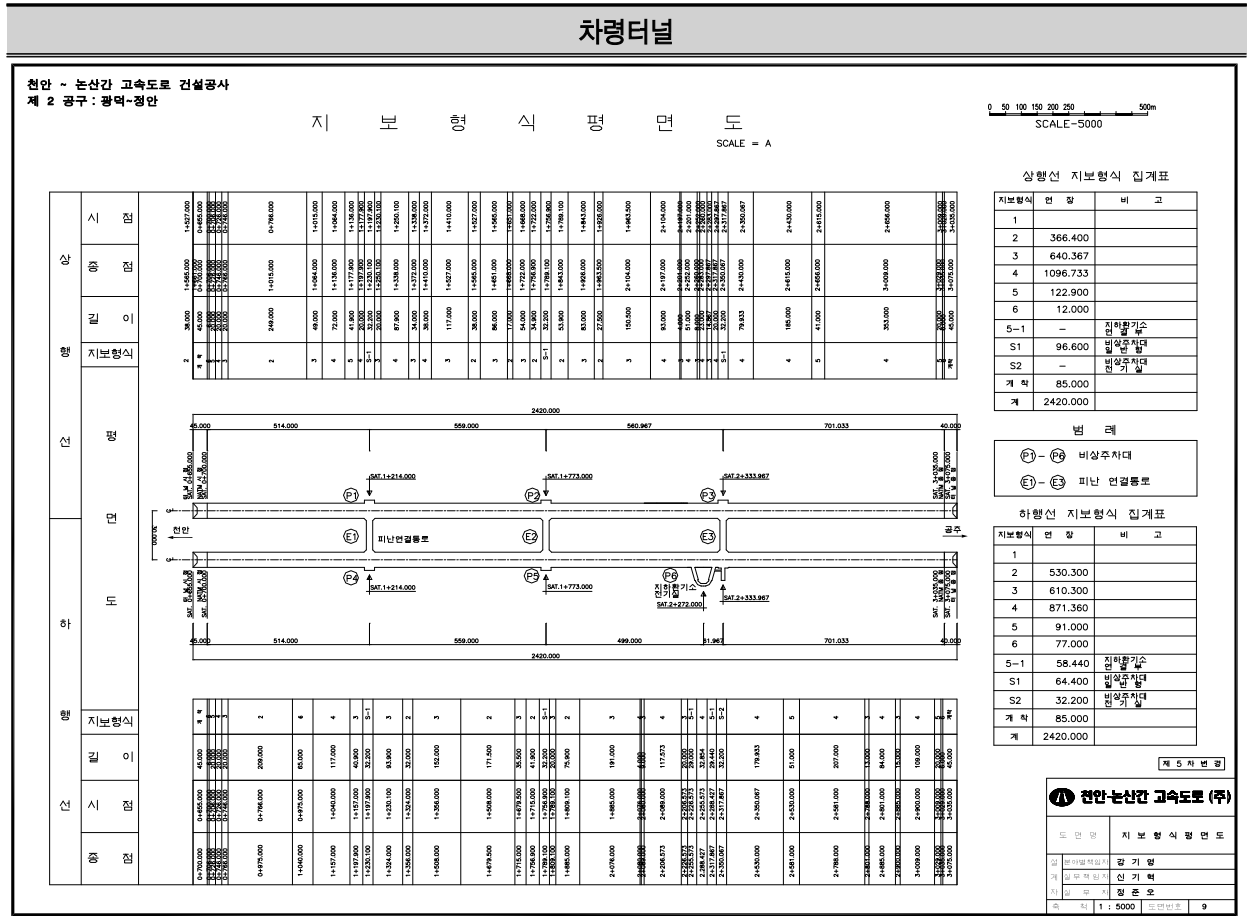


GPR 탐사결과

1 차령터널 성과분석

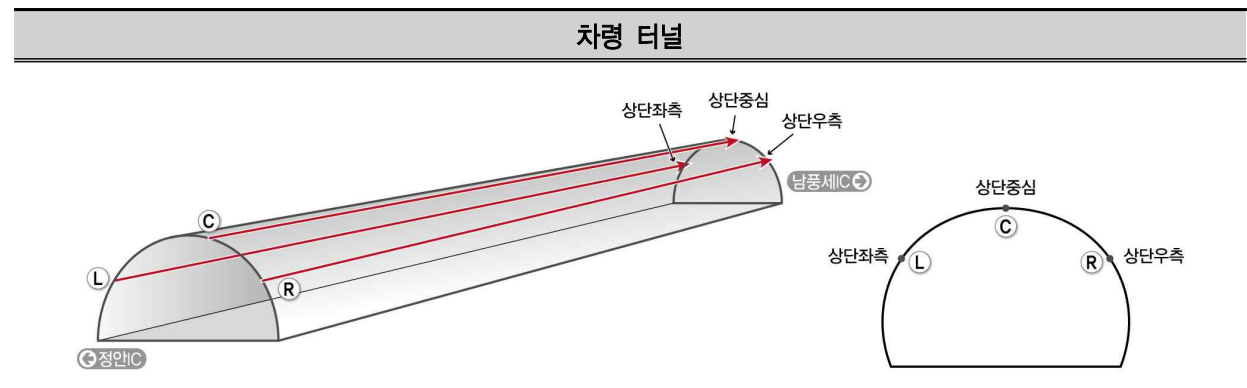
1) 탐사위치 및 구간

- 천안 ~ 논산간 고속도로 제2공구 차령터널 라이닝 배면공동 GPR 탐사구간



2) 탐사구간

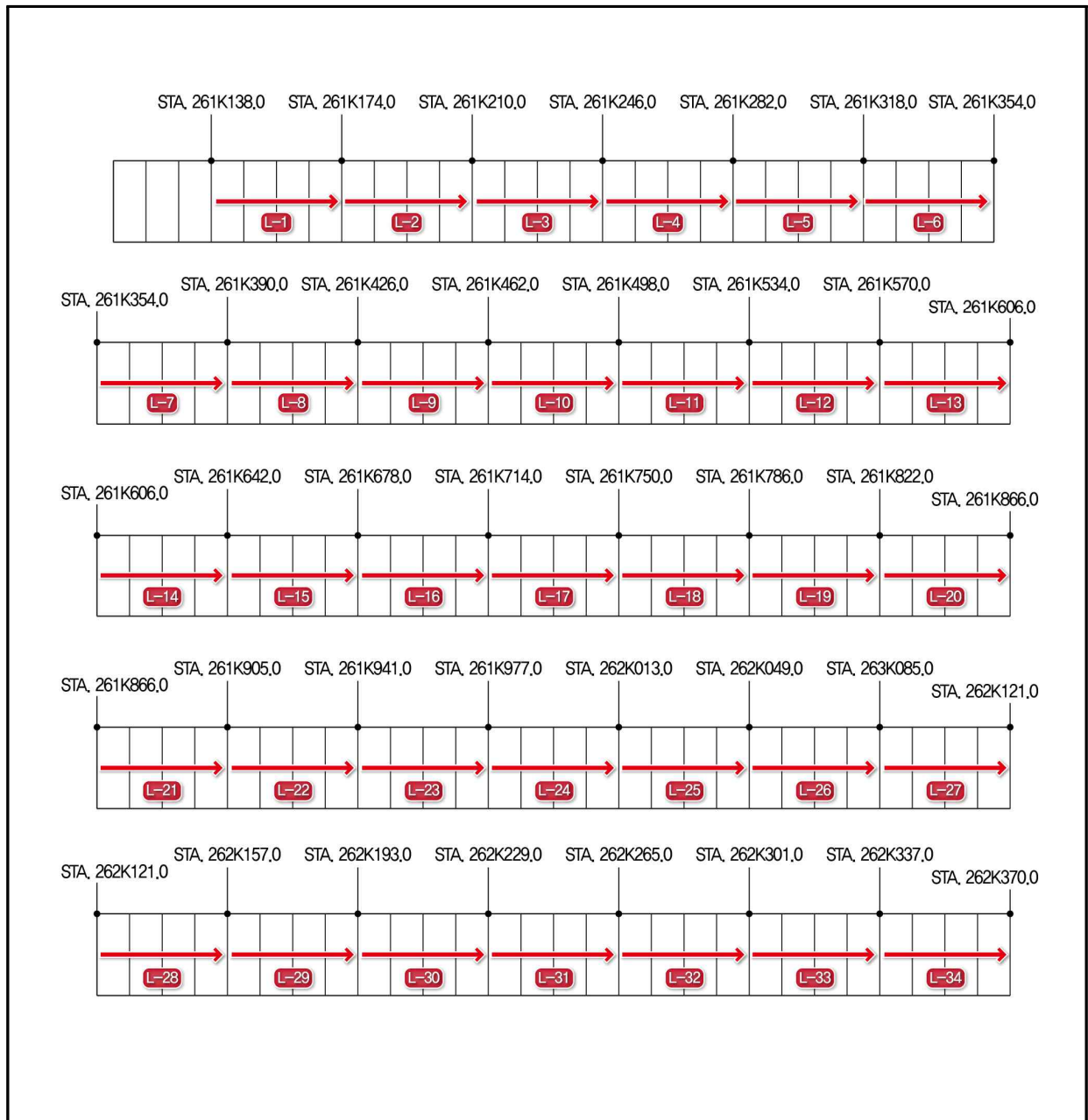
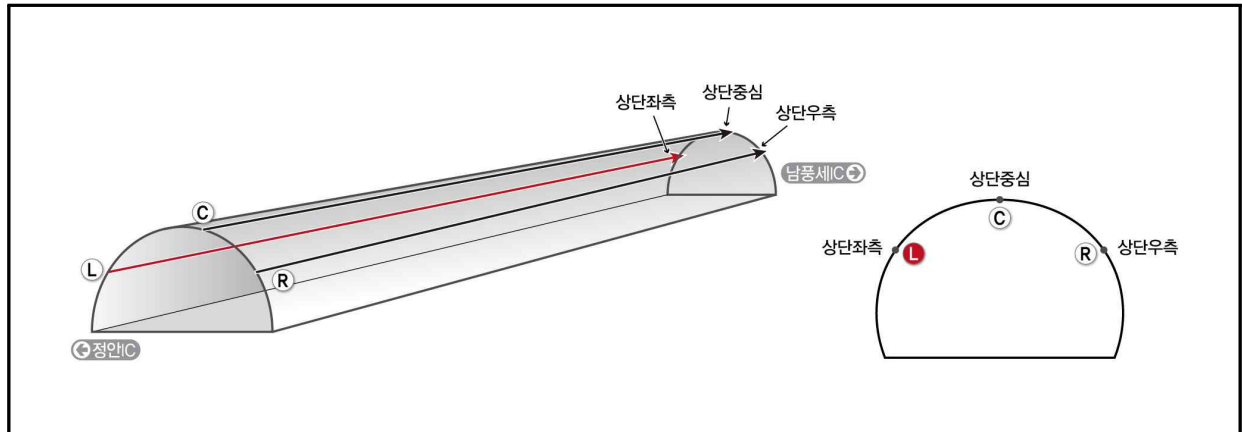
- 천안-논산간 차령터널 중 STA.261k138.0~263k504.0(L=2,366m)구간에 대해 중단 천단부 탐사를 수행

