00	0.157	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

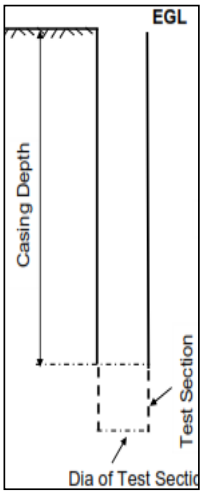
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-57
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+246
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	13.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.927	**t_1 [min]:**	19.00
H_2/H_0:	0.872	**t_2 [min]:**	33.50
H_1/H_2:	1.063		

Coefficient of Permeability (K_t)			4.53E-03		**[cm/min]**
η_t	12.06	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			6.387E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	6.00	194.00	0.970	-
4	2.00	11.00	189.00	0.945	-
5	5.00	26.00	174.00	0.870	-
6	10.00	35.00	165.00	0.825	-
7	15.00	42.00	158.00	0.790	-
8	30.00	54.00	146.00	0.730	-
9	60.00	72.00	128.00	0.640	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

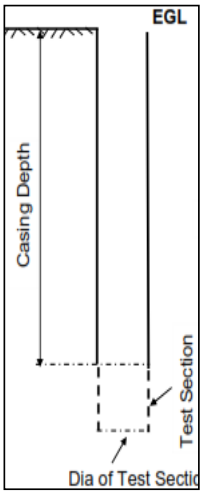
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-58
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+323
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	12.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.908	**t_1 [min]:**	19.00
H_2/H_0:	0.839	**t_2 [min]:**	33.50
H_1/H_2:	1.083		

Coefficient of Permeability (K_t)			5.89E-03		**[cm/min]**
η_t	12.39	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.531E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	3.00	197.00	0.985	-
4	2.00	7.00	193.00	0.965	-
5	5.00	15.00	185.00	0.925	-
6	10.00	25.00	175.00	0.875	-
7	15.00	32.00	168.00	0.840	-
8	30.00	44.00	156.00	0.780	-
9	60.00	69.00	131.00	0.655	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

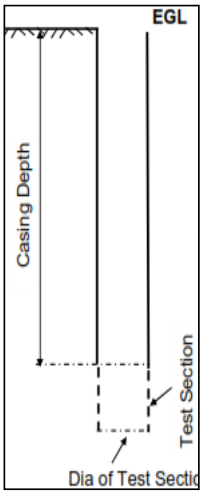
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-59
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+429
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	11.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.908	**t_1 [min]:**	19.00
H_2/H_0:	0.838	**t_2 [min]:**	33.50
H_1/H_2:	1.084		

Coefficient of Permeability (K_t)			5.91E-03		**[cm/min]**
η_t	12.74	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.807E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	4.00	196.00	0.980	-
4	2.00	7.00	193.00	0.965	-
5	5.00	13.00	187.00	0.935	-
6	10.00	26.00	174.00	0.870	-
7	15.00	33.00	167.00	0.835	-
8	30.00	43.00	157.00	0.785	-
9	60.00	68.00	132.00	0.660	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

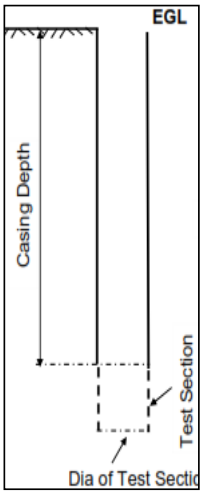
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-60
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+488
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.990	**t_1 [min]:**	19.00
H_2/H_0:	0.982	**t_2 [min]:**	33.50
H_1/H_2:	1.008		

Coefficient of Permeability (K_t)			5.96E-04		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			7.578E-04		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	2.00	198.00	0.990	-
4	2.00	4.00	196.00	0.980	-
5	5.00	6.00	194.00	0.970	-
6	10.00	8.00	192.00	0.960	-
7	15.00	11.00	189.00	0.945	-
8	30.00	15.00	185.00	0.925	-
9	60.00	18.00	182.00	0.910	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

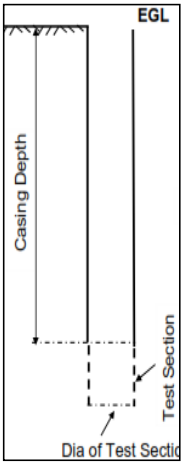
E.8 Zone 8: CH: 6+490 km to 7+490 km (BH-61 to BH-70)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-61
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+639
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.35

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.908	**t_1 [min]:**	19.00
H_2/H_0:	0.838	**t_2 [min]:**	33.50
H_1/H_2:	1.084		

Coefficient of Permeability (K_t)			5.91E-03		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			8.123E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	4.00	196.00	0.980	-
4	2.00	7.00	193.00	0.965	-
5	5.00	12.00	188.00	0.940	-
6	10.00	19.00	181.00	0.905	-
7	15.00	27.00	173.00	0.865	-
8	30.00	42.00	158.00	0.790	-
9	60.00	67.00	133.00	0.665	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

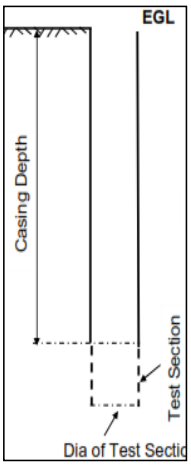
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-62
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+726
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	9.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.925	**t_1 [min]:**	19.00
H_2/H_0:	0.867	**t_2 [min]:**	33.50
H_1/H_2:	1.066		

Coefficient of Permeability (K_t)			4.73E-03		**[cm/min]**
η_t	13.48	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			7.452E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	2.00	198.00	0.990	-
4	2.00	4.00	196.00	0.980	-
5	5.00	10.00	190.00	0.950	-
6	10.00	14.00	186.00	0.930	-
7	15.00	19.00	181.00	0.905	-
8	30.00	32.00	168.00	0.840	-
9	60.00	54.00	146.00	0.730	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

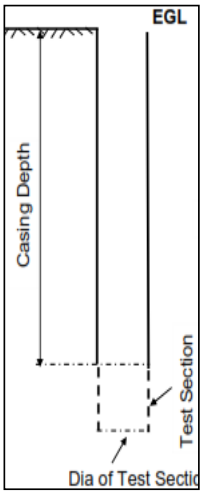
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-63
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+838
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.70

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.902	**t_1 [min]:**	19.00
H_2/H_0:	0.827	**t_2 [min]:**	33.50
H_1/H_2:	1.090		

Coefficient of Permeability (K_t)			6.36E-03		**[cm/min]**
η_t	15.68	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.166E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	4.00	196.00	0.980	-
4	2.00	6.00	194.00	0.970	-
5	5.00	11.00	189.00	0.945	-
6	10.00	16.00	184.00	0.920	-
7	15.00	25.00	175.00	0.875	-
8	30.00	36.00	164.00	0.820	-
9	60.00	63.00	137.00	0.685	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

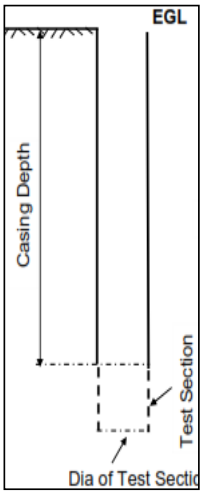
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-64
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+925
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.908	**t_1 [min]:**	19.00
H_2/H_0:	0.837	**t_2 [min]:**	33.50
H_1/H_2:	1.084		

Coefficient of Permeability (K_t)			5.96E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			7.581E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	1.00	199.00	0.995	-
3	1.00	3.00	197.00	0.985	-
4	2.00	4.00	196.00	0.980	-
5	5.00	10.00	190.00	0.950	-
6	10.00	16.00	184.00	0.920	-
7	15.00	24.00	176.00	0.880	-
8	30.00	34.00	166.00	0.830	-
9	60.00	60.00	140.00	0.700	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

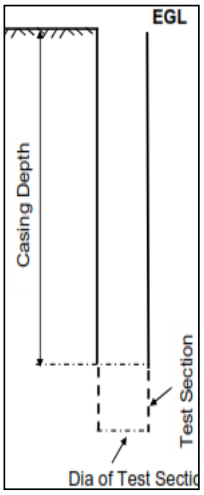
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-65
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	6+998
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.844	**t_1 [min]:**	19.00
H_2/H_0:	0.725	**t_2 [min]:**	33.50
H_1/H_2:	1.164		

Coefficient of Permeability (K_t)			1.12E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.385E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	7.00	193.00	0.965	-
3	1.00	12.00	188.00	0.940	-
4	2.00	20.00	180.00	0.900	-
5	5.00	25.00	175.00	0.875	-
6	10.00	38.00	162.00	0.810	-
7	15.00	57.00	143.00	0.715	-
8	30.00	77.00	123.00	0.615	-
9	60.00	112.00	88.00	0.440	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

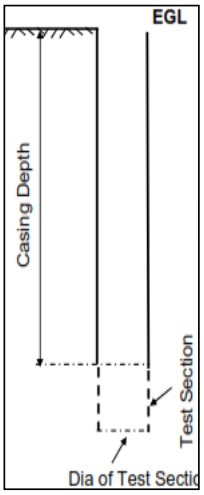
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-66
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+129
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	9.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.862	**t_1 [min]:**	19.00
H_2/H_0:	0.757	**t_2 [min]:**	33.50
H_1/H_2:	1.139		

Coefficient of Permeability (K_t)			9.55E-03		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.280E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	10.00	190.00	0.950	-
4	2.00	16.00	184.00	0.920	-
5	5.00	23.00	177.00	0.885	-
6	10.00	39.00	161.00	0.805	-
7	15.00	55.00	145.00	0.725	-
8	30.00	74.00	126.00	0.630	-
9	60.00	105.00	95.00	0.475	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

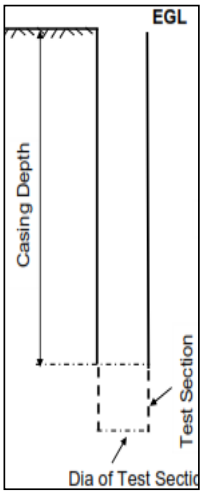
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-67
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+220
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.892	**t_1 [min]:**	19.00
H_2/H_0:	0.810	**t_2 [min]:**	33.50
H_1/H_2:	1.102		

Coefficient of Permeability (K_t)			7.13E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			9.078E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	6.00	194.00	0.970	-
3	1.00	10.00	190.00	0.950	-
4	2.00	17.00	183.00	0.915	-
5	5.00	24.00	176.00	0.880	-
6	10.00	40.00	160.00	0.800	-
7	15.00	58.00	142.00	0.710	-
8	30.00	73.00	127.00	0.635	-
9	60.00	97.00	103.00	0.515	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

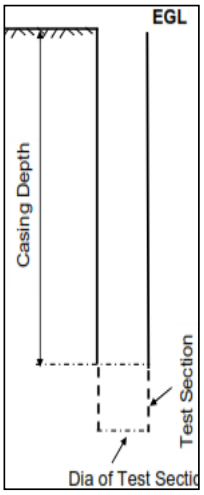
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-68
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+268
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	8.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.890	**t_1 [min]:**	19.00
H_2/H_0:	0.807	**t_2 [min]:**	33.50
H_1/H_2:	1.104		

Coefficient of Permeability (K_t)			7.26E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			9.235E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	24.00	176.00	0.880	-
6	10.00	39.00	161.00	0.805	-
7	15.00	48.00	152.00	0.760	-
8	30.00	63.00	137.00	0.685	-
9	60.00	90.00	110.00	0.550	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

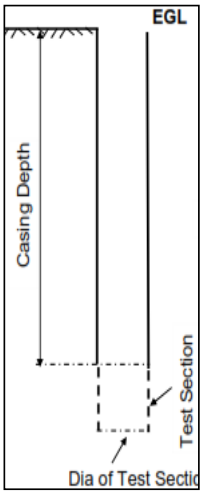
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-69
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+329
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	9.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	14.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.884	**t_1 [min]:**	19.00
H_2/H_0:	0.796	**t_2 [min]:**	33.50
H_1/H_2:	1.111		

Coefficient of Permeability (K_t)			7.73E-03		**[cm/min]**
η_t	11.75	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.063E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	13.00	187.00	0.935	-
5	5.00	20.00	180.00	0.900	-
6	10.00	29.00	171.00	0.855	-
7	15.00	37.00	163.00	0.815	-
8	30.00	52.00	148.00	0.740	-
9	60.00	90.00	110.00	0.550	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

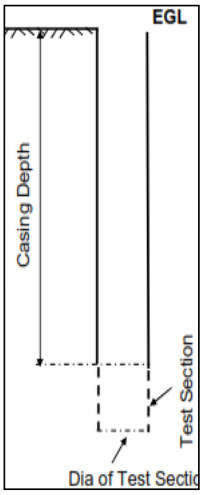
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-69B
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+392
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 2.50m to 3.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.723	**t_1 [min]:**	19.00
H_2/H_0:	0.511	**t_2 [min]:**	33.50
H_1/H_2:	1.413		

Coefficient of Permeability (K_t)			2.55E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.080E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	8.00	292.00	0.973	-
3	1.00	16.00	284.00	0.947	-
4	2.00	29.00	271.00	0.903	-
5	5.00	57.00	243.00	0.810	-
6	10.00	92.00	208.00	0.693	-
7	15.00	142.00	158.00	0.527	-
8	30.00	194.00	106.00	0.353	-
9	60.00	262.00	38.00	0.127	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