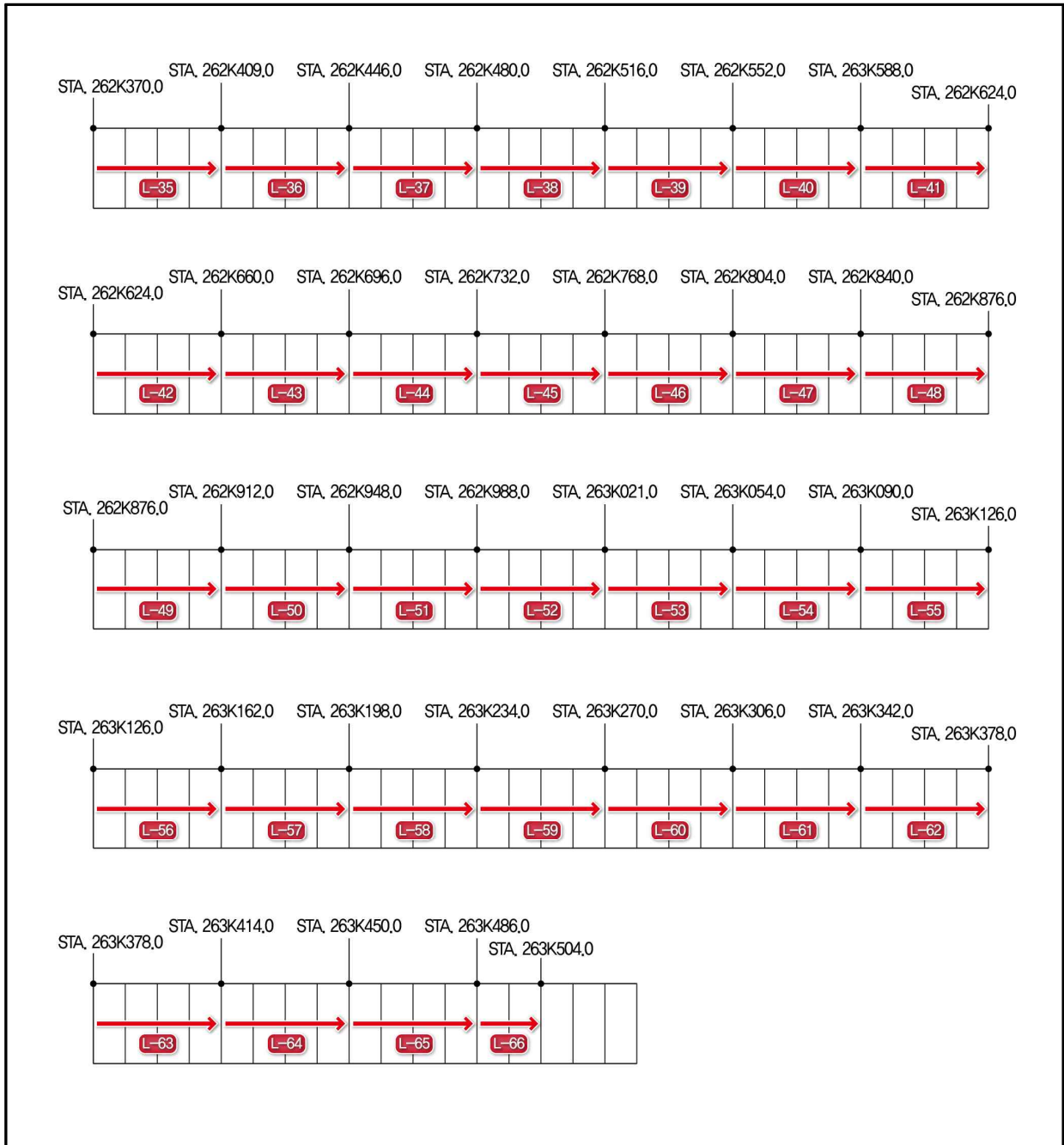


1.1

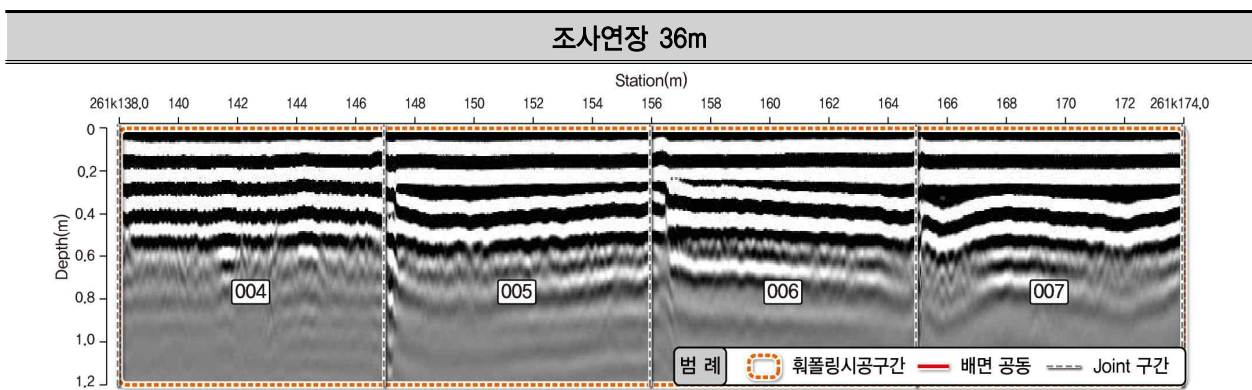
터널 종방향 상단좌측

1) 측선설정

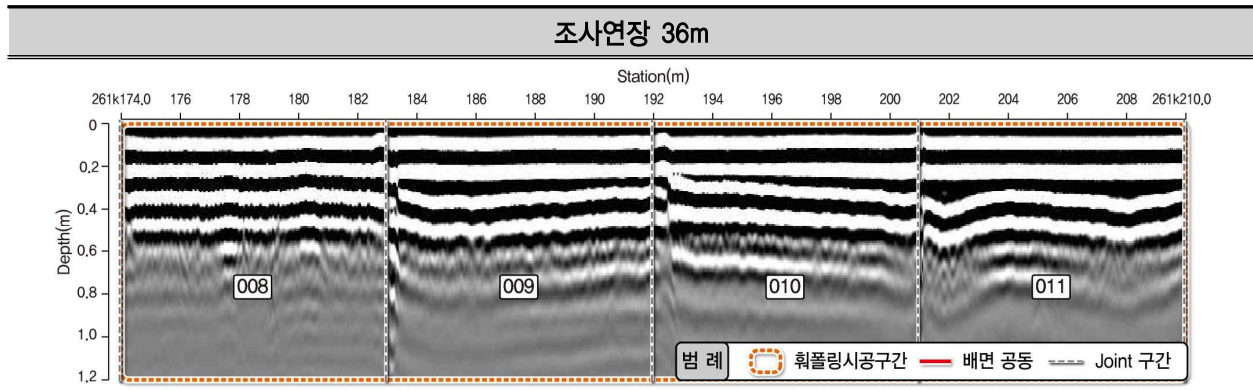




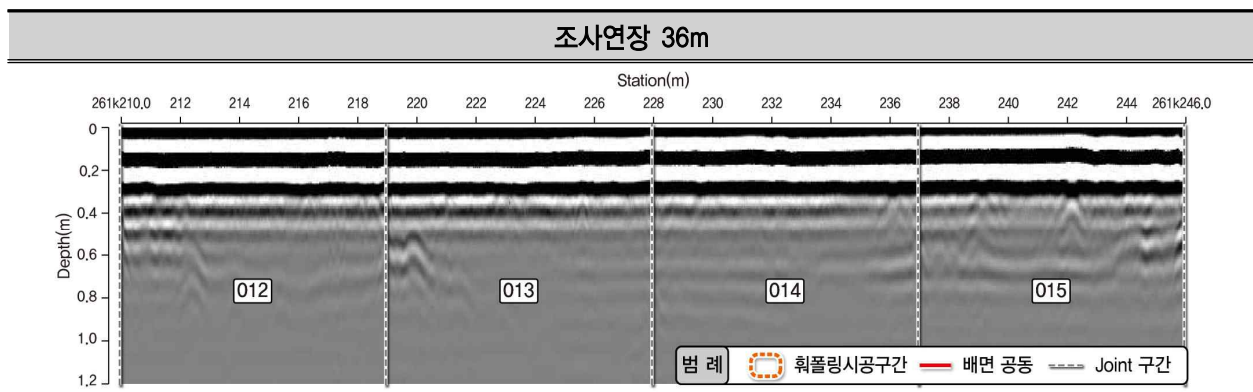
2) L-1(STA. 261K138,0 ~ 261K174,0)



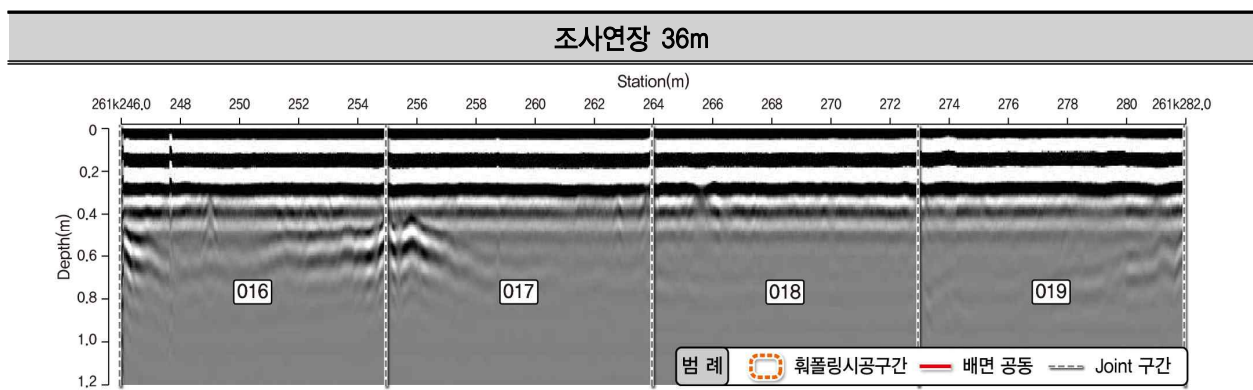
3) L-2(STA. 261K174.0 ~ 261K210.0)



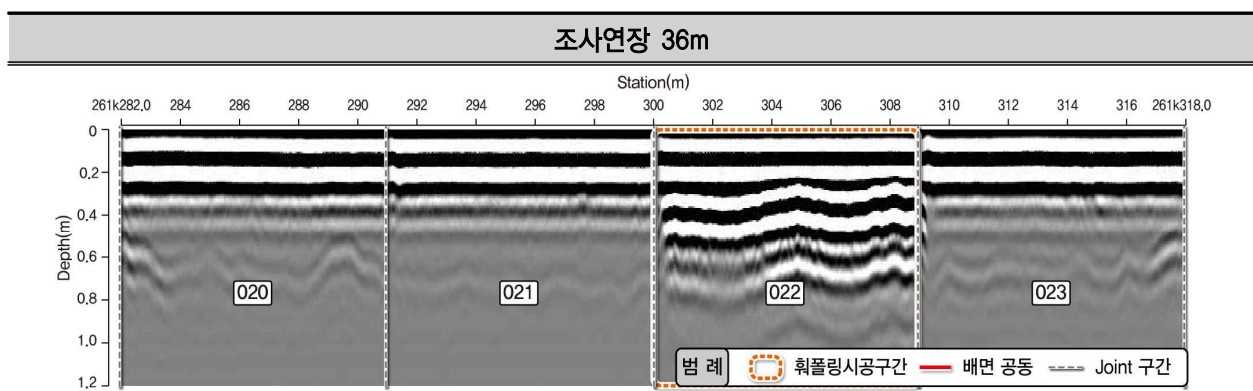
4) L-3(STA. 261K210.0 ~ 261K246.0)



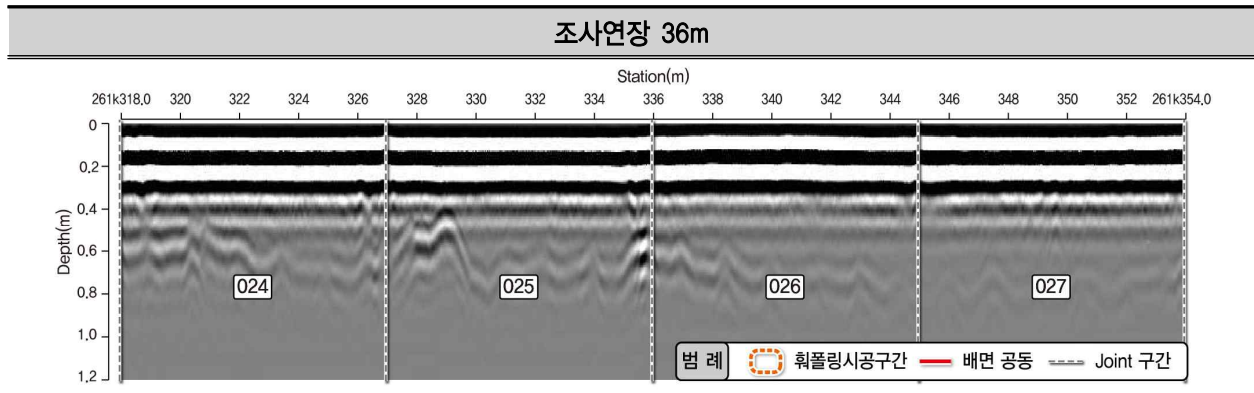
5) L-4(STA. 261K246.0 ~ 261K282.0)



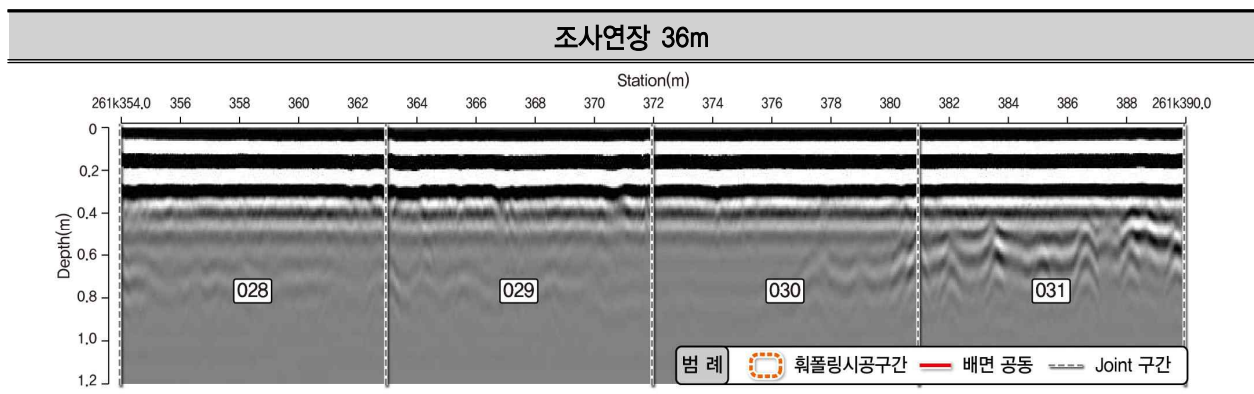
6) L-5(STA. 261K282.0 ~ 261K318.0)



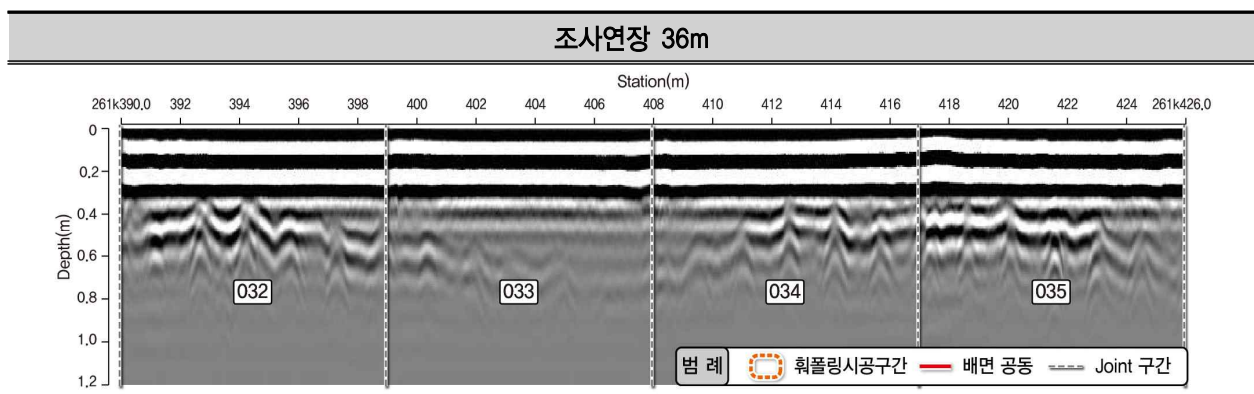
7) L-6(STA. 261K318.0 ~ 261K354.0)



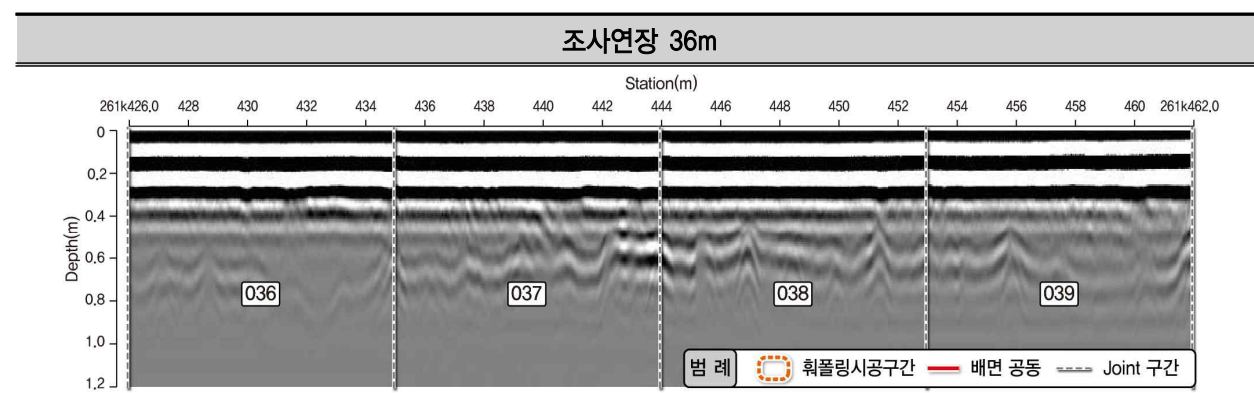
8) L-7(STA. 261K354.0 ~ 261K390.0)



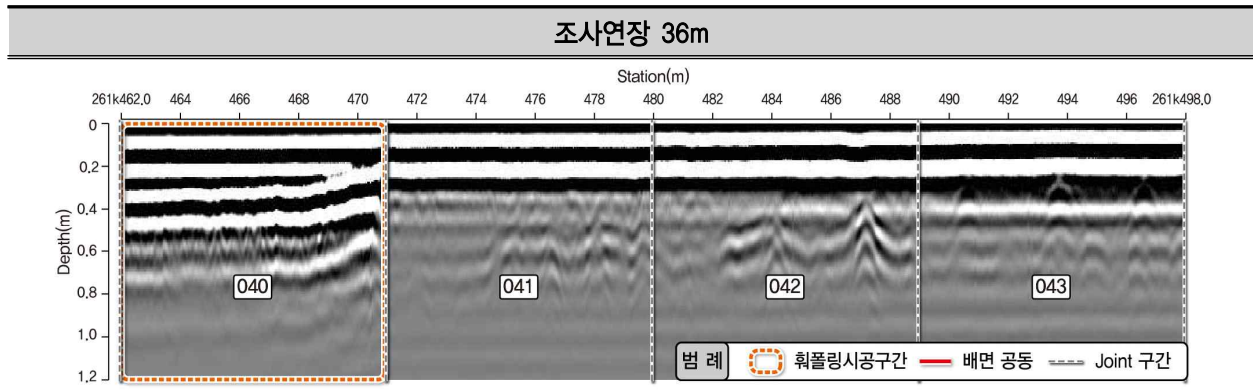
9) L-8(STA. 261K390.0 ~ 261K426.0)



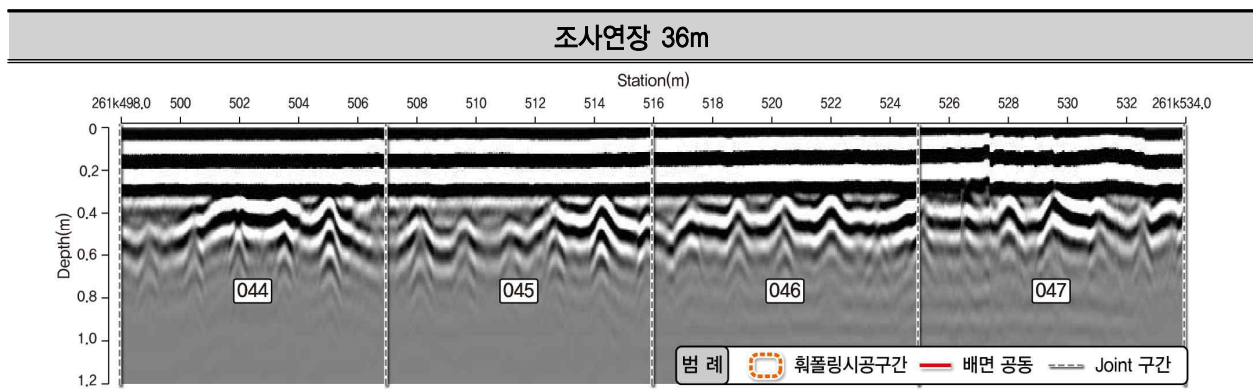
10) L-9(STA. 261K426.0 ~ 261K462.0)



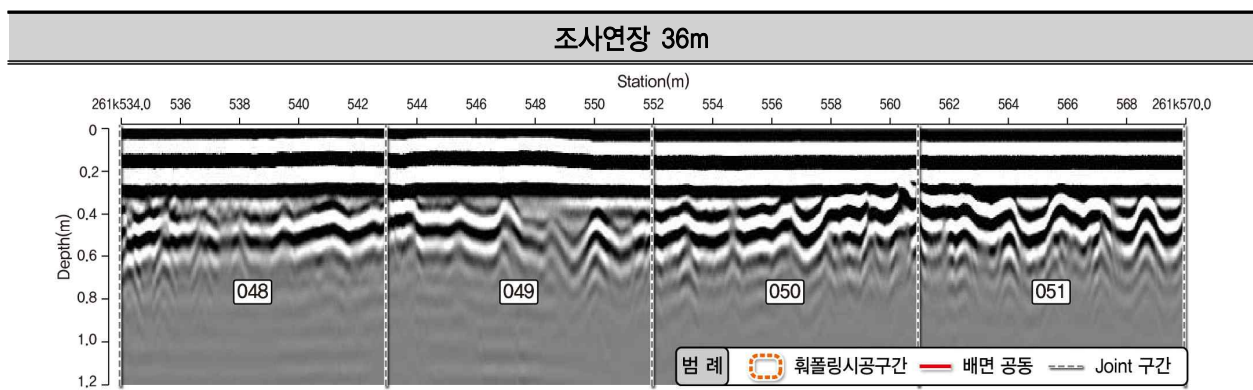
11) L-10(STA. 261K462.0 ~ 261K498.0)



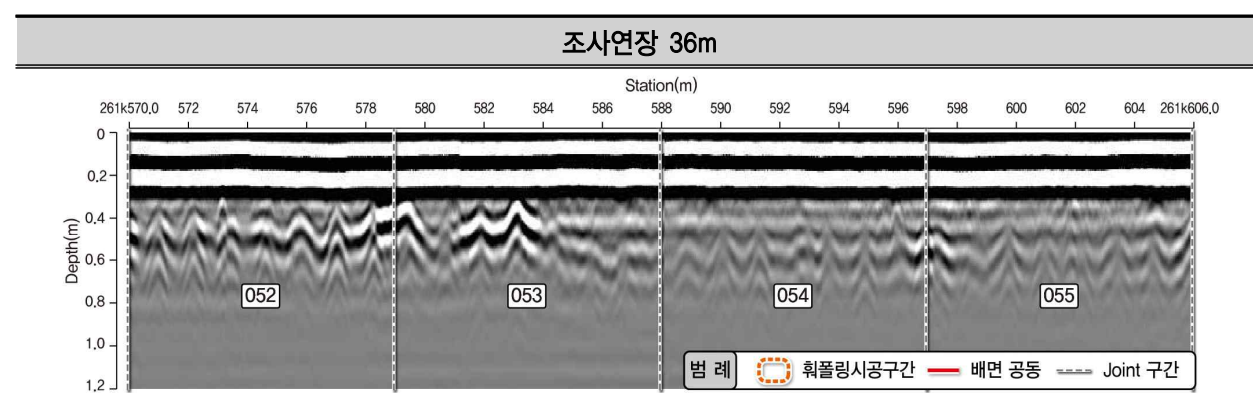
12) L-11(STA. 261K498.0 ~ 261K534.0)



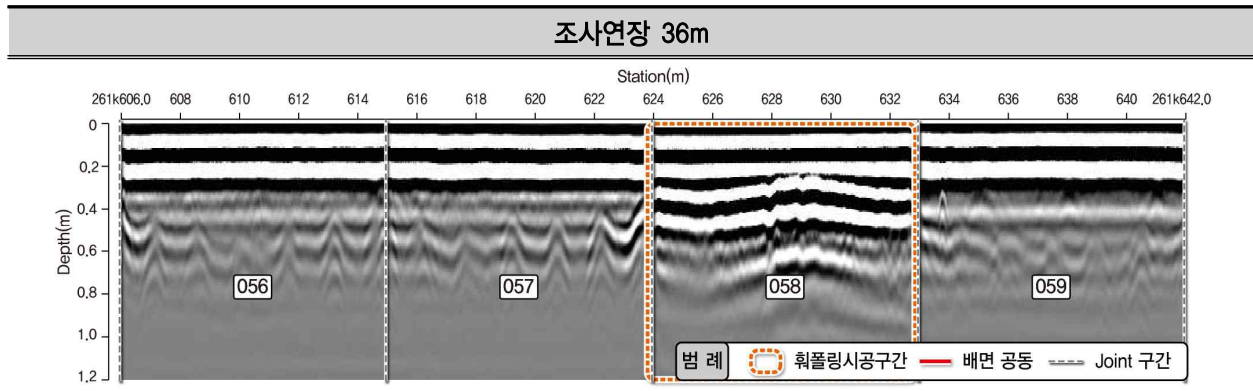
13) L-12(STA. 261K534.0 ~ 261K570.0)



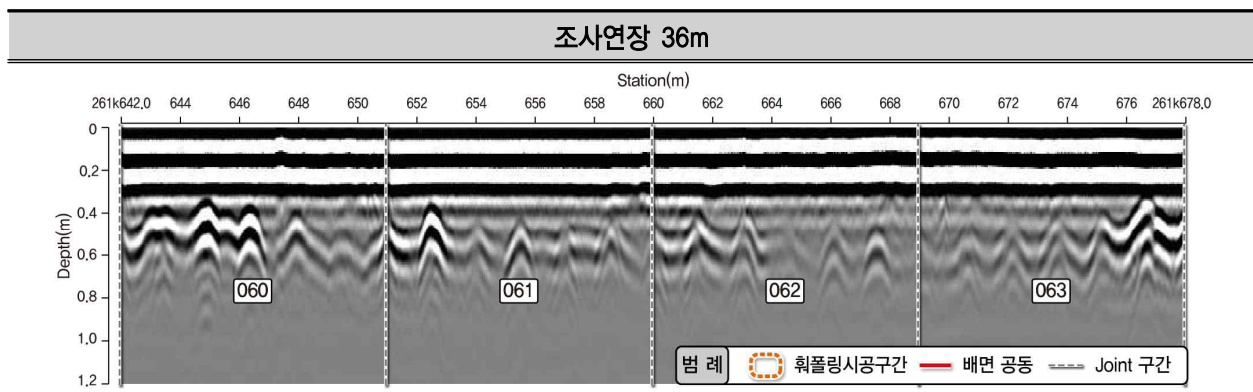
14) L-13(STA. 261K570.0 ~ 261K606.0)



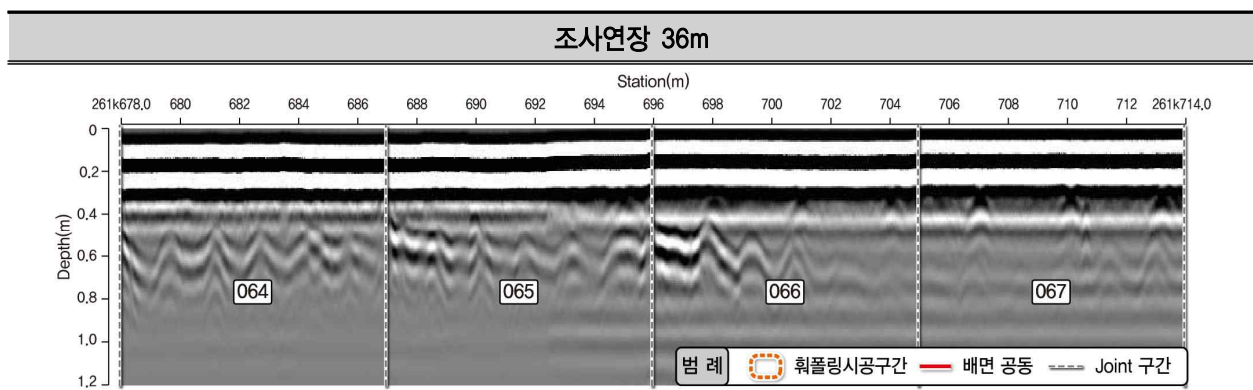
15) L-14(STA.261K606.0 ~ 261K642.0)



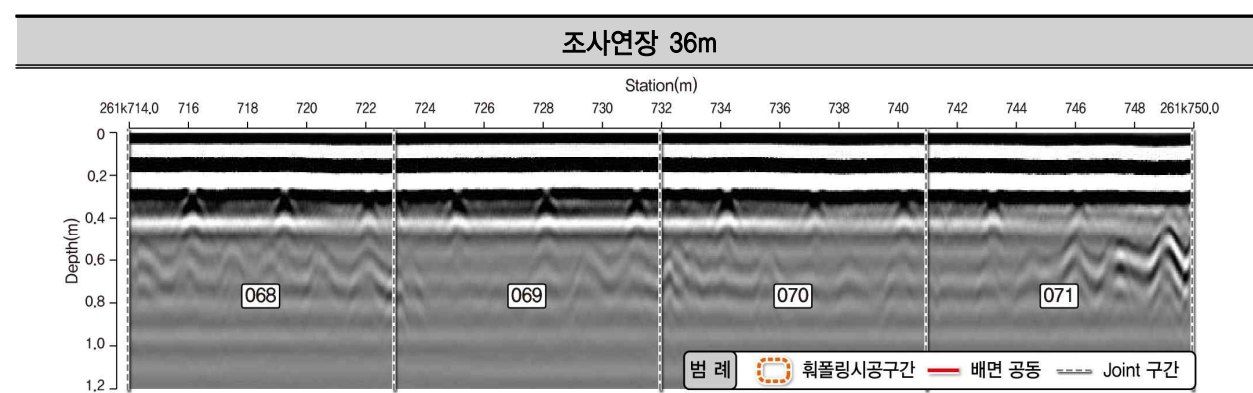
16) L-15(STA.261K642.0 ~ 261K678.0)