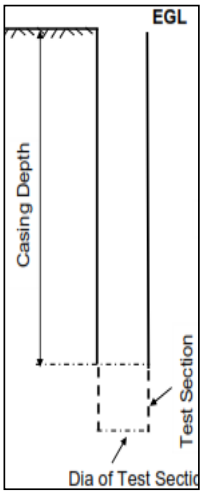
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-70
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+487
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	9.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.805	**t_1 [min]:**	19.00
H_2/H_0:	0.656	**t_2 [min]:**	33.50
H_1/H_2:	1.227		

Coefficient of Permeability (K_t)			1.51E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.020E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	29.00	171.00	0.855	-
6	10.00	45.00	155.00	0.775	-
7	15.00	77.00	123.00	0.615	-
8	30.00	96.00	104.00	0.520	-
9	60.00	124.00	76.00	0.380	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

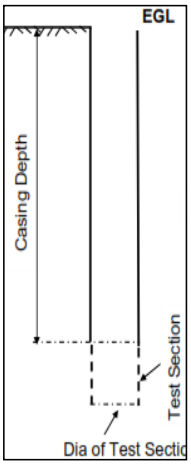
E.9 Zone 9: CH: 7+490 km to 8+550 km (BH-71 to BH-80)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-71
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+629
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.50

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.872	**t_1 [min]:**	19.00
H_2/H_0:	0.774	**t_2 [min]:**	33.50
H_1/H_2:	1.126		

Coefficient of Permeability (K_t)			8.74E-03		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.057E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	8.00	192.00	0.960	-
4	2.00	15.00	185.00	0.925	-
5	5.00	26.00	174.00	0.870	-
6	10.00	43.00	157.00	0.785	-
7	15.00	71.00	129.00	0.645	-
8	30.00	92.00	108.00	0.540	-
9	60.00	117.00	83.00	0.415	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

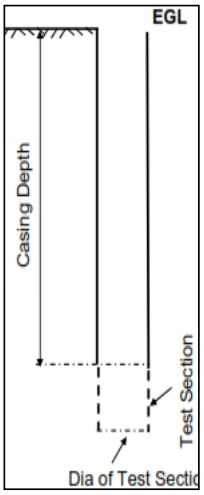
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-72
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+728
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.911	**t_1 [min]:**	19.00
H_2/H_0:	0.843	**t_2 [min]:**	33.50
H_1/H_2:	1.081		

Coefficient of Permeability (K_t)			5.70E-03		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			7.441E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	11.00	189.00	0.945	-
4	2.00	19.00	181.00	0.905	-
5	5.00	32.00	168.00	0.840	-
6	10.00	44.00	156.00	0.780	-
7	15.00	72.00	128.00	0.640	-
8	30.00	83.00	117.00	0.585	-
9	60.00	101.00	99.00	0.495	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

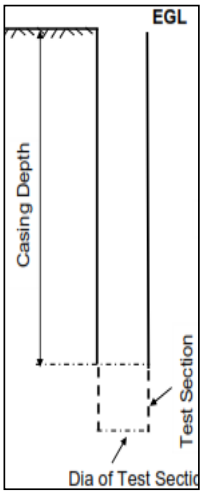
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-73
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+837
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.843	**t_1 [min]:**	19.00
H_2/H_0:	0.724	**t_2 [min]:**	33.50
H_1/H_2:	1.165		

Coefficient of Permeability (K_t)			1.13E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.433E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	12.00	188.00	0.940	-
5	5.00	22.00	178.00	0.890	-
6	10.00	34.00	166.00	0.830	-
7	15.00	68.00	132.00	0.660	-
8	30.00	81.00	119.00	0.595	-
9	60.00	116.00	84.00	0.420	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

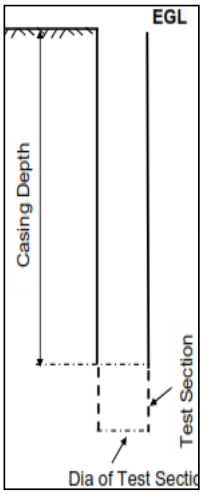
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-74
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	7+912
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	11.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.884	**t_1 [min]:**	19.00
H_2/H_0:	0.795	**t_2 [min]:**	33.50
H_1/H_2:	1.112		

Coefficient of Permeability (K_t)			7.78E-03		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			9.412E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	12.00	188.00	0.940	-
5	5.00	20.00	180.00	0.900	-
6	10.00	36.00	164.00	0.820	-
7	15.00	49.00	151.00	0.755	-
8	30.00	72.00	128.00	0.640	-
9	60.00	98.00	102.00	0.510	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

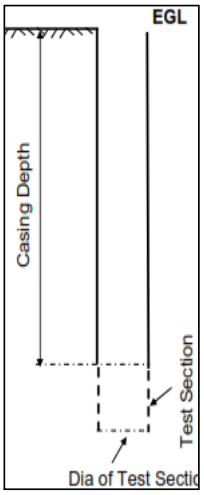
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-75
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+031
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.842	**t_1 [min]:**	19.00
H_2/H_0:	0.721	**t_2 [min]:**	33.50
H_1/H_2:	1.167		

Coefficient of Permeability (K_t)			1.14E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.523E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	16.00	184.00	0.920	-
5	5.00	28.00	172.00	0.860	-
6	10.00	51.00	149.00	0.745	-
7	15.00	79.00	121.00	0.605	-
8	30.00	97.00	103.00	0.515	-
9	60.00	127.00	73.00	0.365	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

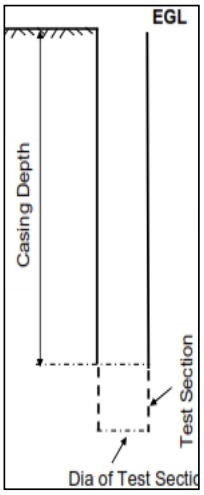
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-76
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+069
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.814	**t_1 [min]:**	19.00
H_2/H_0:	0.672	**t_2 [min]:**	33.50
H_1/H_2:	1.211		

Coefficient of Permeability (K_t)			1.41E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.793E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	16.00	184.00	0.920	-
5	5.00	24.00	176.00	0.880	-
6	10.00	39.00	161.00	0.805	-
7	15.00	58.00	142.00	0.710	-
8	30.00	81.00	119.00	0.595	-
9	60.00	124.00	76.00	0.380	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

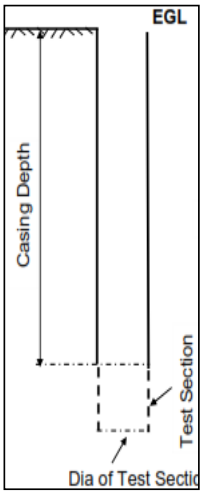
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-77
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+226
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.40

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.804	**t_1 [min]:**	19.00
H_2/H_0:	0.654	**t_2 [min]:**	33.50
H_1/H_2:	1.229		

Coefficient of Permeability (K_t)			1.52E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.034E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	10.00	190.00	0.950	-
4	2.00	18.00	182.00	0.910	-
5	5.00	32.00	168.00	0.840	-
6	10.00	57.00	143.00	0.715	-
7	15.00	82.00	118.00	0.590	-
8	30.00	104.00	96.00	0.480	-
9	60.00	141.00	59.00	0.295	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

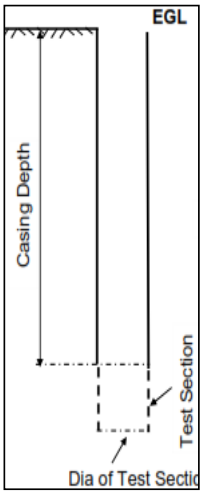
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-80
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+551
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.60

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.844	**t_1 [min]:**	19.00
H_2/H_0:	0.725	**t_2 [min]:**	33.50
H_1/H_2:	1.164		

Coefficient of Permeability (K_t)			1.12E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.462E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	9.00	191.00	0.955	-
4	2.00	16.00	184.00	0.920	-
5	5.00	24.00	176.00	0.880	-
6	10.00	36.00	164.00	0.820	-
7	15.00	58.00	142.00	0.710	-
8	30.00	77.00	123.00	0.615	-
9	60.00	112.00	88.00	0.440	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

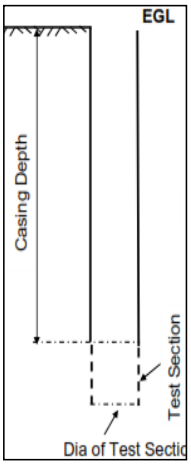
E.10 Zone 10: CH: 8+550 km to 9+430 km (BH-82 to BH-89)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-82
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+859
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.45

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.813	**t_1 [min]:**	19.00
H_2/H_0:	0.669	**t_2 [min]:**	33.50
H_1/H_2:	1.214		

Coefficient of Permeability (K_t)			1.43E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.860E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	7.00	193.00	0.965	-
4	2.00	15.00	185.00	0.925	-
5	5.00	26.00	174.00	0.870	-
6	10.00	43.00	157.00	0.785	-
7	15.00	61.00	139.00	0.695	-
8	30.00	87.00	113.00	0.565	-
9	60.00	128.00	72.00	0.360	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

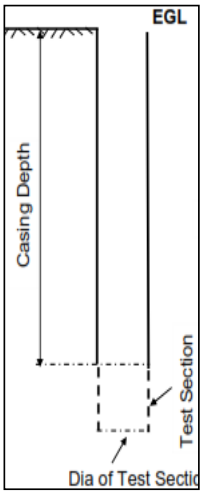
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-84
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	8+939
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	16.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.860	**t_1 [min]:**	19.00
H_2/H_0:	0.754	**t_2 [min]:**	33.50
H_1/H_2:	1.141		

Coefficient of Permeability (K_t)			9.73E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.238E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	3.00	197.00	0.985	-
3	1.00	7.00	193.00	0.965	-
4	2.00	11.00	189.00	0.945	-
5	5.00	18.00	182.00	0.910	-
6	10.00	27.00	173.00	0.865	-
7	15.00	49.00	151.00	0.755	-
8	30.00	74.00	126.00	0.630	-
9	60.00	106.00	94.00	0.470	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

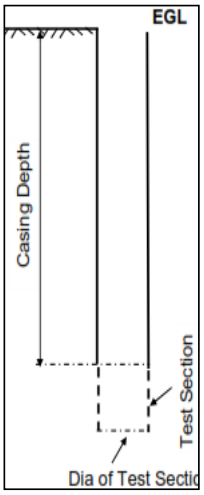
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-85
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+024
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.864	**t_1 [min]:**	19.00
H_2/H_0:	0.760	**t_2 [min]:**	33.50
H_1/H_2:	1.136		

Coefficient of Permeability (K_t)			9.41E-03		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.137E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	2.00	198.00	0.990	-
3	1.00	6.00	194.00	0.970	-
4	2.00	10.00	190.00	0.950	-
5	5.00	19.00	181.00	0.905	-
6	10.00	28.00	172.00	0.860	-
7	15.00	41.00	159.00	0.795	-
8	30.00	70.00	130.00	0.650	-
9	60.00	102.00	98.00	0.490	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

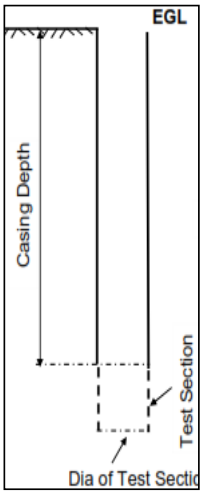
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-86
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+115
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.95

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.694	**t_1 [min]:**	19.00
H_2/H_0:	0.461	**t_2 [min]:**	33.50
H_1/H_2:	1.506		

Coefficient of Permeability (K_t)			3.01E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.832E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	18.00	182.00	0.910	-
5	5.00	37.00	163.00	0.815	-
6	10.00	66.00	134.00	0.670	-
7	15.00	91.00	109.00	0.545	-
8	30.00	136.00	64.00	0.320	-
9	60.00	188.00	12.00	0.060	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

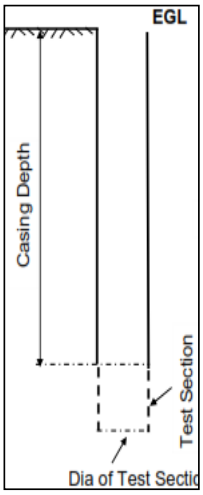
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-87
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+244
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.742	**t_1 [min]:**	19.00
H_2/H_0:	0.544	**t_2 [min]:**	33.50
H_1/H_2:	1.362		

Coefficient of Permeability (K_t)			2.28E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.751E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	7.00	193.00	0.965	-
3	1.00	14.00	186.00	0.930	-
4	2.00	29.00	171.00	0.855	-
5	5.00	48.00	152.00	0.760	-
6	10.00	61.00	139.00	0.695	-
7	15.00	88.00	112.00	0.560	-
8	30.00	120.00	80.00	0.400	-
9	60.00	166.00	34.00	0.170	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

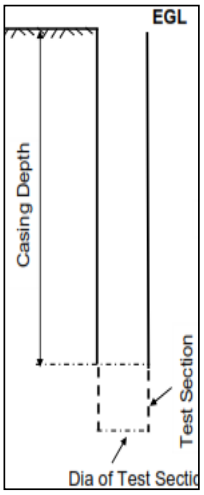
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-88
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+346
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	15.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.852	**t_1 [min]:**	19.00
H_2/H_0:	0.739	**t_2 [min]:**	33.50
H_1/H_2:	1.153		