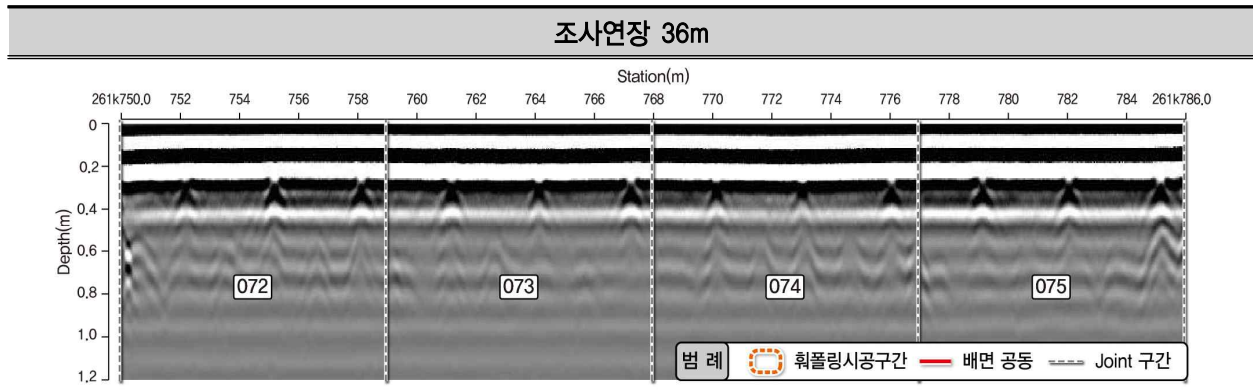
17) L-16(STA. 261K678.0 ~ 261K714.0)



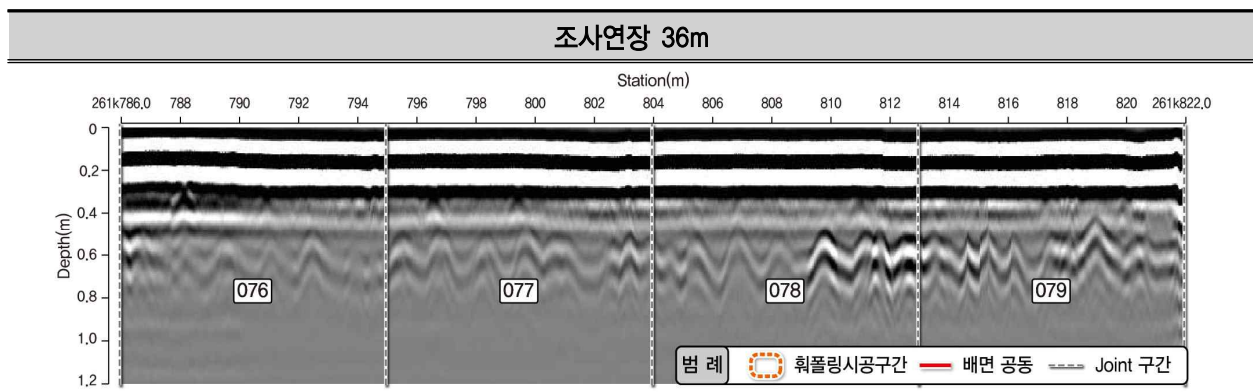
18) L-17(STA. 261K714.0 ~ 261K750.0)



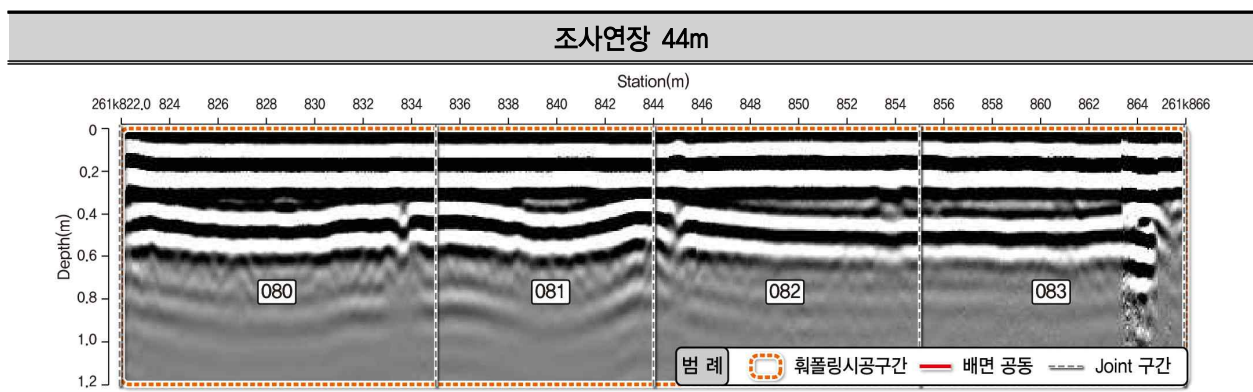
19) L-18(STA. 261K750.0 ~ 261K786.0)



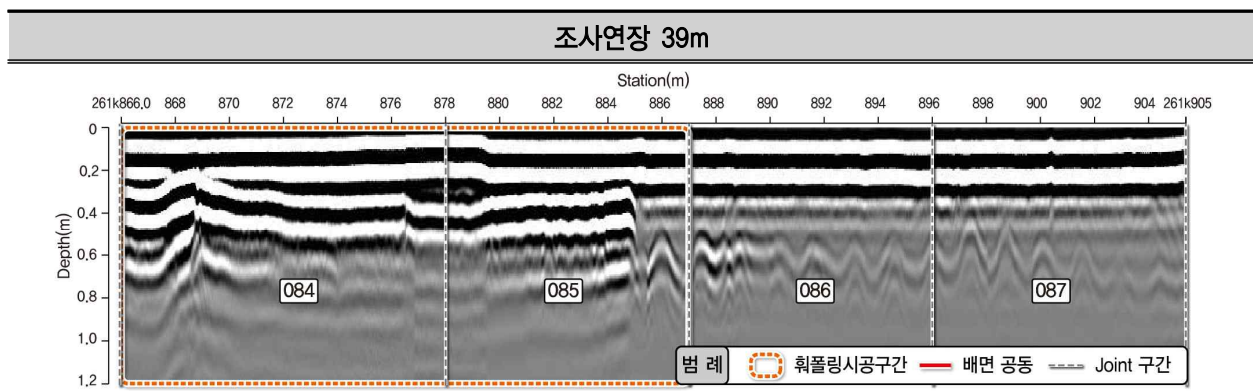
20) L-19(STA. 261K786.0 ~ 261K822.0)



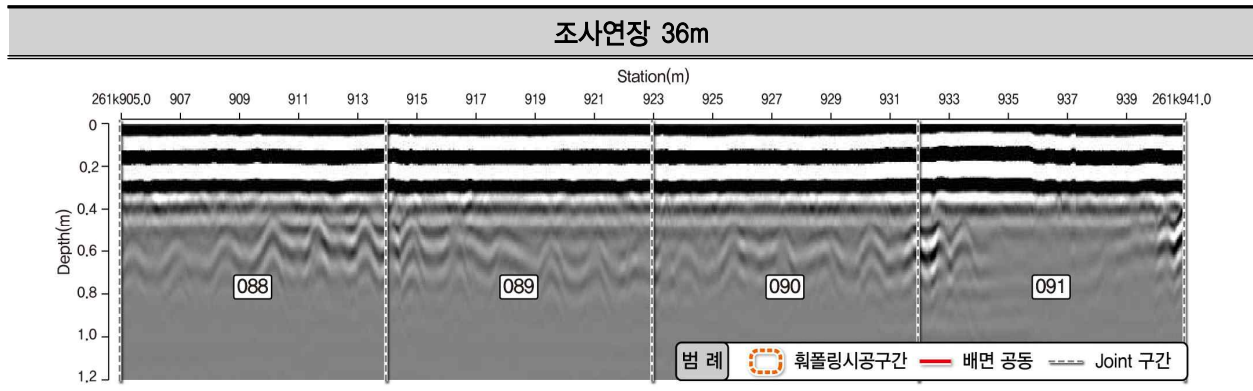
21) L-20(STA. 261K822.0 ~ 261K866.0)



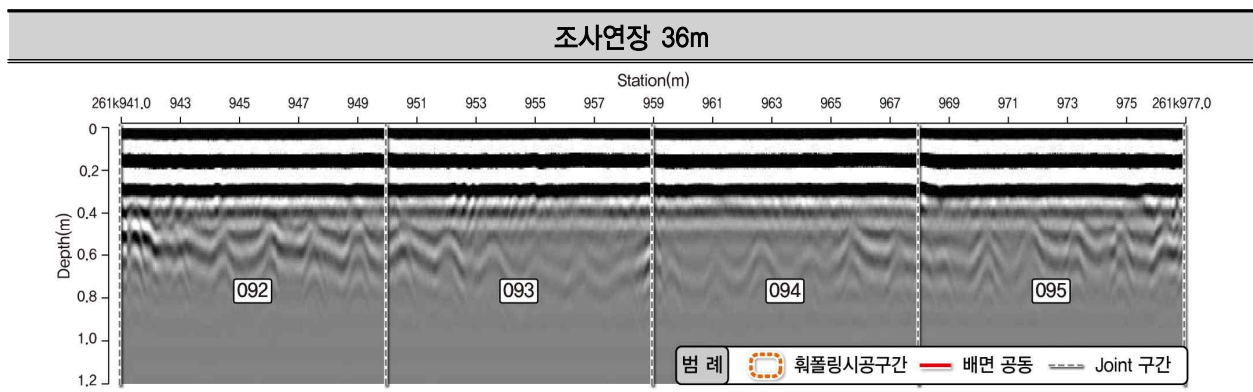
22) L-21(STA. 261K866.0 ~ 261K905.0)



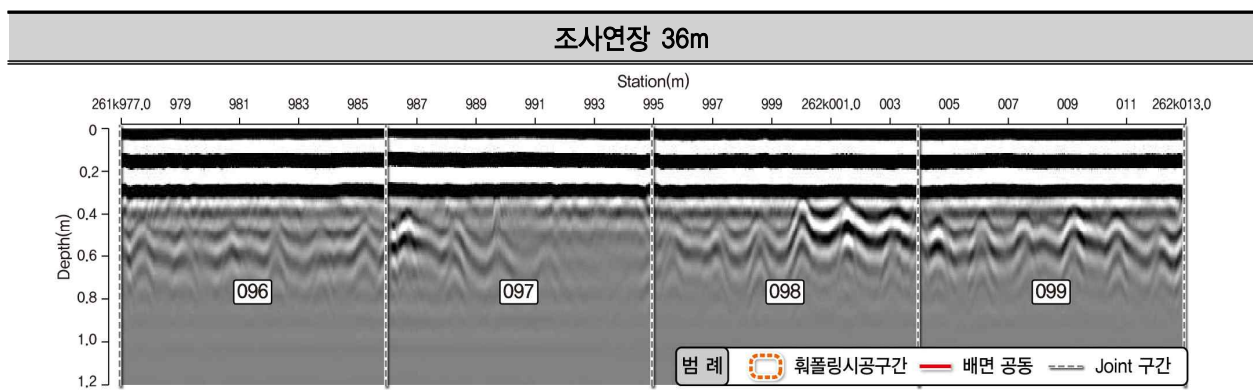
23) L-22(STA, 261K905.0 ~ 261K941.0)



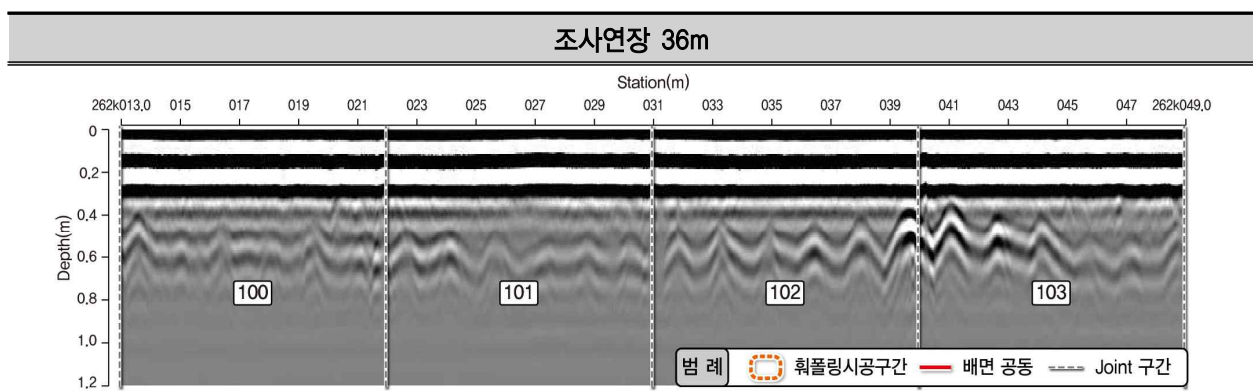
24) L-23(STA, 261K941.0 ~ 261K977.0)



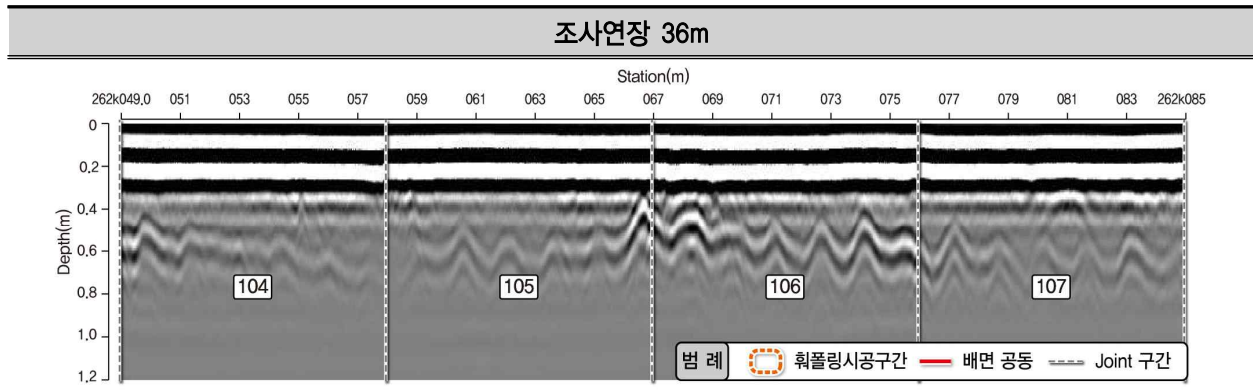
25) L-24(STA, 261K977.0 ~ 262K013.0)



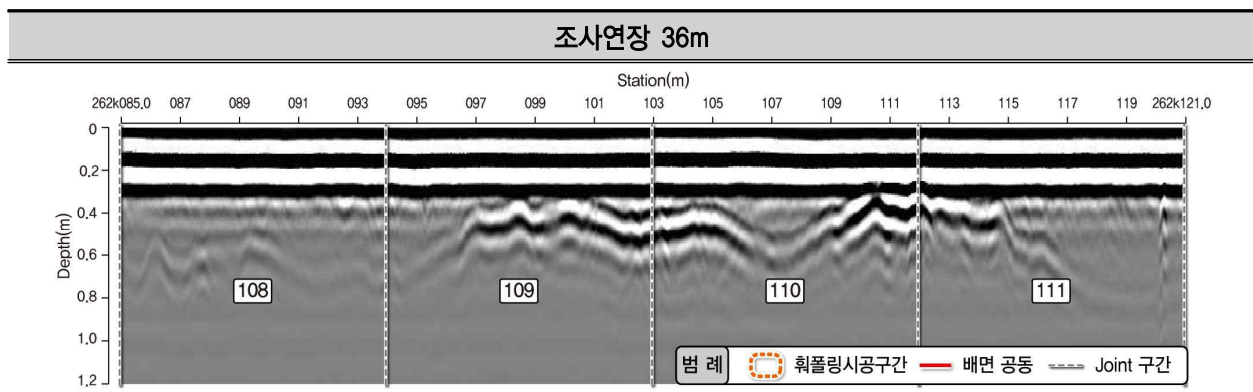
26) L-25(STA, 262K013.0 ~ 262K049.0)



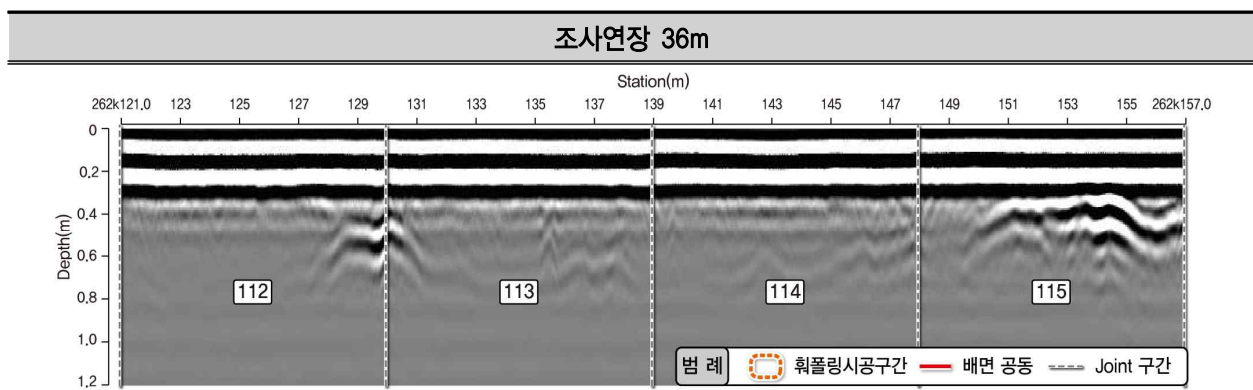
27) L-26(STA, 262K049.0 ~ 262K085.0)



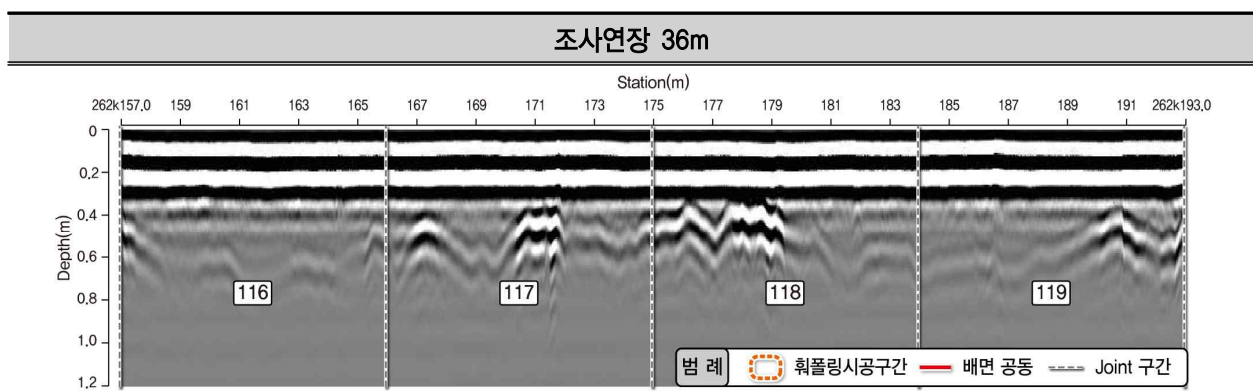
28) L-27(STA, 262K085.0 ~ 262K121.0)



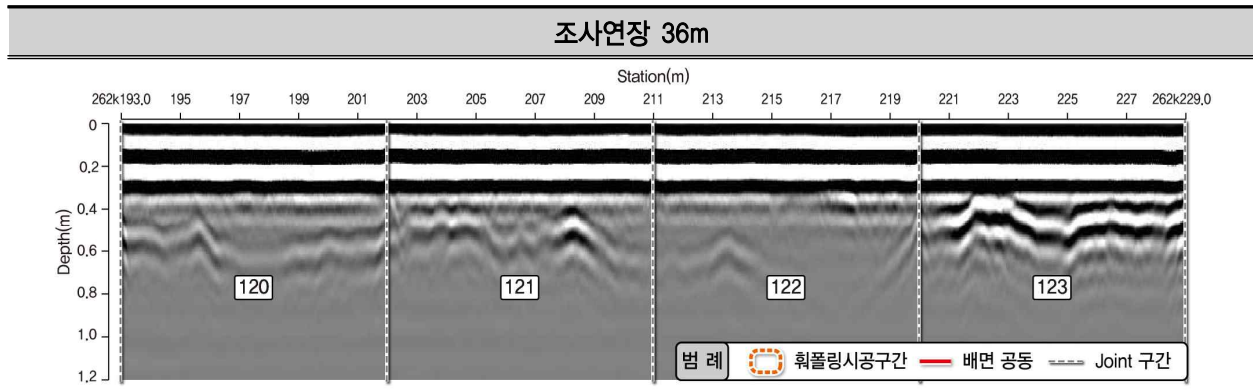
29) L-28(STA, 262K121.0 ~ 262K157.0)



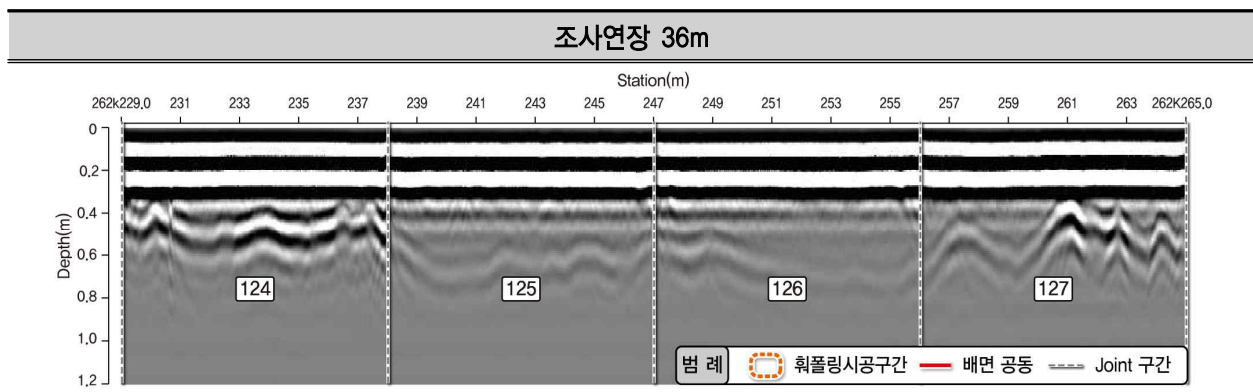
30) L-29(STA, 262K157.0 ~ 262K193.0)



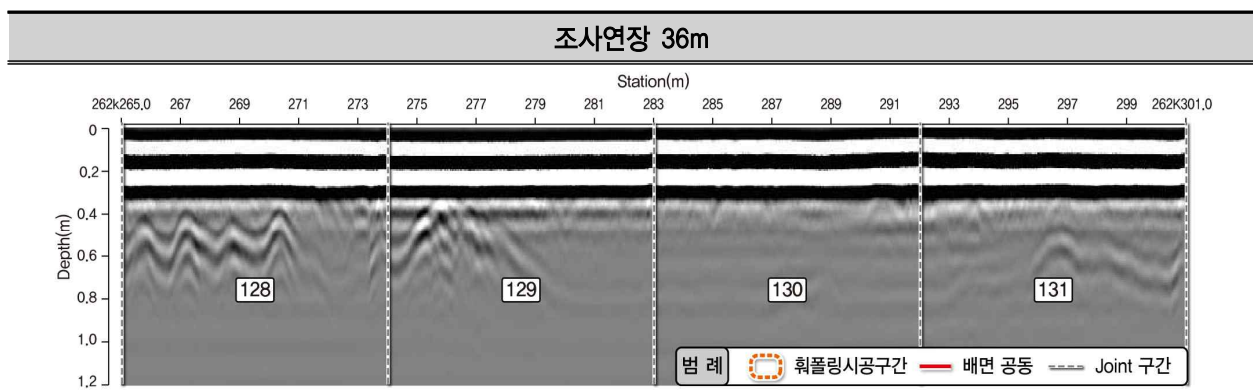
31) L-30(STA. 262K193.0 ~ 262K229.0)



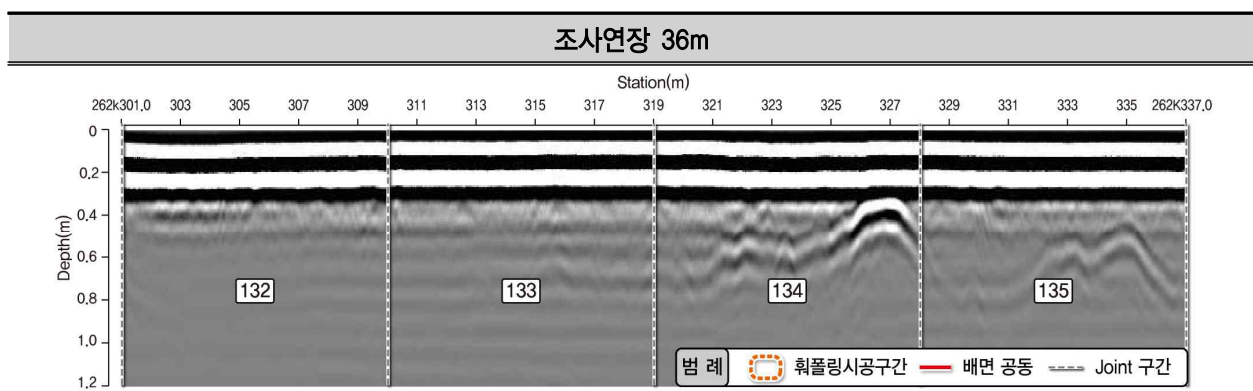
32) L-31(STA. 262K229.0 ~ 262K265.0)



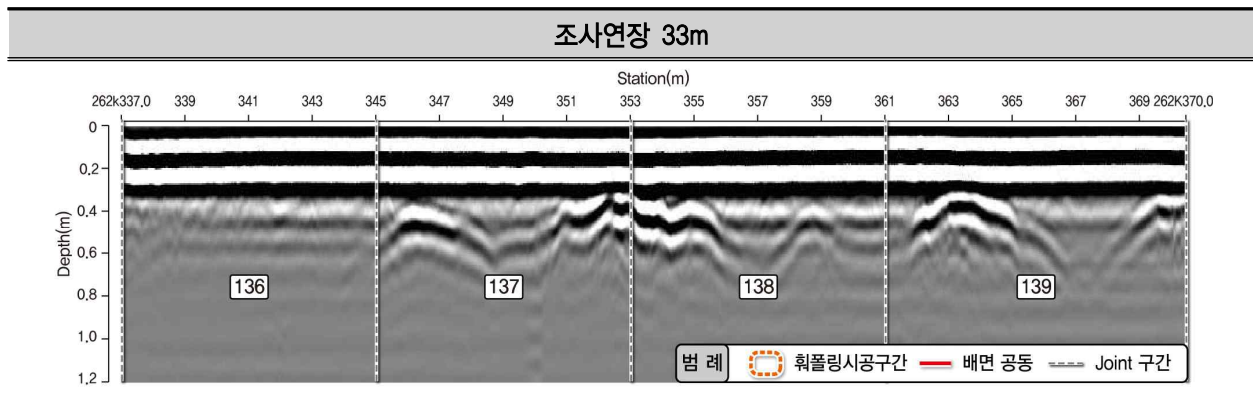
33) L-32(STA. 262K265.0 ~ 262K301.0)