Coefficient of Permeability (K_t)			1.05E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.365E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	21.00	279.00	0.930	-
5	5.00	34.00	266.00	0.887	-
6	10.00	67.00	233.00	0.777	-
7	15.00	92.00	208.00	0.693	-
8	30.00	119.00	181.00	0.603	-
9	60.00	168.00	132.00	0.440	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

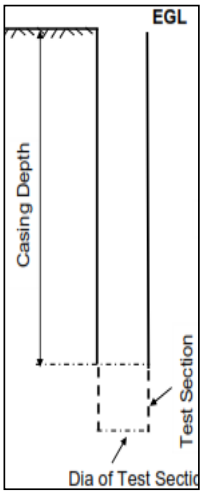
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-89
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+428
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.40

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	21.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.851	**t_1 [min]:**	19.00
H_2/H_0:	0.736	**t_2 [min]:**	33.50
H_1/H_2:	1.155		

Coefficient of Permeability (K_t)			1.06E-02		**[cm/min]**
η_t	9.84	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.220E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	21.00	279.00	0.930	-
5	5.00	34.00	266.00	0.887	-
6	10.00	67.00	233.00	0.777	-
7	15.00	92.00	208.00	0.693	-
8	30.00	119.00	181.00	0.603	-
9	60.00	168.00	132.00	0.440	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

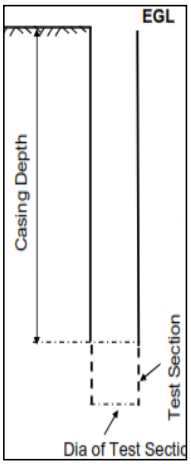
E.11 Zone 11: CH: 9+430 km to 10+540 km (BH-91 to BH-100)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-91
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+626
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.10

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.737	**t_1 [min]:**	19.00
H_2/H_0:	0.537	**t_2 [min]:**	33.50
H_1/H_2:	1.374		

Coefficient of Permeability (K_t)			2.34E-02		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			3.130E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	15.00	285.00	0.950	-
4	2.00	28.00	272.00	0.907	-
5	5.00	61.00	239.00	0.797	-
6	10.00	97.00	203.00	0.677	-
7	15.00	141.00	159.00	0.530	-
8	30.00	181.00	119.00	0.397	-
9	60.00	251.00	49.00	0.163	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

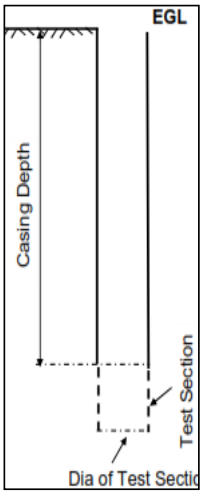
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-92
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+737
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.85

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.834	**t_1 [min]:**	19.00
H_2/H_0:	0.707	**t_2 [min]:**	33.50
H_1/H_2:	1.179		

Coefficient of Permeability (K_t)			1.21E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.466E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	8.00	192.00	0.960	-
3	1.00	16.00	184.00	0.920	-
4	2.00	31.00	169.00	0.845	-
5	5.00	50.00	150.00	0.750	-
6	10.00	72.00	128.00	0.640	-
7	15.00	95.00	105.00	0.525	-
8	30.00	116.00	84.00	0.420	-
9	60.00	142.00	58.00	0.290	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

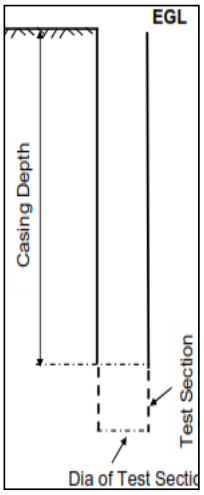
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-93
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	9+820
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.864	**t_1 [min]:**	19.00
H_2/H_0:	0.760	**t_2 [min]:**	33.50
H_1/H_2:	1.136		

Coefficient of Permeability (K_t)			9.41E-03		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.166E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	30.00	170.00	0.850	-
6	10.00	44.00	156.00	0.780	-
7	15.00	60.00	140.00	0.700	-
8	30.00	79.00	121.00	0.605	-
9	60.00	107.00	93.00	0.465	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

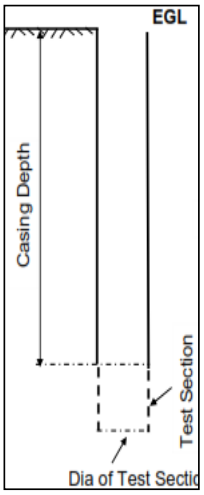
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-95
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+044
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.917	**t_1 [min]:**	19.00
H_2/H_0:	0.854	**t_2 [min]:**	33.50
H_1/H_2:	1.074		

Coefficient of Permeability (K_t)			5.24E-03		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			6.843E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	23.00	277.00	0.923	-
5	5.00	41.00	259.00	0.863	-
6	10.00	63.00	237.00	0.790	-
7	15.00	92.00	208.00	0.693	-
8	30.00	126.00	174.00	0.580	-
9	60.00	172.00	128.00	0.427	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

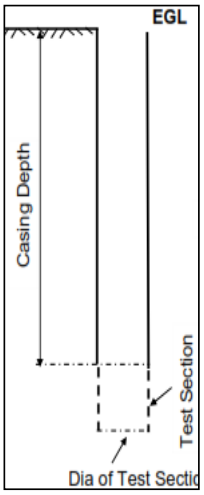
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-96
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+125
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.90

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.844	**t_1 [min]:**	19.00
H_2/H_0:	0.725	**t_2 [min]:**	33.50
H_1/H_2:	1.164		

Coefficient of Permeability (K_t)			1.12E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.385E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	11.00	189.00	0.945	-
4	2.00	19.00	181.00	0.905	-
5	5.00	28.00	172.00	0.860	-
6	10.00	42.00	158.00	0.790	-
7	15.00	60.00	140.00	0.700	-
8	30.00	83.00	117.00	0.585	-
9	60.00	116.00	84.00	0.420	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

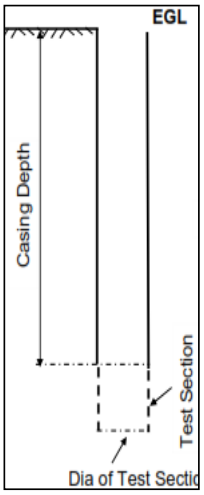
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-97
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+222
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.50

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.763	**t_1 [min]:**	19.00
H_2/H_0:	0.582	**t_2 [min]:**	33.50
H_1/H_2:	1.311		

Coefficient of Permeability (K_t)			1.99E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.537E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	14.00	286.00	0.953	-
4	2.00	26.00	274.00	0.913	-
5	5.00	57.00	243.00	0.810	-
6	10.00	88.00	212.00	0.707	-
7	15.00	116.00	184.00	0.613	-
8	30.00	170.00	130.00	0.433	-
9	60.00	235.00	65.00	0.217	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

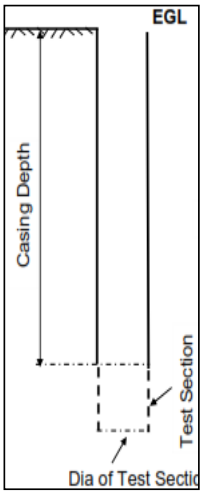
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-98
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+328
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.792	**t_1 [min]:**	19.00
H_2/H_0:	0.633	**t_2 [min]:**	33.50
H_1/H_2:	1.251		

Coefficient of Permeability (K_t)			1.65E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.100E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	11.00	189.00	0.945	-
4	2.00	20.00	180.00	0.900	-
5	5.00	45.00	155.00	0.775	-
6	10.00	66.00	134.00	0.670	-
7	15.00	89.00	111.00	0.555	-
8	30.00	109.00	91.00	0.455	-
9	60.00	147.00	53.00	0.265	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

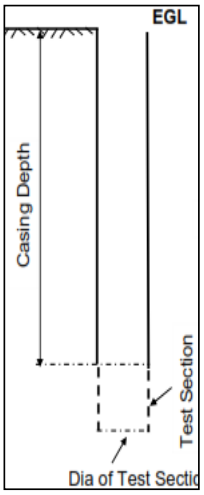
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-99
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+428
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.40

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.786	**t_1 [min]:**	19.00
H_2/H_0:	0.623	**t_2 [min]:**	33.50
H_1/H_2:	1.262		

Coefficient of Permeability (K_t)			1.71E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.234E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	6.00	294.00	0.980	-
3	1.00	12.00	288.00	0.960	-
4	2.00	23.00	277.00	0.923	-
5	5.00	49.00	251.00	0.837	-
6	10.00	68.00	232.00	0.773	-
7	15.00	92.00	208.00	0.693	-
8	30.00	151.00	149.00	0.497	-
9	60.00	215.00	85.00	0.283	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

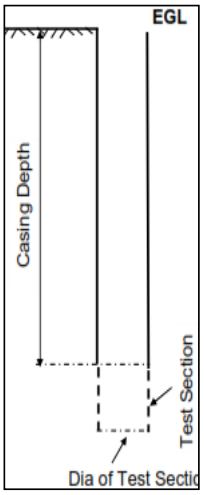
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-100
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+542
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.80

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.812	**t_1 [min]:**	19.00
H_2/H_0:	0.668	**t_2 [min]:**	33.50
H_1/H_2:	1.215		

Coefficient of Permeability (K_t)			1.43E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.822E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	10.00	190.00	0.950	-
4	2.00	21.00	179.00	0.895	-
5	5.00	42.00	158.00	0.790	-
6	10.00	57.00	143.00	0.715	-
7	15.00	86.00	114.00	0.570	-
8	30.00	109.00	91.00	0.455	-
9	60.00	142.00	58.00	0.290	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

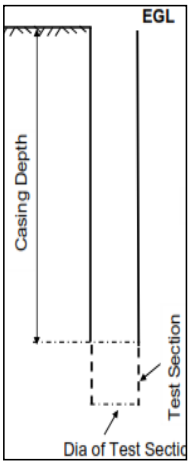
E.12 Zone 12: CH: 10+540 km to 11+400 km (BH-101 to BH-109)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-101
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+631
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.799	**t_1 [min]:**	19.00
H_2/H_0:	0.645	**t_2 [min]:**	33.50
H_1/H_2:	1.238		

Coefficient of Permeability (K_t)			1.57E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.950E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	17.00	183.00	0.915	-
5	5.00	33.00	167.00	0.835	-
6	10.00	55.00	145.00	0.725	-
7	15.00	78.00	122.00	0.610	-
8	30.00	108.00	92.00	0.460	-
9	60.00	144.00	56.00	0.280	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

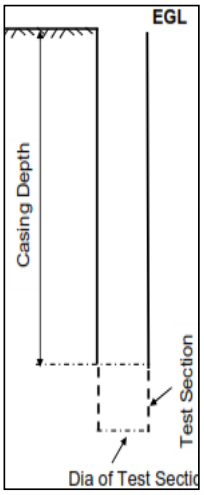
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-102
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+709
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.85

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	15.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.872	**t_1 [min]:**	19.00
H_2/H_0:	0.774	**t_2 [min]:**	33.50
H_1/H_2:	1.126		

Coefficient of Permeability (K_t)			8.76E-03		**[cm/min]**
η_t	11.45	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.174E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	16.00	184.00	0.920	-
5	5.00	23.00	177.00	0.885	-
6	10.00	42.00	158.00	0.790	-
7	15.00	59.00	141.00	0.705	-
8	30.00	78.00	122.00	0.610	-
9	60.00	106.00	94.00	0.470	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

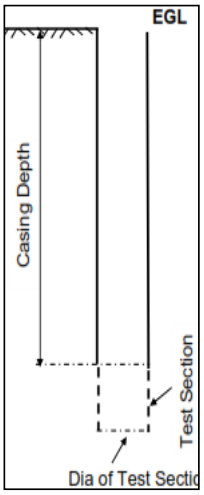
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-103
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+821
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.848	**t_1 [min]:**	19.00
H_2/H_0:	0.733	**t_2 [min]:**	33.50
H_1/H_2:	1.158		

Coefficient of Permeability (K_t)			1.08E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.409E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	16.00	184.00	0.920	-
5	5.00	29.00	171.00	0.855	-
6	10.00	61.00	139.00	0.695	-
7	15.00	79.00	121.00	0.605	-
8	30.00	98.00	102.00	0.510	-
9	60.00	126.00	74.00	0.370	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

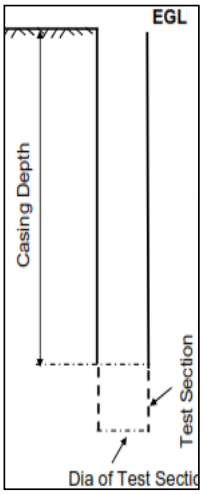
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-104
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	10+946
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	22.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.849	**t_1 [min]:**	19.00
H_2/H_0:	0.734	**t_2 [min]:**	33.50
H_1/H_2:	1.157		

Coefficient of Permeability (K_t)			1.07E-02		**[cm/min]**
η_t	9.61	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.204E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	12.00	188.00	0.940	-
4	2.00	21.00	179.00	0.895	-
5	5.00	36.00	164.00	0.820	-
6	10.00	54.00	146.00	0.730	-
7	15.00	76.00	124.00	0.620	-
8	30.00	96.00	104.00	0.520	-
9	60.00	125.00	75.00	0.375	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

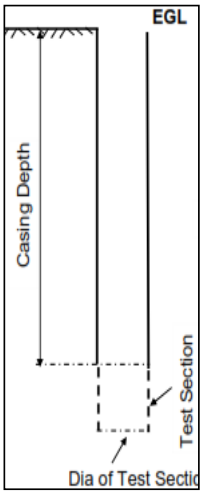
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-105
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+034
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.853	**t_1 [min]:**	19.00
H_2/H_0:	0.741	**t_2 [min]:**	33.50
H_1/H_2:	1.151		

Coefficient of Permeability (K_t)			1.03E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.251E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	9.00	191.00	0.955	-
4	2.00	17.00	183.00	0.915	-
5	5.00	32.00	168.00	0.840	-
6	10.00	64.00	136.00	0.680	-
7	15.00	82.00	118.00	0.590	-
8	30.00	103.00	97.00	0.485	-
9	60.00	129.00	71.00	0.355	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

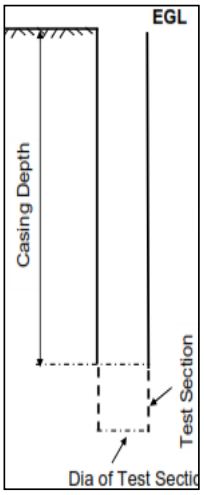
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-106
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+134
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.90

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.832	**t_1 [min]:**	19.00
H_2/H_0:	0.703	**t_2 [min]:**	33.50
H_1/H_2:	1.183		

Coefficient of Permeability (K_t)			1.24E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.613E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	10.00	190.00	0.950	-
4	2.00	18.00	182.00	0.910	-
5	5.00	34.00	166.00	0.830	-
6	10.00	66.00	134.00	0.670	-
7	15.00	85.00	115.00	0.575	-
8	30.00	107.00	93.00	0.465	-
9	60.00	136.00	64.00	0.320	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

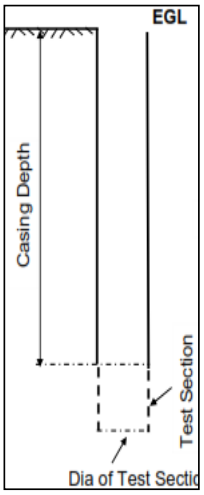
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-107
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+240
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.65

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	16.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.838	**t_1 [min]:**	19.00
H_2/H_0:	0.715	**t_2 [min]:**	33.50
H_1/H_2:	1.173		

Coefficient of Permeability (K_t)			1.17E-02		**[cm/min]**
η_t	11.16	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.531E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	16.00	184.00	0.920	-
5	5.00	28.00	172.00	0.860	-
6	10.00	40.00	160.00	0.800	-
7	15.00	57.00	143.00	0.715	-
8	30.00	83.00	117.00	0.585	-
9	60.00	118.00	82.00	0.410	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

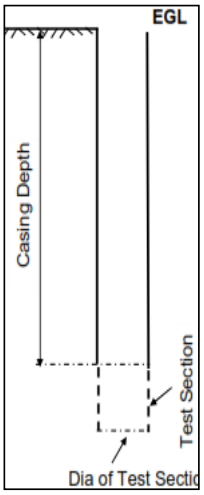
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-108
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+329
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	21.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.824	**t_1 [min]:**	19.00
H_2/H_0:	0.690	**t_2 [min]:**	33.50
H_1/H_2:	1.194		

Coefficient of Permeability (K_t)			1.31E-02		**[cm/min]**
η_t	9.84	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.504E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	5.00	195.00	0.975	-
3	1.00	13.00	187.00	0.935	-
4	2.00	24.00	176.00	0.880	-
5	5.00	40.00	160.00	0.800	-
6	10.00	56.00	144.00	0.720	-
7	15.00	70.00	130.00	0.650	-
8	30.00	89.00	111.00	0.555	-
9	60.00	126.00	74.00	0.370	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

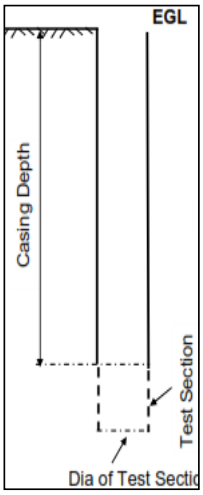
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-109
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+400
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	12.00

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.850	**t_1 [min]:**	19.00
H_2/H_0:	0.735	**t_2 [min]:**	33.50
H_1/H_2:	1.156		

Coefficient of Permeability (K_t)			1.07E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.292E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	7.00	193.00	0.965	-
4	2.00	15.00	185.00	0.925	-
5	5.00	32.00	168.00	0.840	-
6	10.00	59.00	141.00	0.705	-
7	15.00	82.00	118.00	0.590	-
8	30.00	102.00	98.00	0.490	-
9	60.00	129.00	71.00	0.355	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

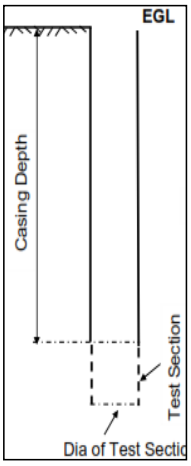
E.13 Zone 13: CH: 11+400 km to 12+130 km (BH-111 to BH-116)

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-111
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+609
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	18.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.769	**t_1 [min]:**	19.00
H_2/H_0:	0.594	**t_2 [min]:**	33.50
H_1/H_2:	1.296		

Coefficient of Permeability (K_t)			1.91E-02		**[cm/min]**
η_t	10.6	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			2.369E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	7.00	293.00	0.977	-
3	1.00	14.00	286.00	0.953	-
4	2.00	27.00	273.00	0.910	-
5	5.00	62.00	238.00	0.793	-
6	10.00	89.00	211.00	0.703	-
7	15.00	120.00	180.00	0.600	-
8	30.00	165.00	135.00	0.450	-
9	60.00	230.00	70.00	0.233	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

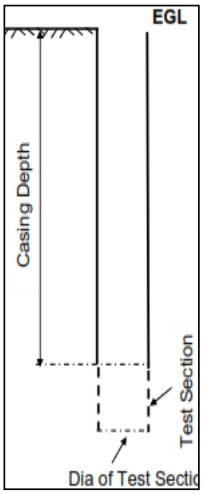
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-112
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+760
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.10

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	19.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.801	**t_1 [min]:**	19.00
H_2/H_0:	0.649	**t_2 [min]:**	33.50
H_1/H_2:	1.234		

Coefficient of Permeability (K_t)			1.55E-02		**[cm/min]**
η_t	10.34	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.873E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	9.00	191.00	0.955	-
4	2.00	16.00	184.00	0.920	-
5	5.00	28.00	172.00	0.860	-
6	10.00	40.00	160.00	0.800	-
7	15.00	61.00	139.00	0.695	-
8	30.00	79.00	121.00	0.605	-
9	60.00	126.00	74.00	0.370	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

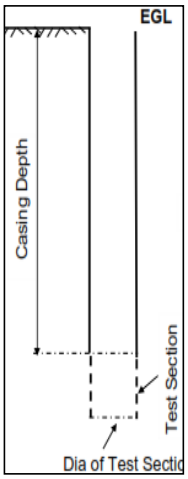
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-113
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+835
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	13.00

Falling Head Method

Depth of borehole [m]:	3.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	2.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.886	**t_1 [min]:**	19.00
H_2/H_0:	0.799	**t_2 [min]:**	33.50
H_1/H_2:	1.109		

Coefficient of Permeability (K_t)			7.61E-03		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			9.679E-03		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	300.00	1.000	-
2	0.30	5.00	295.00	0.983	-
3	1.00	9.00	291.00	0.970	-
4	2.00	19.00	281.00	0.937	-
5	5.00	35.00	265.00	0.883	-
6	10.00	61.00	239.00	0.797	-
7	15.00	82.00	218.00	0.727	-
8	30.00	109.00	191.00	0.637	-
9	60.00	147.00	153.00	0.510	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

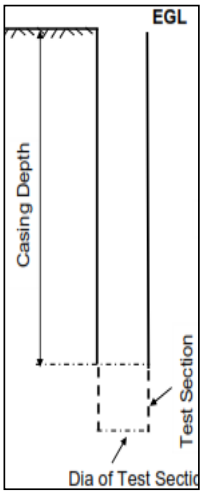
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-114
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	11+943
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	-

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	20.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.825	**t_1 [min]:**	19.00
H_2/H_0:	0.692	**t_2 [min]:**	33.50
H_1/H_2:	1.193		

Coefficient of Permeability (K_t)			1.30E-02		**[cm/min]**
η_t	10.09	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.531E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	7.00	193.00	0.965	-
4	2.00	14.00	186.00	0.930	-
5	5.00	31.00	169.00	0.845	-
6	10.00	48.00	152.00	0.760	-
7	15.00	63.00	137.00	0.685	-
8	30.00	80.00	120.00	0.600	-
9	60.00	120.00	80.00	0.400	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

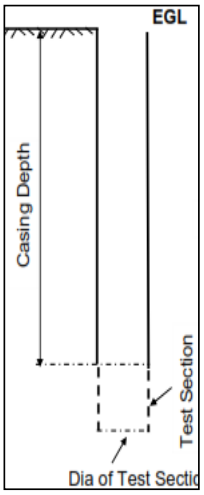
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-115
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	12+051
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	14.20

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	17.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.810	**t_1 [min]:**	19.00
H_2/H_0:	0.665	**t_2 [min]:**	33.50
H_1/H_2:	1.218		

Coefficient of Permeability (K_t)			1.45E-02		**[cm/min]**
η_t	10.88	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.847E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	8.00	192.00	0.960	-
4	2.00	17.00	183.00	0.915	-
5	5.00	31.00	169.00	0.845	-
6	10.00	56.00	144.00	0.720	-
7	15.00	78.00	122.00	0.610	-
8	30.00	99.00	101.00	0.505	-
9	60.00	136.00	64.00	0.320	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

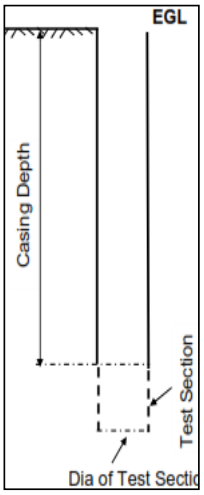
η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

Name of Work:	Geotechnical Investigation work for Proposed Extension Metro corridors of Aqua Line from Noida Sector-142 to Botanical Garden and Depot Station to Boraki MMTH (14.16 km).		
Client:	Noida Metro Rail Corporation (NMRC) Limited	**BH ID:**	BH-116
Stretch:	Sector 142 to Botanical Garden	**Chainage [km]:**	12+130
Project Code:	158_R0_Noida Sector-142 to Botanical Garden_0-372 km TO 12+130 km	**Water table Level [m]:**	-

Falling Head Method

Depth of borehole [m]:	2.00
Temprature [°c]:	20.00
Radius of Hole (r) [cm]:	7.50
Depth of Casing Pipe [m]:	1.50
Length of test Section (l) [cm]:	50.00
L/R Ratio:	6.67

From 1.50m to 2.00m



L [cm]:	50.00		
r [cm]:	7.50	**d [cm]:**	15.00
H_1/H_0:	0.825	**t_1 [min]:**	19.00
H_2/H_0:	0.691	**t_2 [min]:**	33.50
H_1/H_2:	1.193		

Coefficient of Permeability (K_t)			1.30E-02		**[cm/min]**
η_t	10.09	**milipoise**	**η_{27}**	8.55	**milipoise**
Coefficient of Permeability (K_{27})			1.535E-02		**[cm/min]**

Sr No.	Time in Minutes [t]	Water Level from top of the Intake Pipe [cm]	Height (H) of water level at time (t) [cm]	H_t/H_o	Remarks
1	0.00	0.00	200.00	1.000	-
2	0.30	4.00	196.00	0.980	-
3	1.00	7.00	193.00	0.965	-
4	2.00	14.00	186.00	0.930	-
5	5.00	24.00	176.00	0.880	-
6	10.00	46.00	154.00	0.770	-
7	15.00	50.00	150.00	0.750	-
8	30.00	72.00	128.00	0.640	-
9	60.00	115.00	85.00	0.425	-

Permeability by Falling head method is computed by the following relations:

$$K_t = \frac{d^2}{8L}\, x\, (log_e \frac{L}{R})\, \frac{log_e\, {}^{h_1}/_{h_2}}{t_2 - t_1}$$

K = Coefficient of Permeability;
d = Diameter of Intake Pipe (stand pipe);
L = length of Test Section;
h_1 = Head of Water in the Stand Pipe at time t_1, above Piezometeric Surface;
h_2 = Head of Water in the Stand Pipe at the time t_2, above Piezometeric Surface;
R = Radius of Borehole.