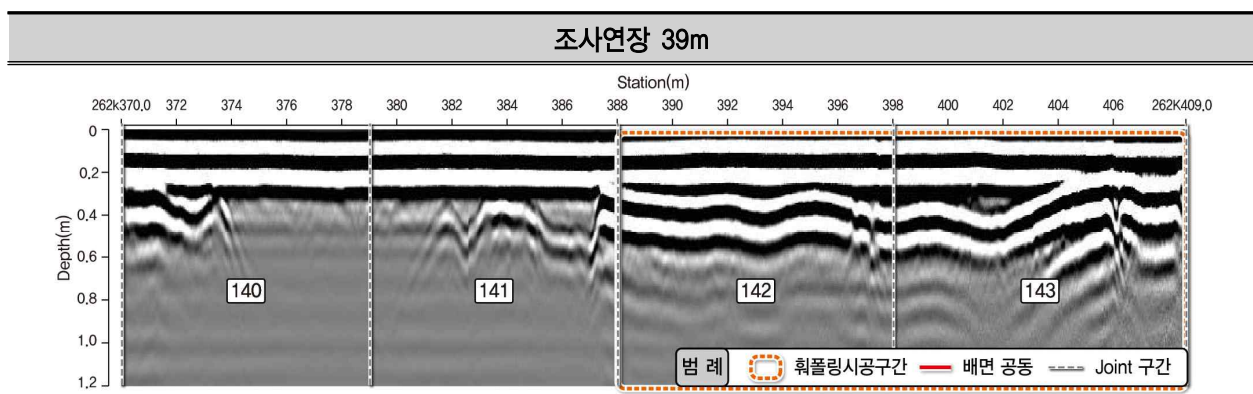
34) L-33(STA. 262K301.0 ~ 262K337.0)



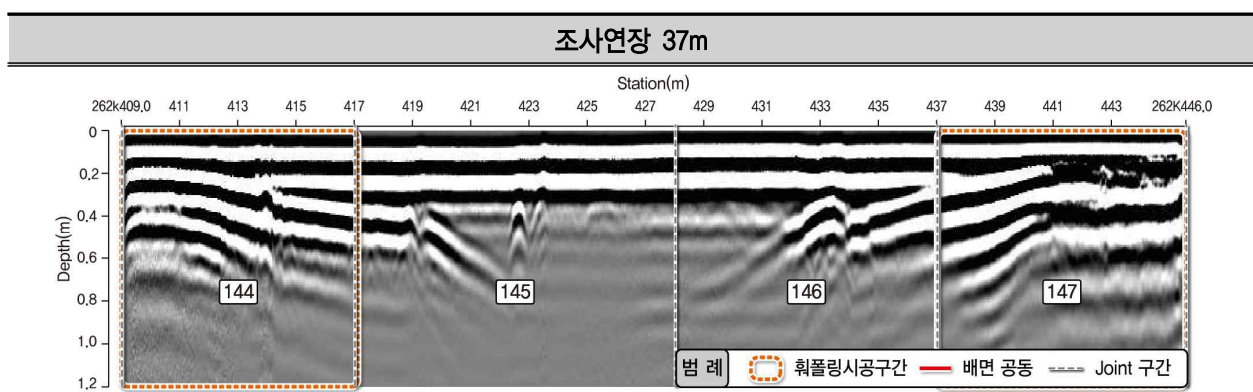
35) L-34(STA. 262K337.0 ~ 262K370.0)



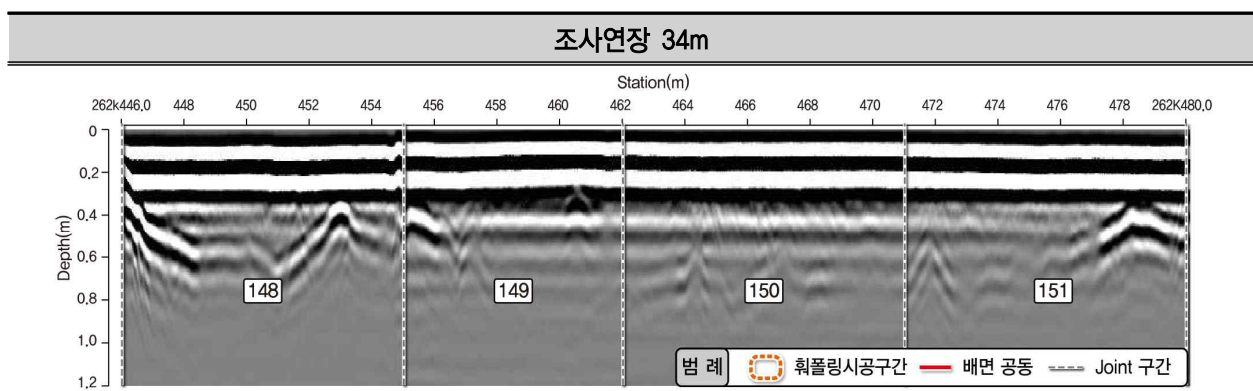
36) L-35(STA. 262K370.0 ~ 262K409.0)



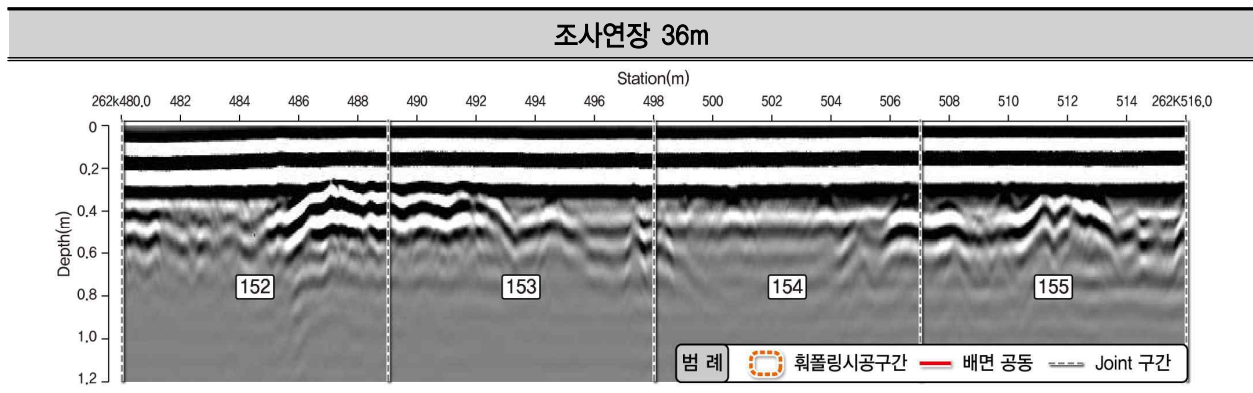
37) L-36(STA. 262K409.0 ~ 262K446.0)



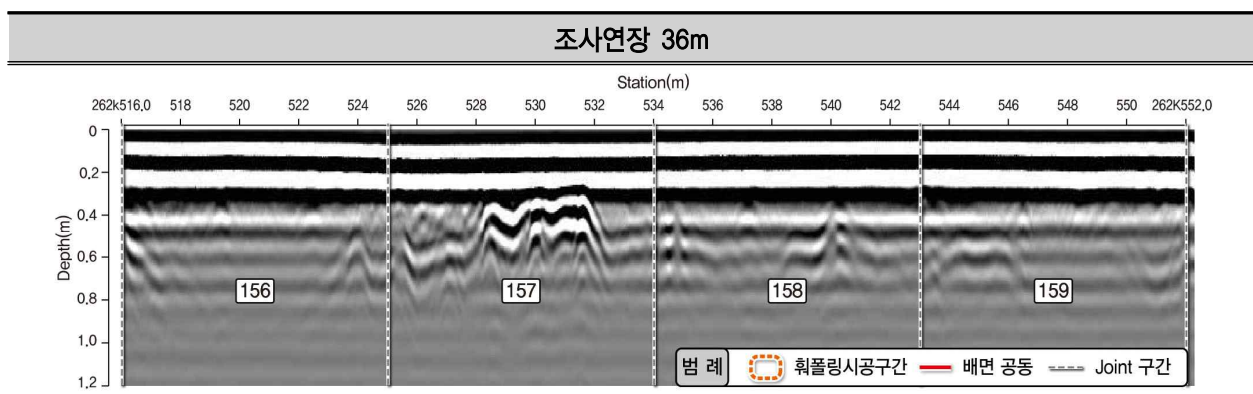
38) L-37(STA. 262K0446.0 ~ 262K480.0)



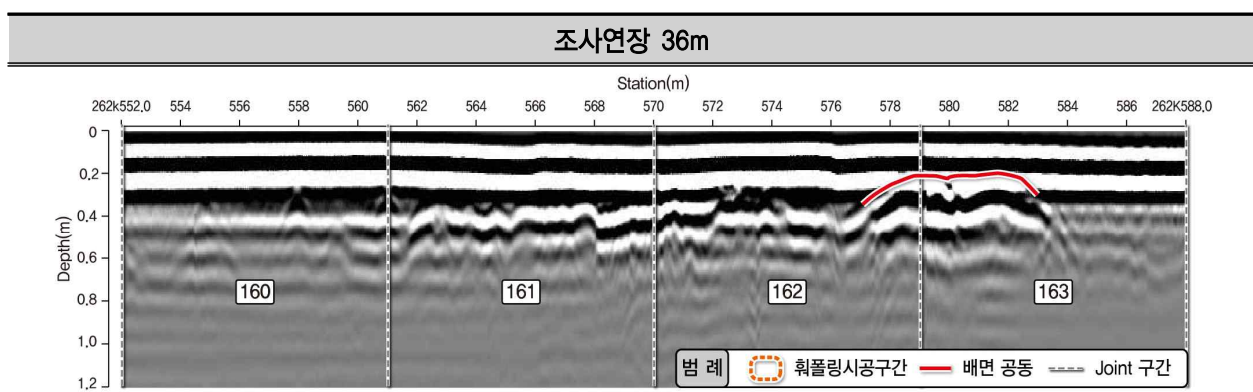
39) L-38(STA. 262K480.0 ~ 262K516.0)



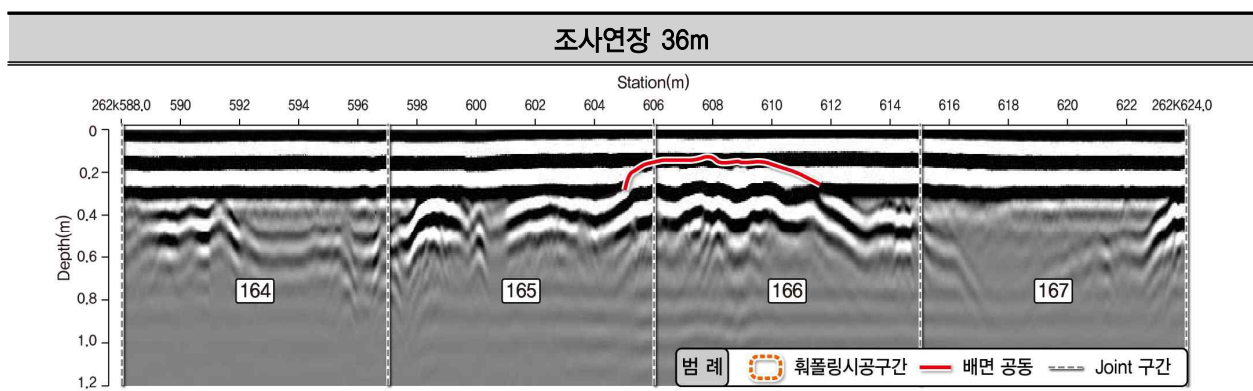
40) L-39(STA. 262K516.0 ~ 262K552.0)



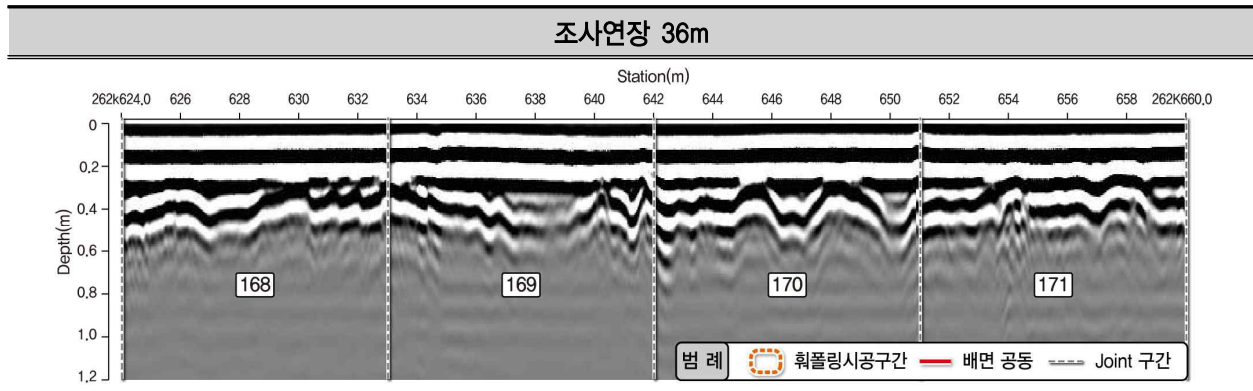
41) L-40(STA. 262K552.0 ~ 262K588.0)



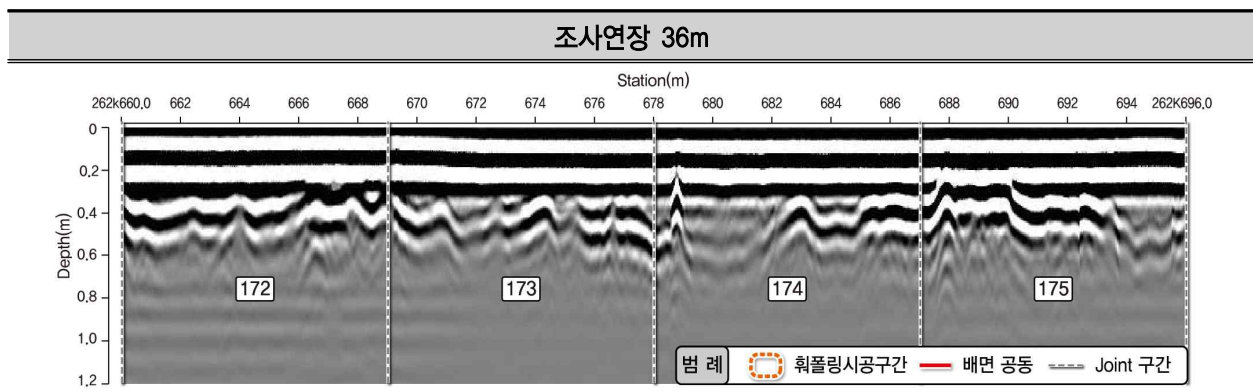
42) L-41(STA. 262K588.0 ~ 262K624.0)



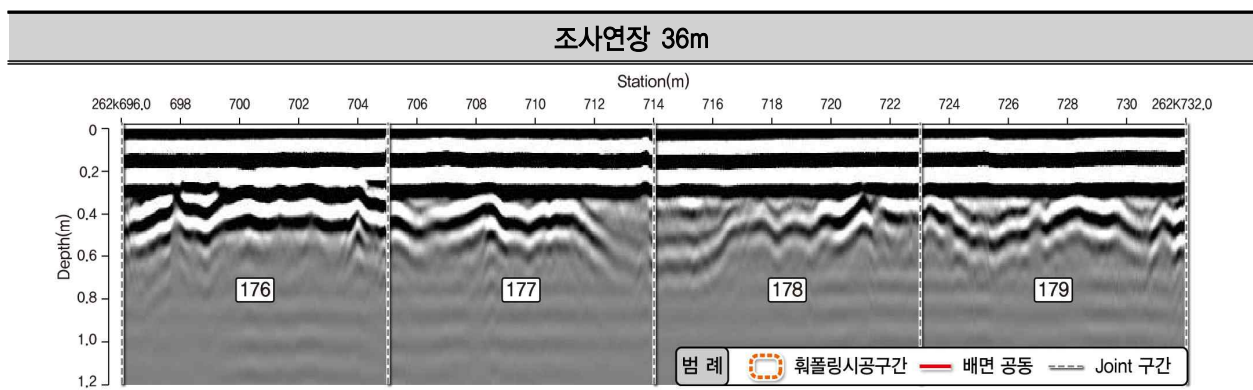
43) L-42(STA. 262K624.0 ~ 262K660.0)



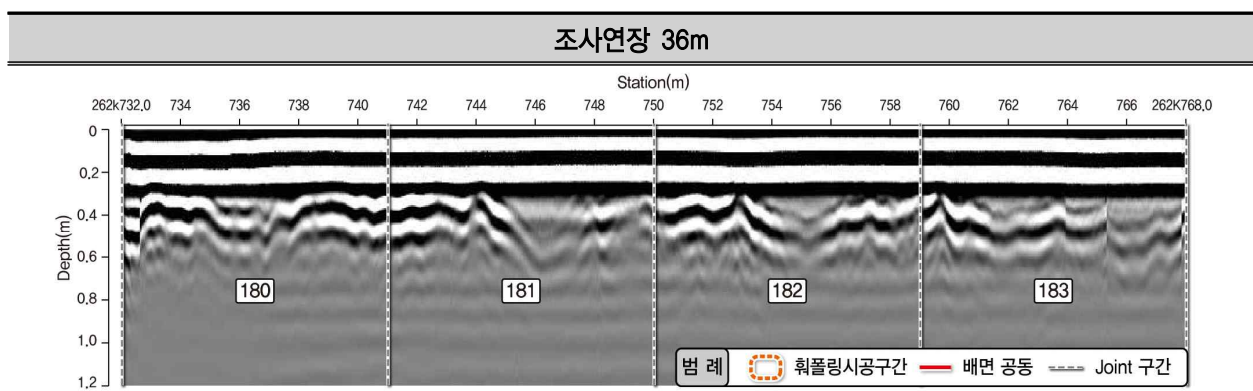
44) L-43(STA. 262K660.0 ~ 262K696.0)



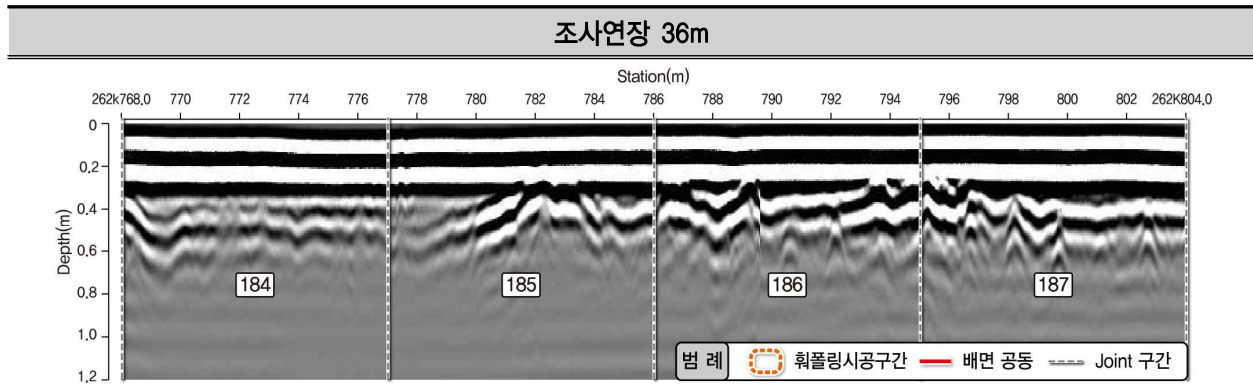
45) L-44(STA. 262K696.0 ~ 262K732.0)



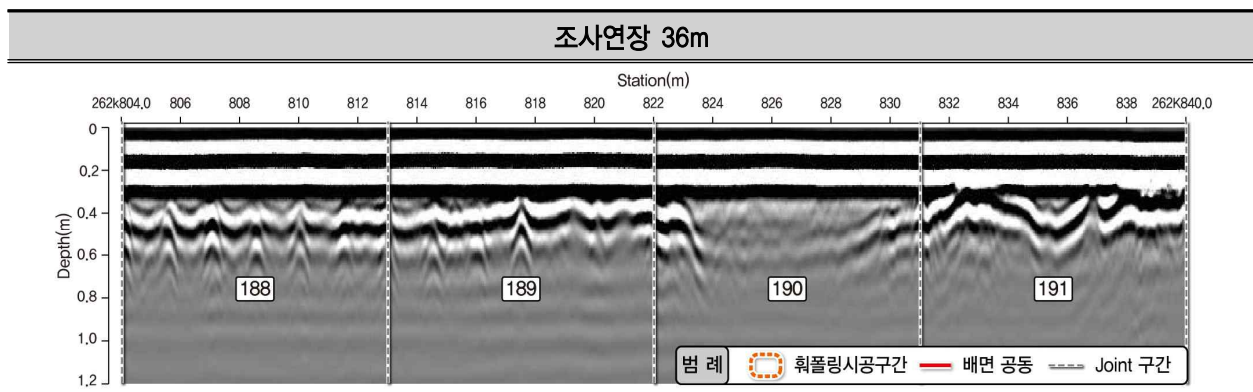
46) L-45(STA. 262K732.0 ~ 262K768.0)



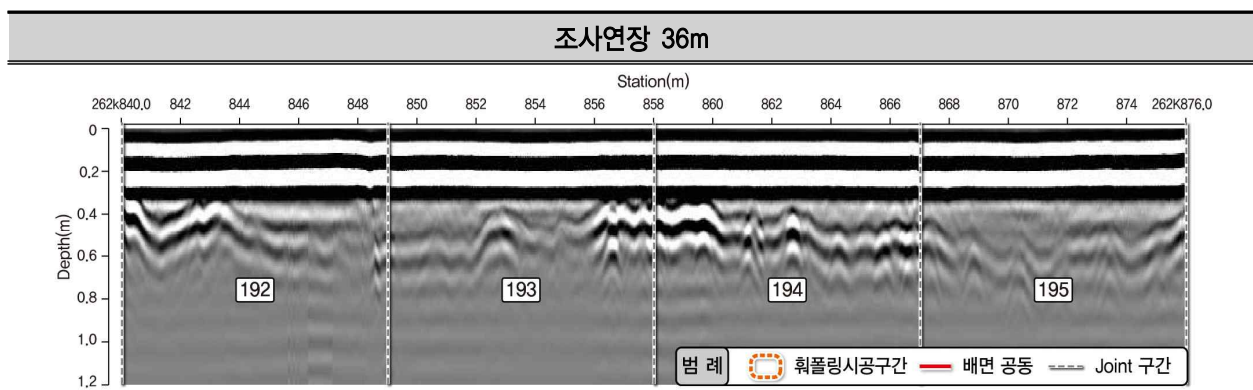
47) L-46(STA. 262K768.0 ~ 262K804.0)



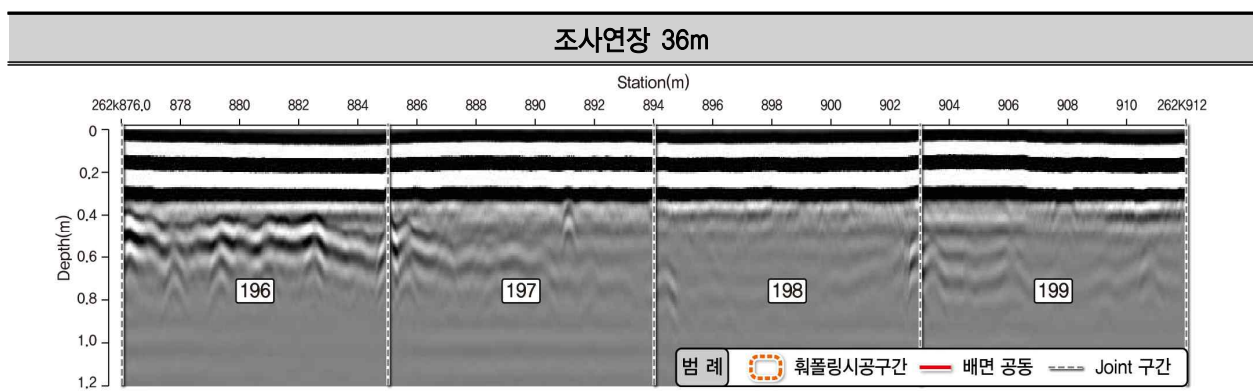
48) L-47(STA. 262K804.0 ~ 262K840.0)



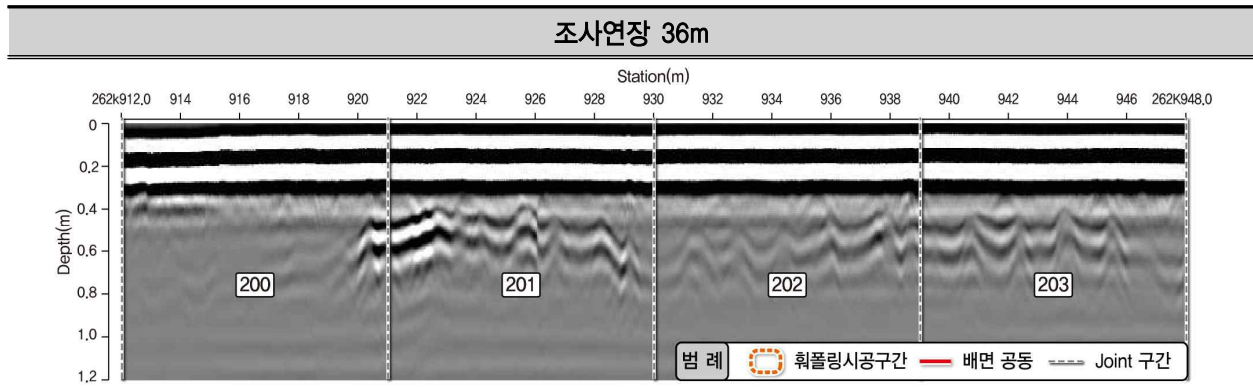
49) L-48(STA. 262K840.0 ~ 262K876.0)



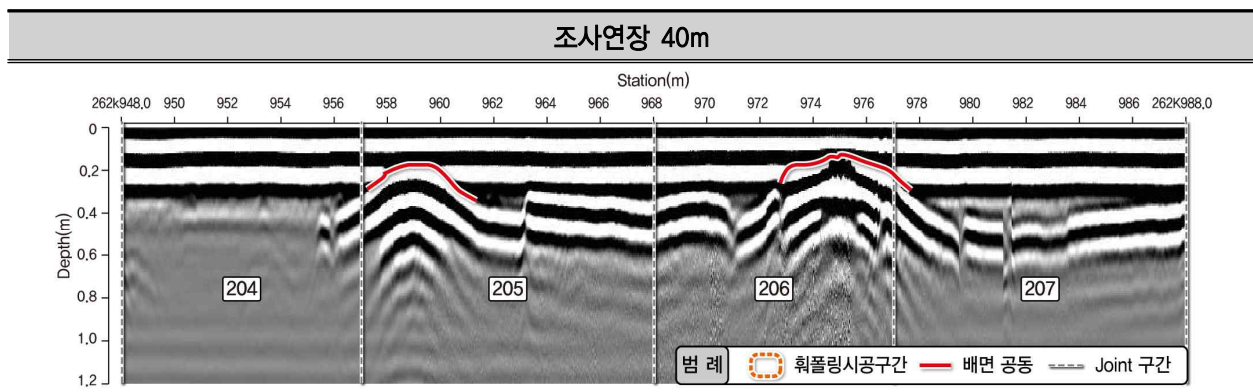
50) L-49(STA. 262K876.0 ~ 262K912.0)