Coefficient of Permeability K_{27}, at 27°C is calculated by the following formula

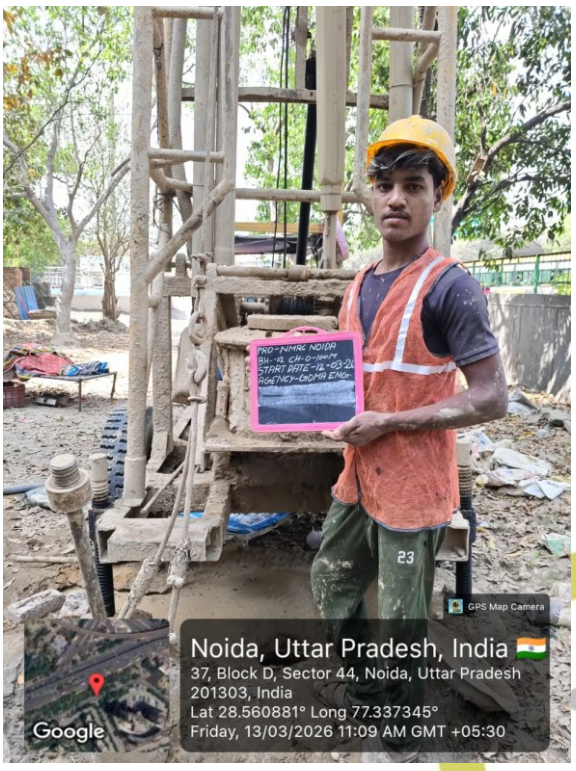
$$K_{27} = \frac{\eta_t\, K_t}{\eta_{27}}$$

η_t = Viscosity of Water at the Field Temperature, t;
K_t = Coefficient of Permeability at the Field Temperature,
η_{27} = Viscosity of Water at 27°C.

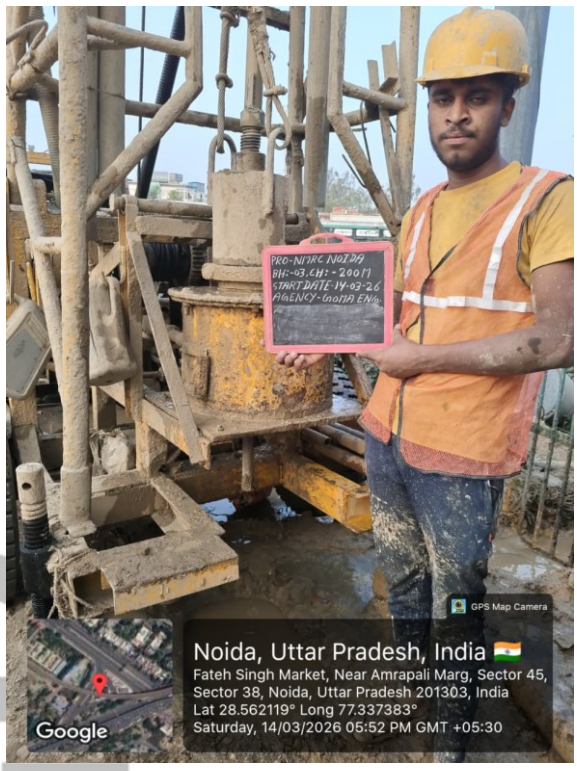
Appendix F Site Investigation Photographs

F.1 Zone 1: CH: 0-372 km to 0+500 km (BH-(-02) to BH-(-10))

BH-(-02)



BH-(-03)

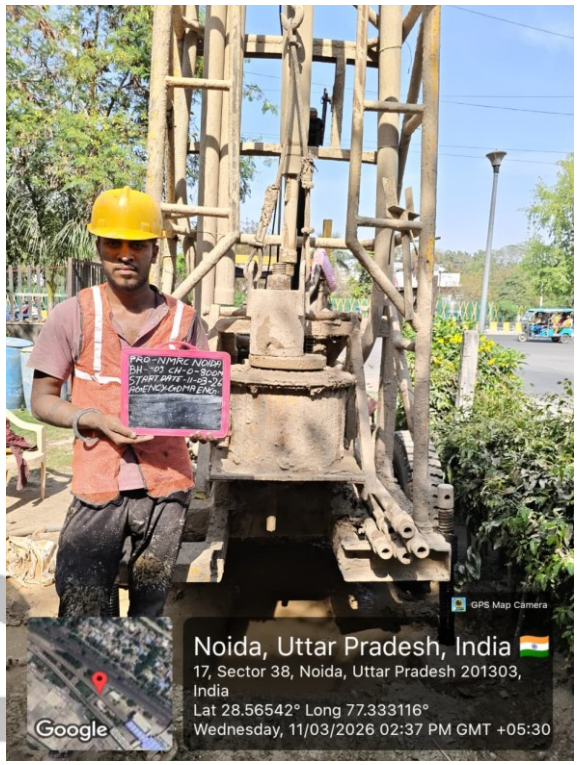


BH-(-05)

BH-(-06)

BH-(-08)

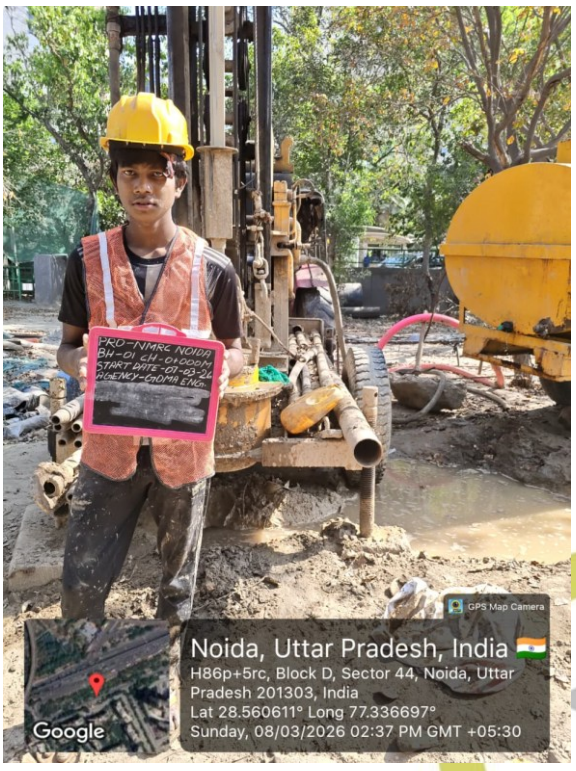
BH-(-09)



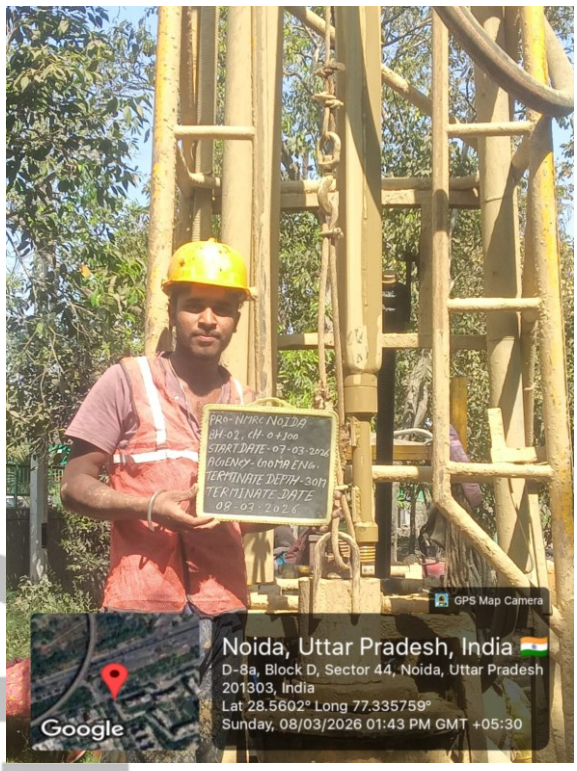
BH-(-10)

F.2 Zone 2: CH: 0+500 km to 1+450 km (BH-01 to BH-09)

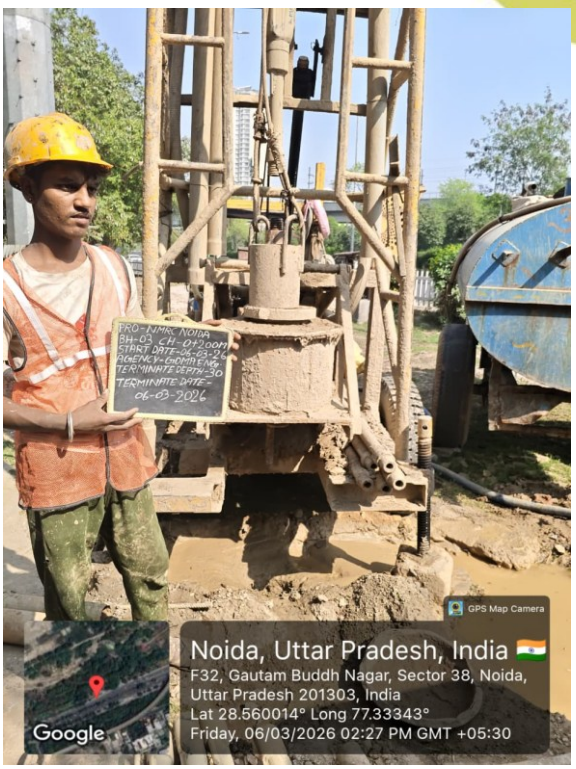
BH-01



BH-02



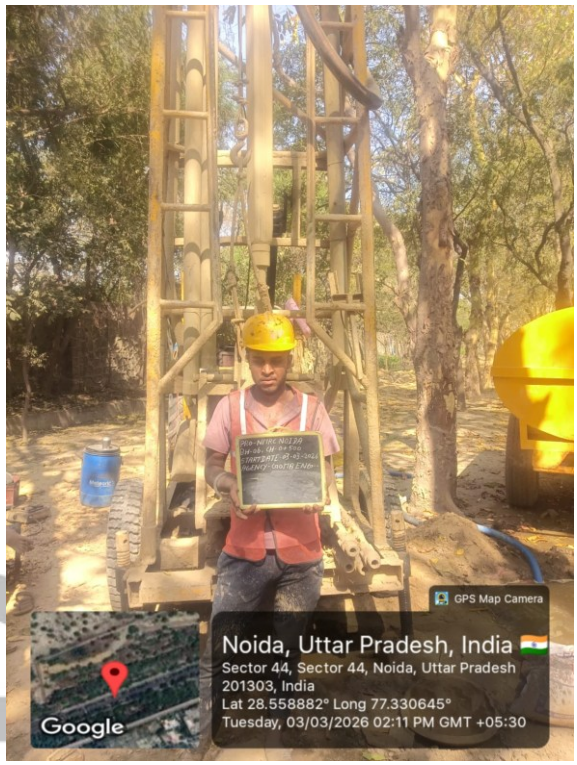
BH-03



BH-04

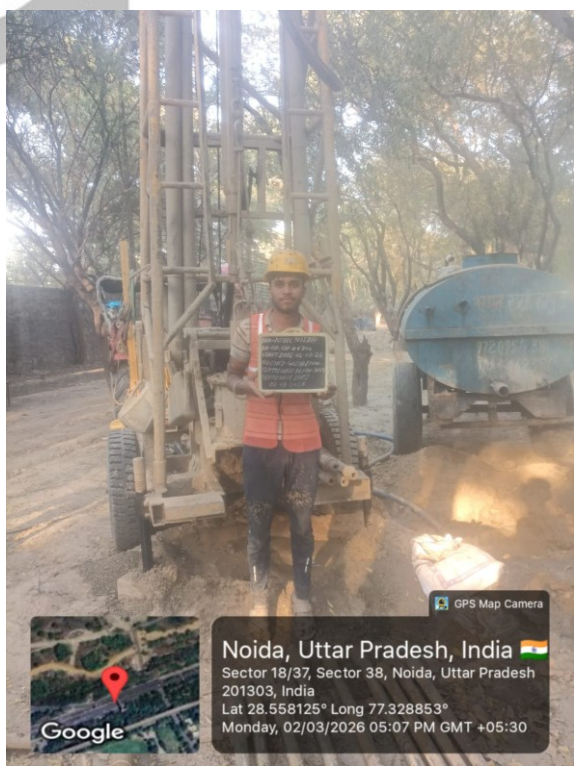
BH-05

BH-06



BH-07

BH-08

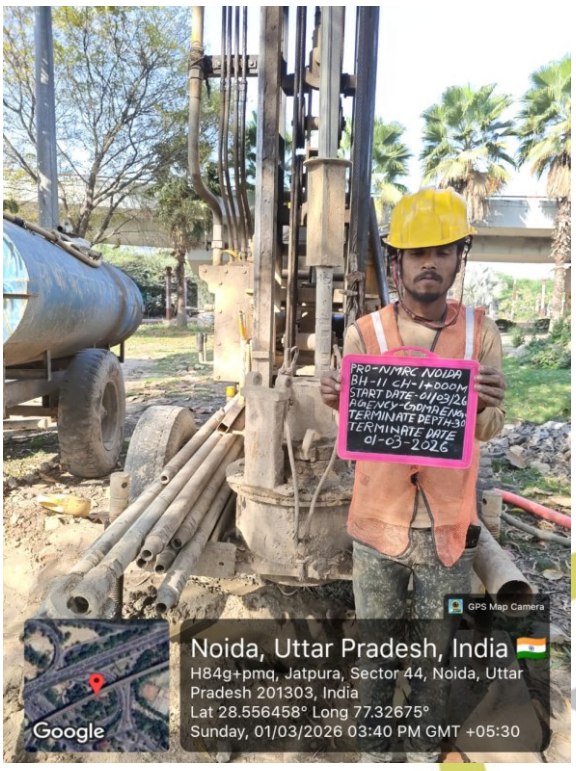


BH-09


PRO-NMRC NOIDA
BH-9 CH-0+800M
START DATE-02-02-26
AGENCY-GAMMON
GPS Map Camera
Noida, Uttar Pradesh, India
Second Hand, Furniture Market, Near, Mahamaya Flyover, C Block, Sector 44, Noida, Uttar Pradesh 201303, India
Lat 28.557891° Long 77.328135°
Monday, 02/03/2026 06:00 PM GMT +05:30
Google

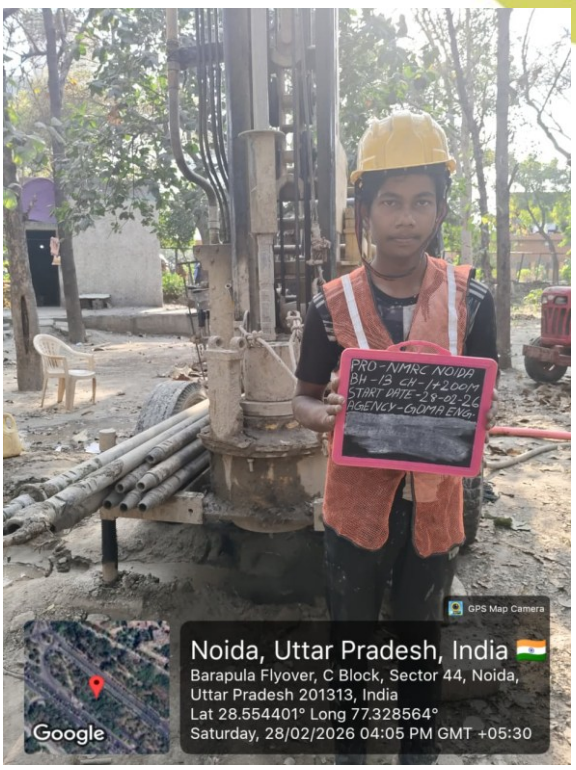
F.3 Zone 3: CH: 1+450 km to 2+515 km (BH-11 to BH-20A)

BH-11

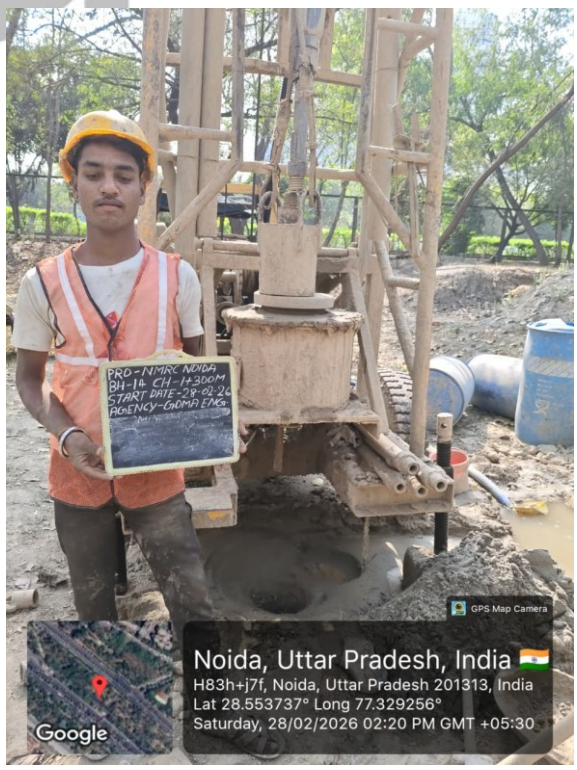


BH-12

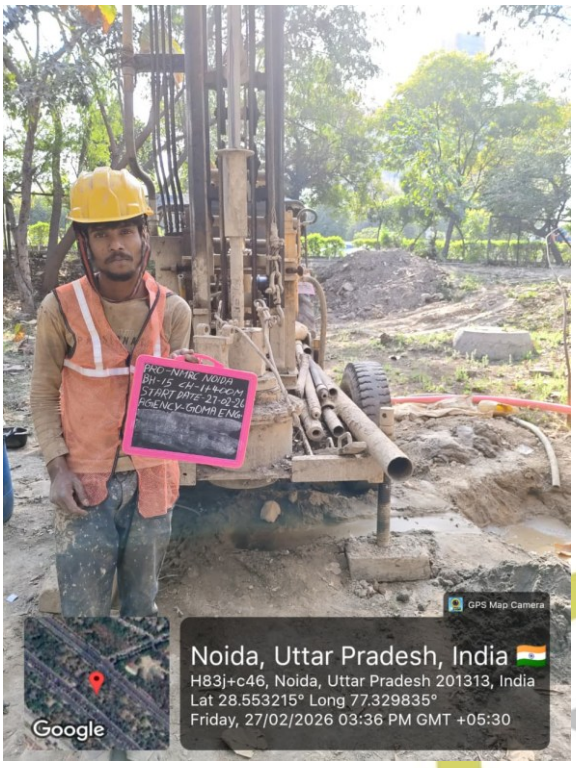
BH-13



BH-14



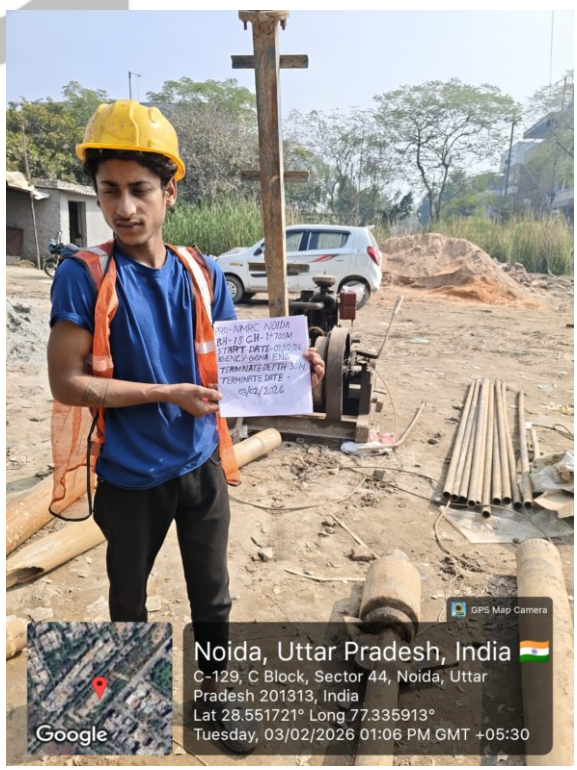
BH-15



BH-16

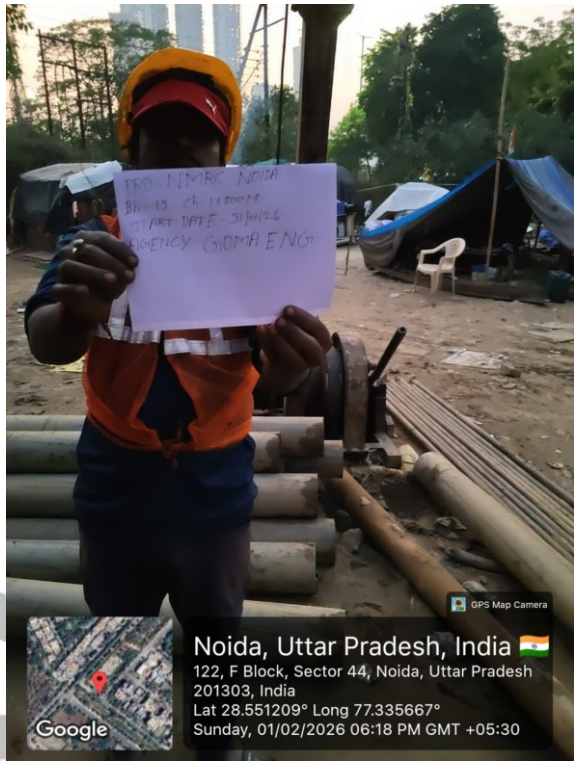
BH-17

BH-18

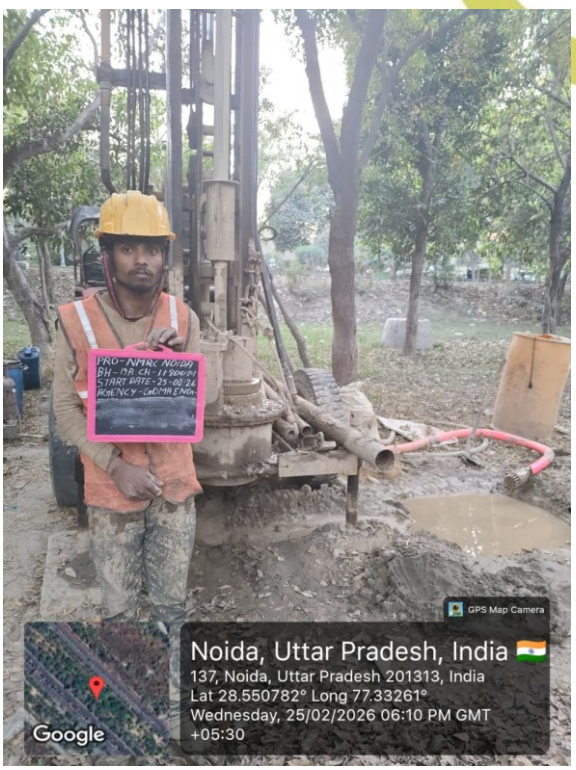


BH-18A

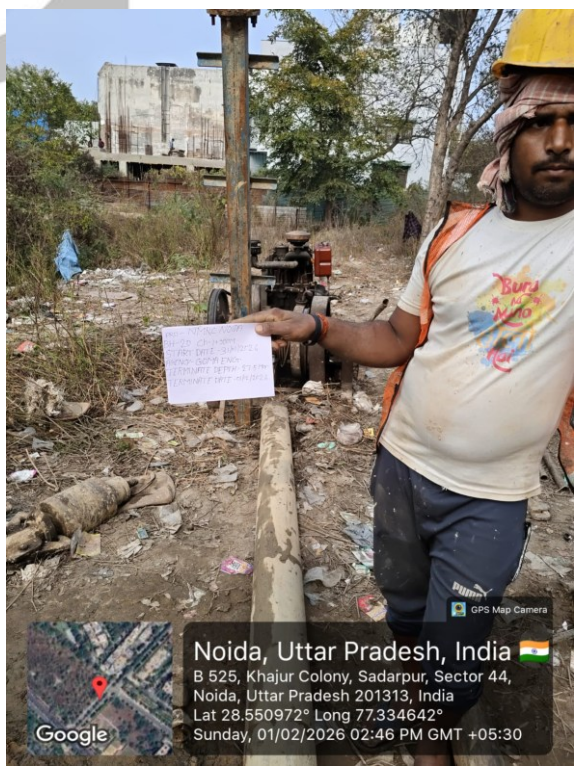
BH-19



BH-19A



BH-20



BH-20A


GPS Map Camera
Noida, Uttar Pradesh, India
B 525, Khajur Colony, Sadarpur, Sector 44,
Noida, Uttar Pradesh 201313, India
Lat 28.550137° Long 77.333238°
Wednesday, 25/02/2026 02:54 PM GMT
+05:30
Google

F.4 Zone 4: CH: 2+515 km to 3+515 km (BH-21 to BH-30)

BH-21

BH-22

BH-23

BH-24

BH-25

BH-26

BH-27

BH-28

BH-28A

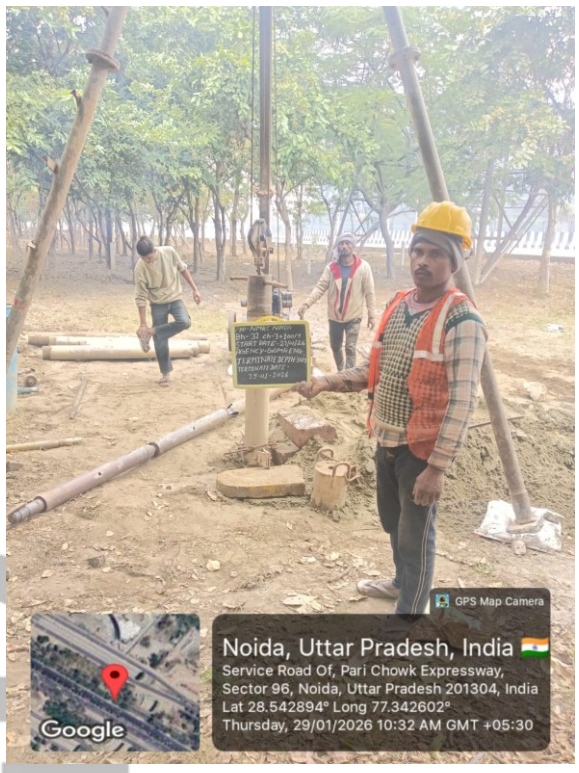
BH-29

BH-30

F.5 Zone 5: CH: CH: 3+515 km to 4+520 km (BH-31 to BH-40)

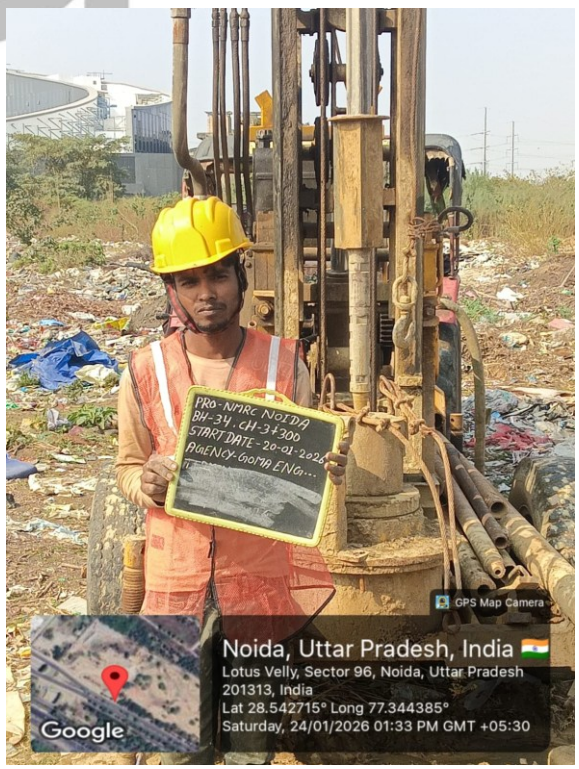
BH-31

BH-32

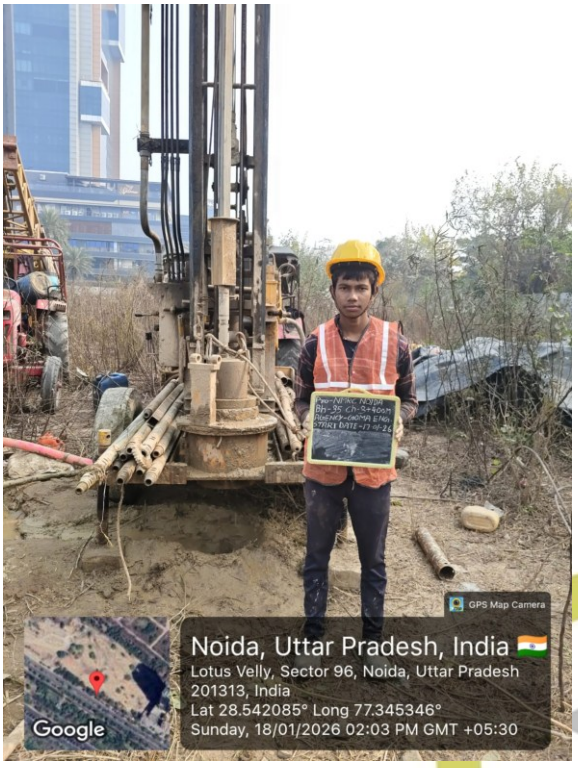


BH-33

BH-34



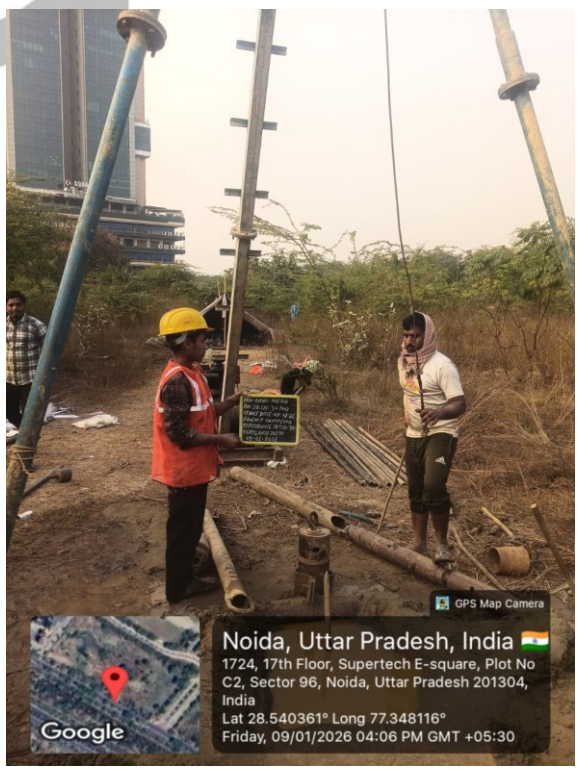
BH-35



BH-36

BH-37

BH-38



BH-39


GPS Map Camera
Noida, Uttar Pradesh, India
G8qx+wv7, Noida, Uttar Pradesh 201304, India
Lat 28.539847° Long 77.348843°
Monday, 12/01/2026 12:29 PM GMT +05:30
Google

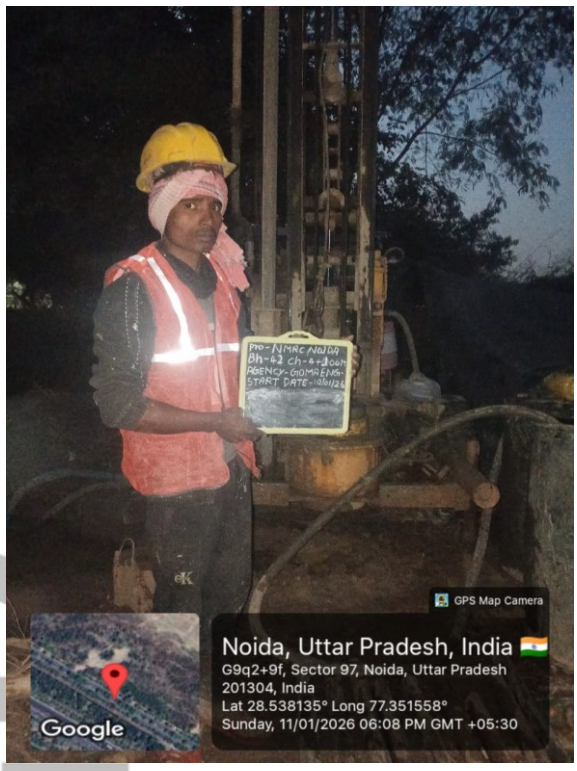
BH-40


GPS Map Camera
Noida, Uttar Pradesh, India
G8qx+wv7, Noida, Uttar Pradesh 201304, India
Lat 28.539304° Long 77.34958°
Friday, 16/01/2026 11:27 AM GMT +05:30
Google

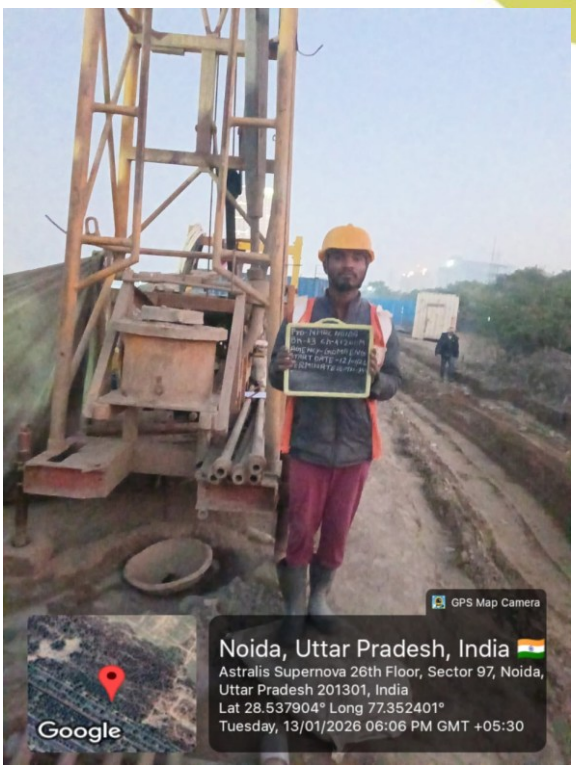
F.6 Zone 6: CH: CH: 4+515 km to 5+530 km (BH-41 to BH-50)

BH-41

BH-42

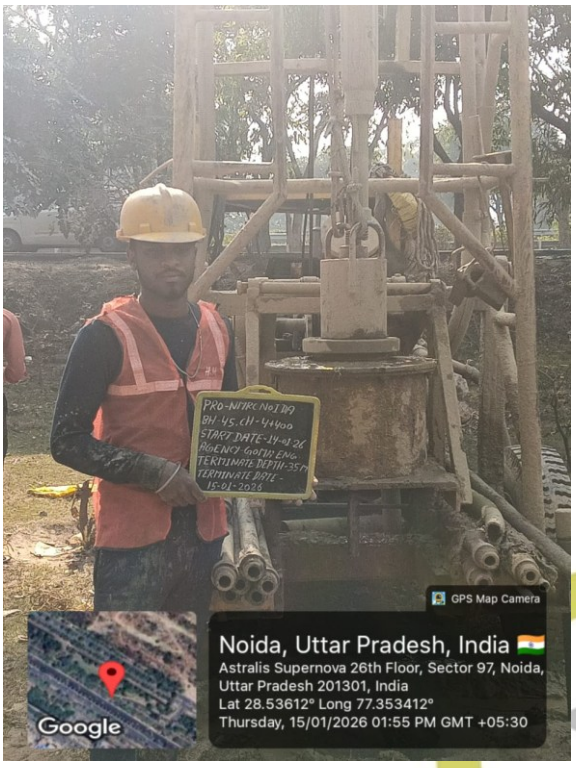


BH-43



BH-44

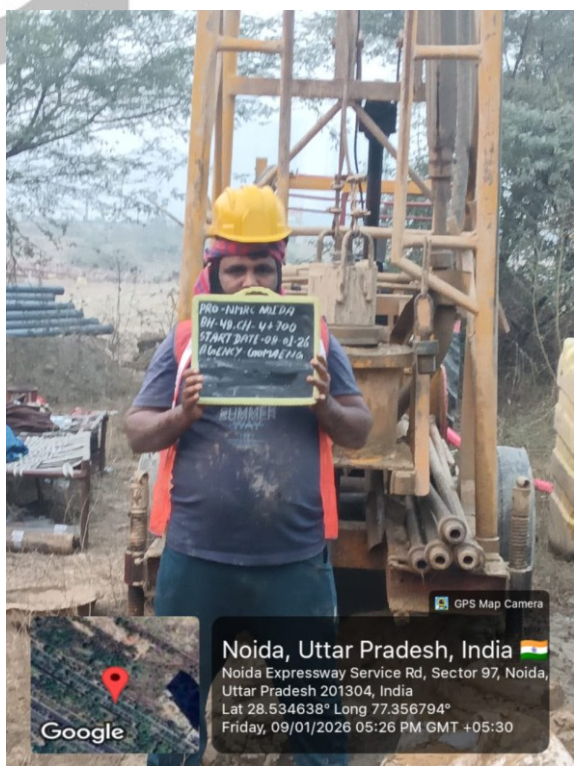
BH-45



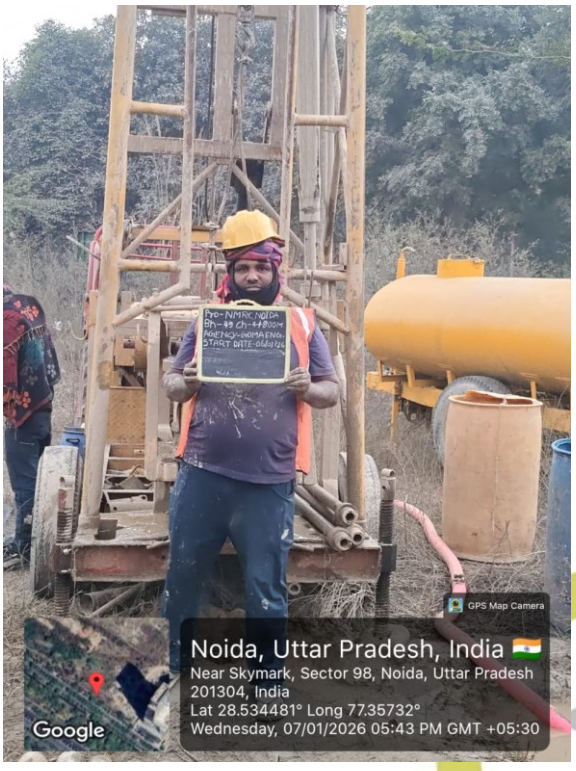
BH-45A

BH-46

BH-48



BH-49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Near Skymark, Sector 98, Noida, Uttar Pradesh 201304, India
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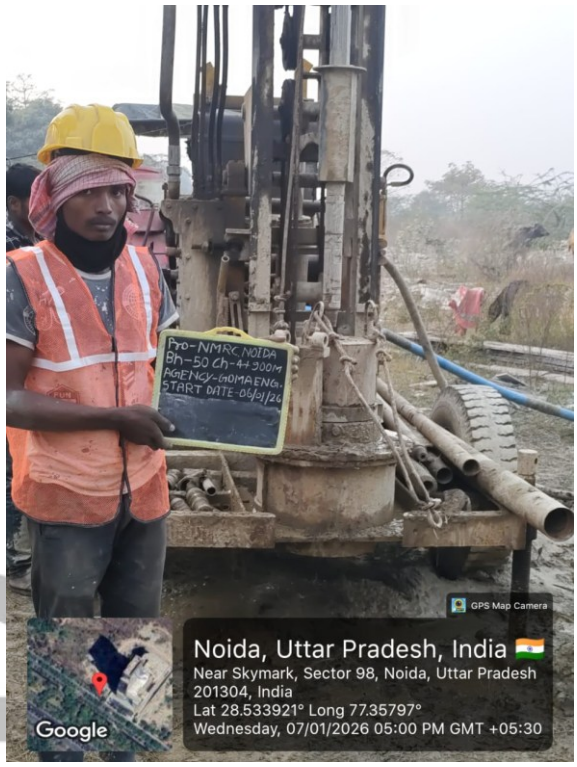
Wednesday, 07/01/2026 05:43 PM GMT +05:30
Google

BH-50


Pro-NMRC NOIDA
Bh-50 Ch-44300M
AGENCY-GOMAENG.
START DATE-06/01/26
GPS Map Camera
Noida, Uttar Pradesh, India
Near Skymark, Sector 98, Noida, Uttar Pradesh 201304, India
Lat 28.533921° Long 77.35797°
Wednesday, 07/01/2026 05:00 PM GMT +05:30
Google

F.7 Zone 7: CH: 5+530 km to 6+490 km (BH-51 to BH-60)

BH-51

BH-52

BH-53

BH-54

BH-55

BH-56

BH-57

BH-58

BH-59


GPS Map Camera
Noida, Uttar Pradesh, India
Tower 14, Flat 1717, Sector 105, Noida, Uttar Pradesh
201305, India
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31/12/2025 05:28 PM GMT +05:30
Google

BH-60


GPS Map Camera
Noida, Uttar Pradesh, India
G9h8+chj, Sector 105, Noida, Uttar Pradesh
201304, India
Lat 28.528927° Long 77.365871°
Tuesday, 30/12/2025 11:30 AM GMT +05:30
Google

F.8 Zone 8: CH: 6+490 km to 7+490 km (BH-61 to BH-70)

BH-61

BH-62

BH-63

BH-64

BH-65

BH-66

BH-67

BH-68

BH-69

BH-69A

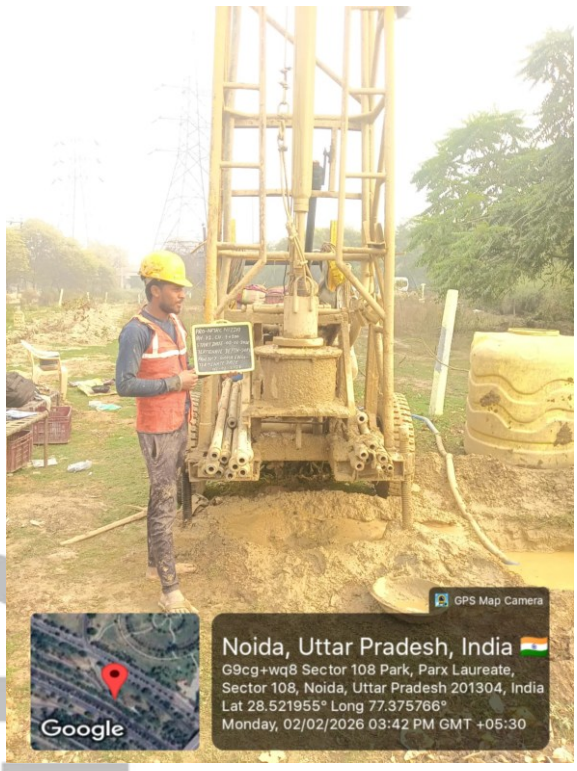
BH-69B

BH-70

F.9 Zone 9: CH: 7+490 km to 8+550 km (BH-71 to BH-80)

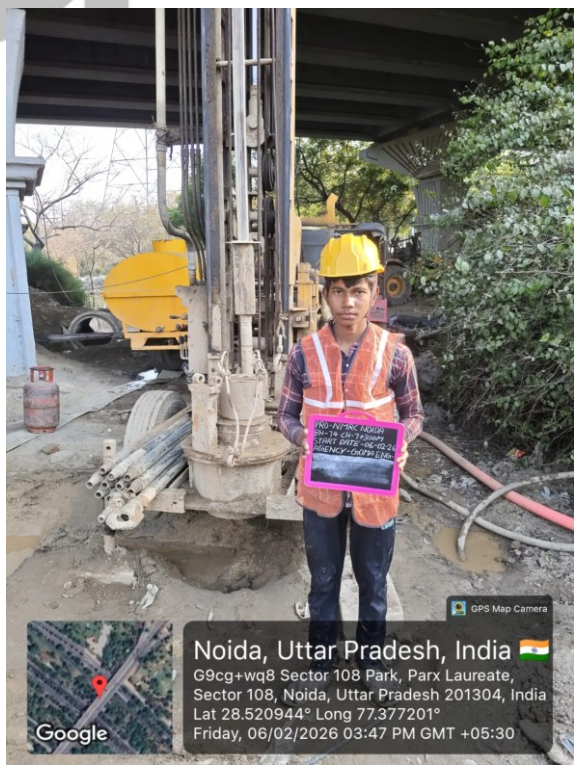
BH-71

BH-72

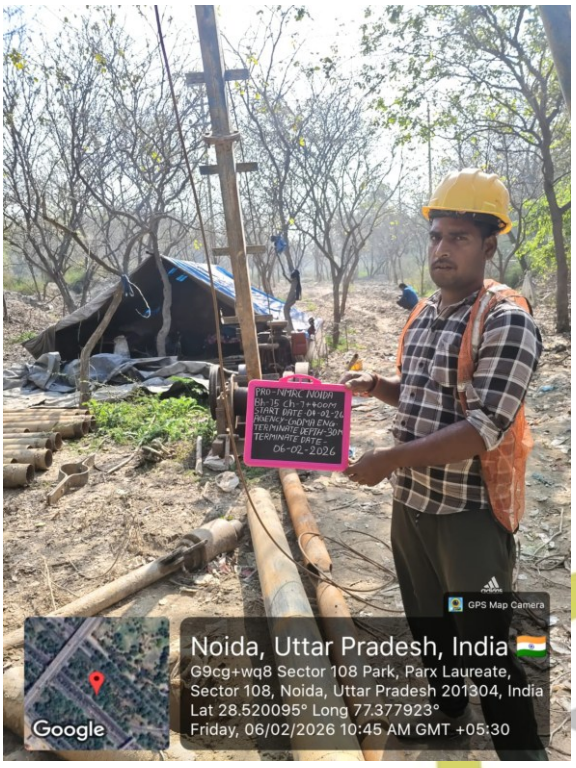


BH-73

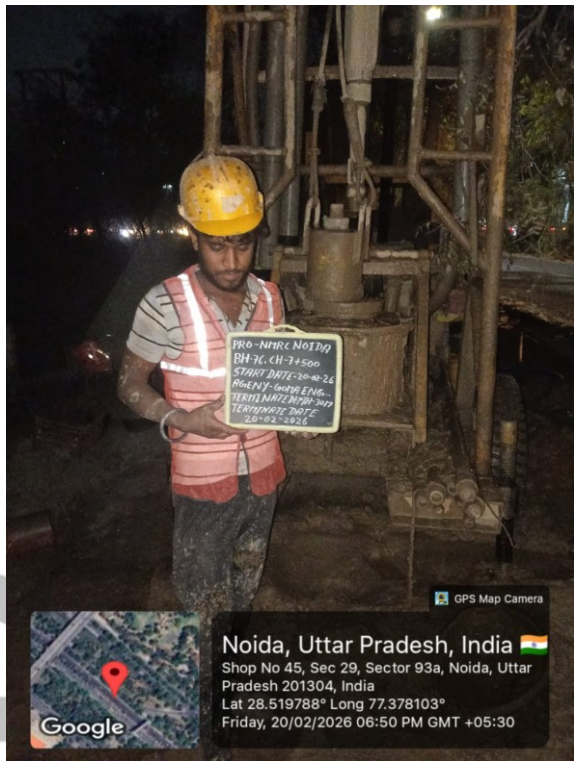
BH-74



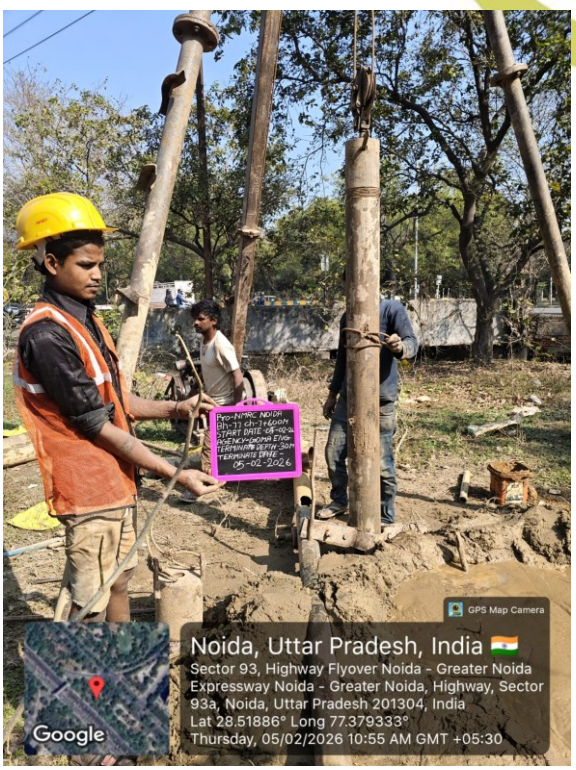
BH-75



BH-76



BH-77



BH-80

F.10 Zone 10: CH: 8+550 km to 9+430 km (BH-82 to BH-89)

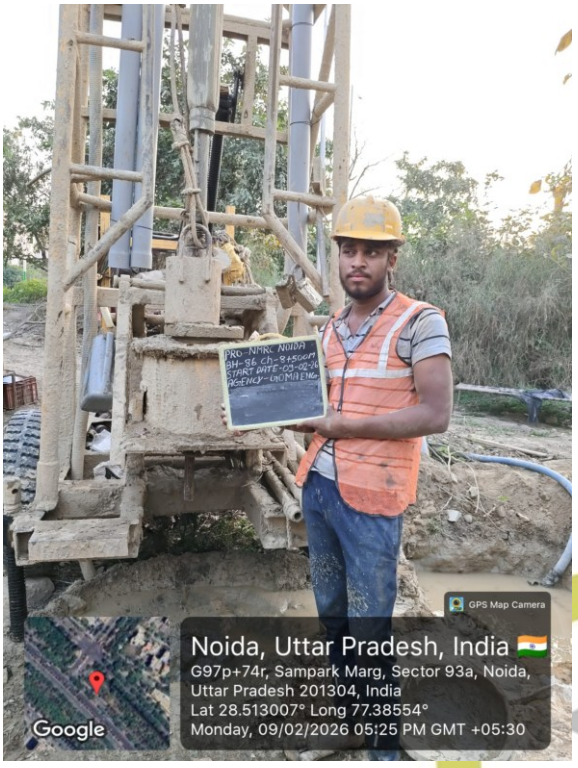
BH-82

BH-83

BH-84

BH-85

BH-86



BH-87

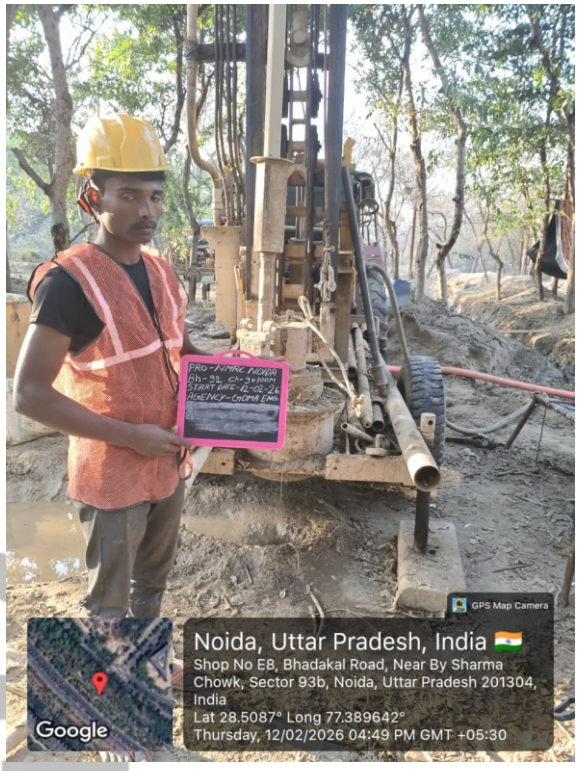
BH-88

BH-89

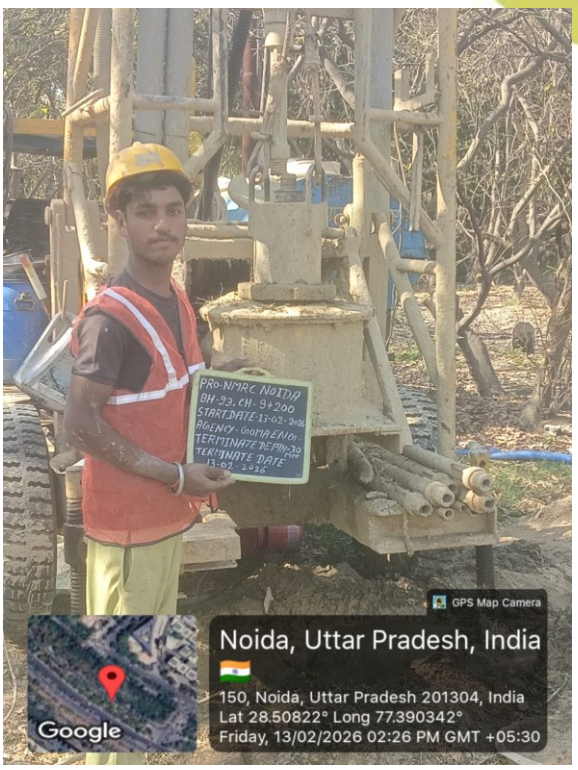
F.11 Zone 11: CH: 9+430 km to 10+540 km (BH-91 to BH-100)

BH-91

BH-92



BH-93



BH-95