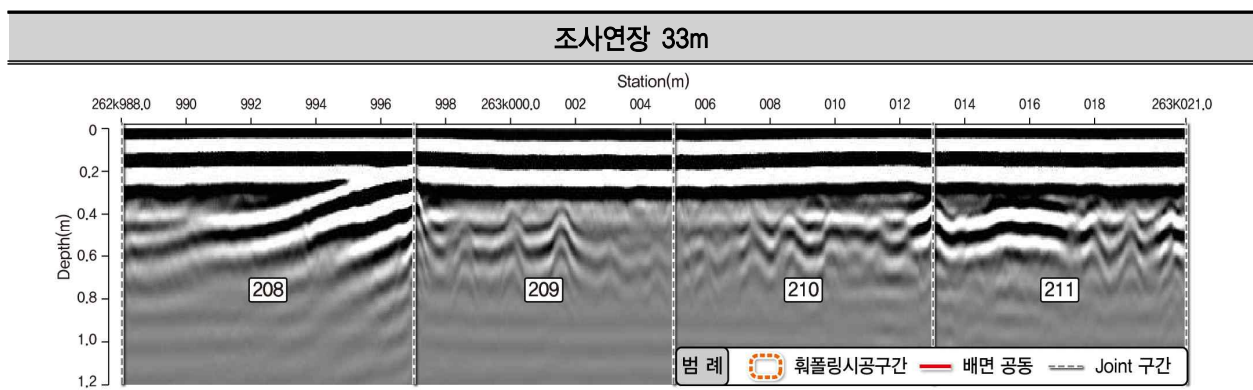
51) L-50(STA. 262K912.0 ~ 262K948.0)



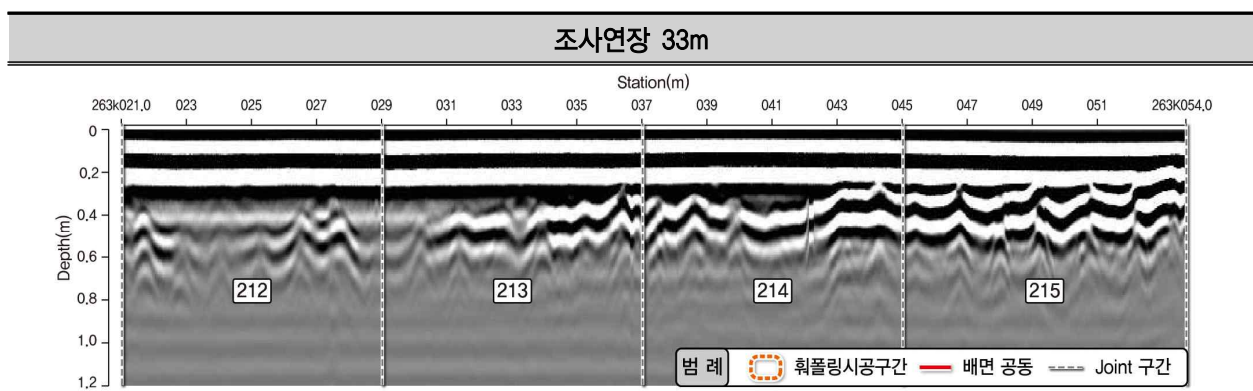
52) L-51(STA. 262K948.0 ~ 262K988.0)



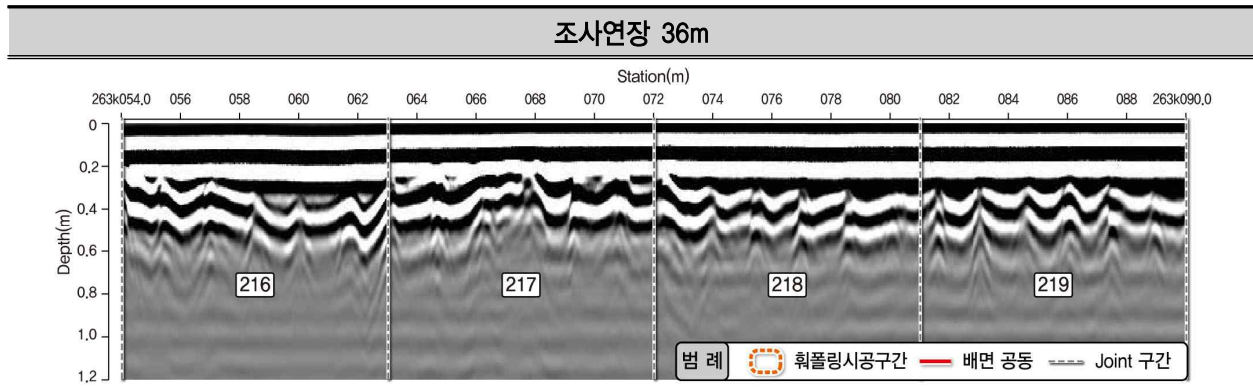
53) L-52(STA. 262K988.0 ~ 263K021.0)



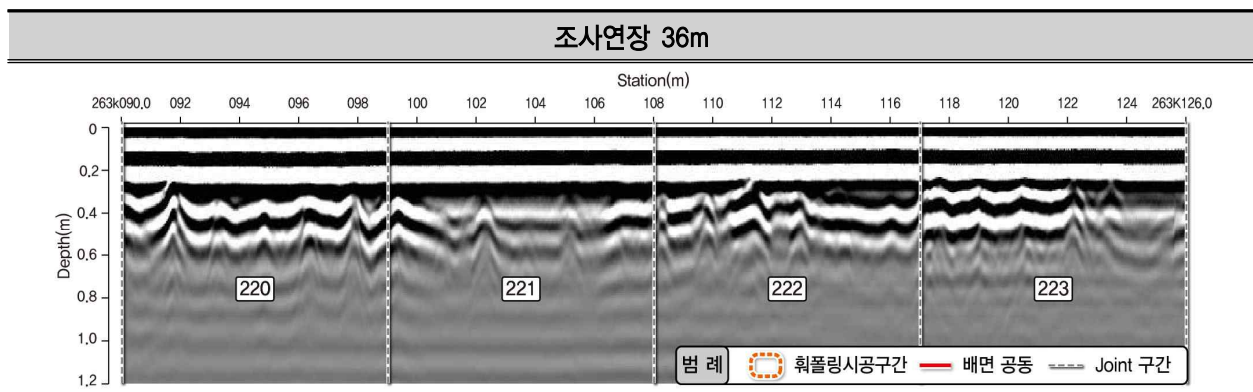
54) L-53(STA. 263K021.0 ~ 263K054.0)



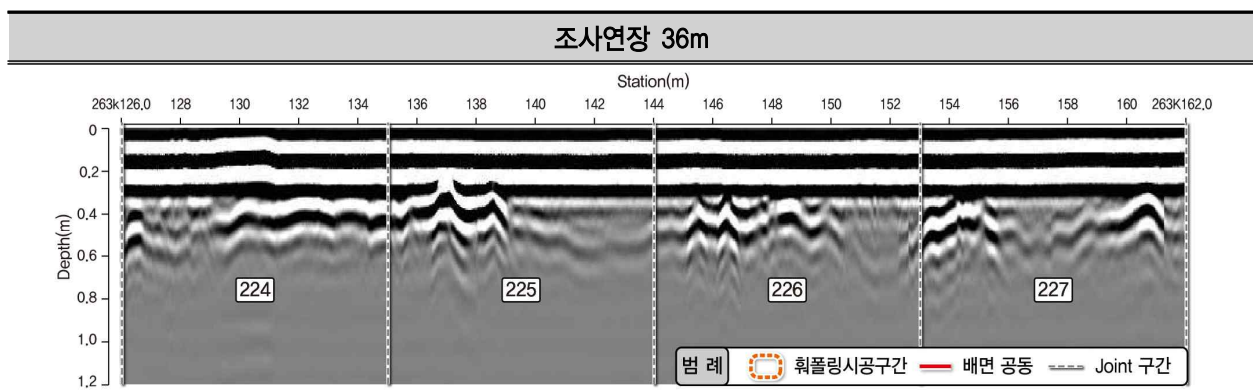
55) L-54(STA. 263K054.0 ~ 263K090.0)



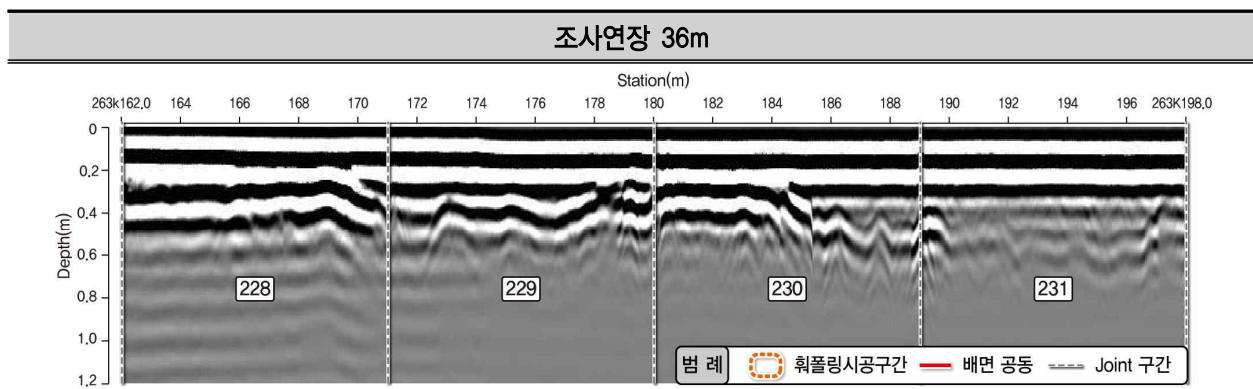
56) L-55(STA. 263K090.0 ~ 263K126.0)



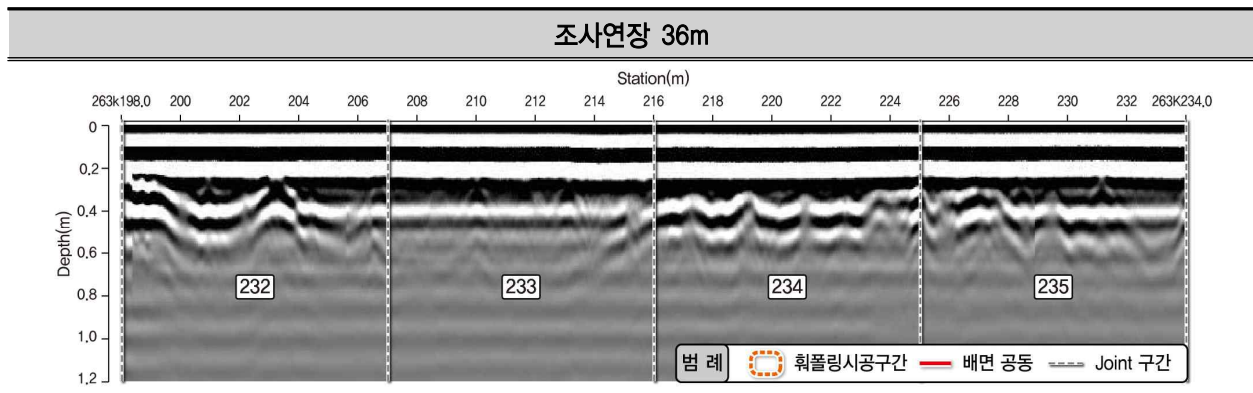
57) L-56(STA. 263K126.0 ~ 263K162.0)



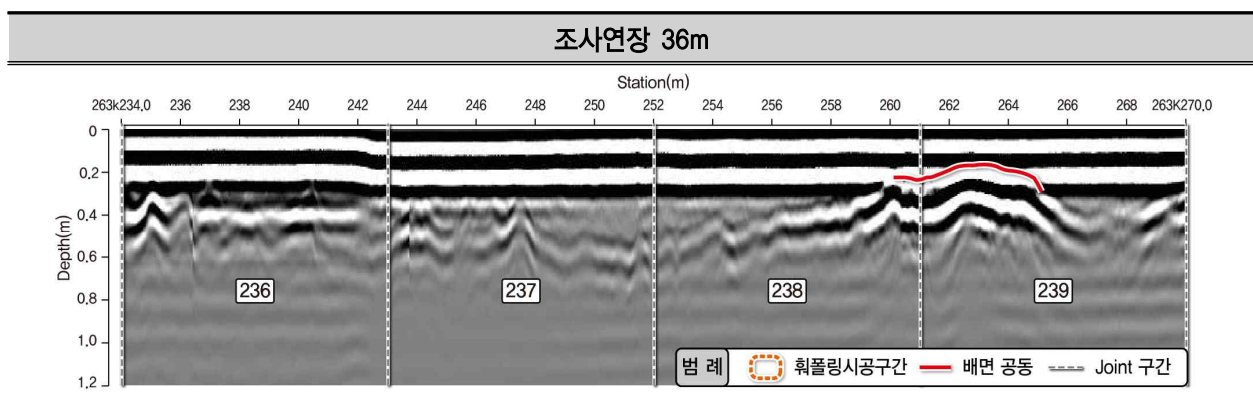
58) L-57(STA. 263K162.0 ~ 263K198.0)



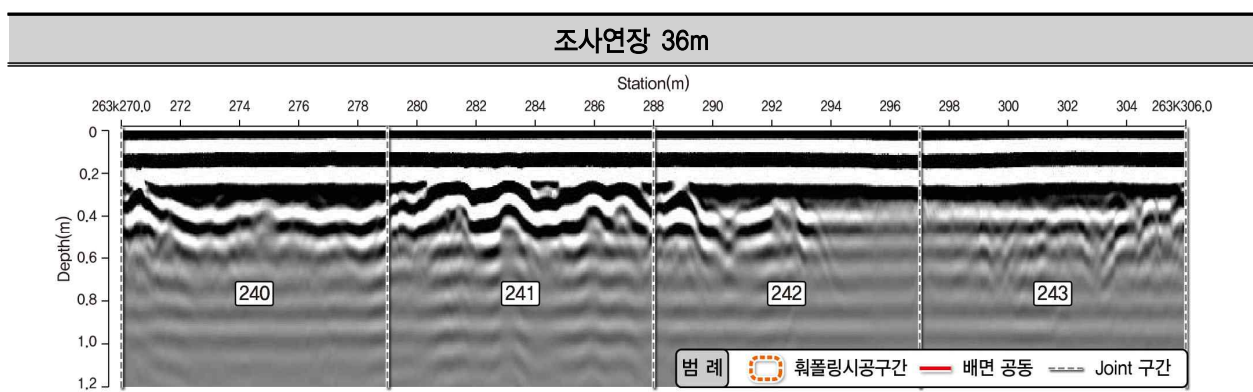
59) L-58(STA. 263K198.0 ~ 263K234.0)



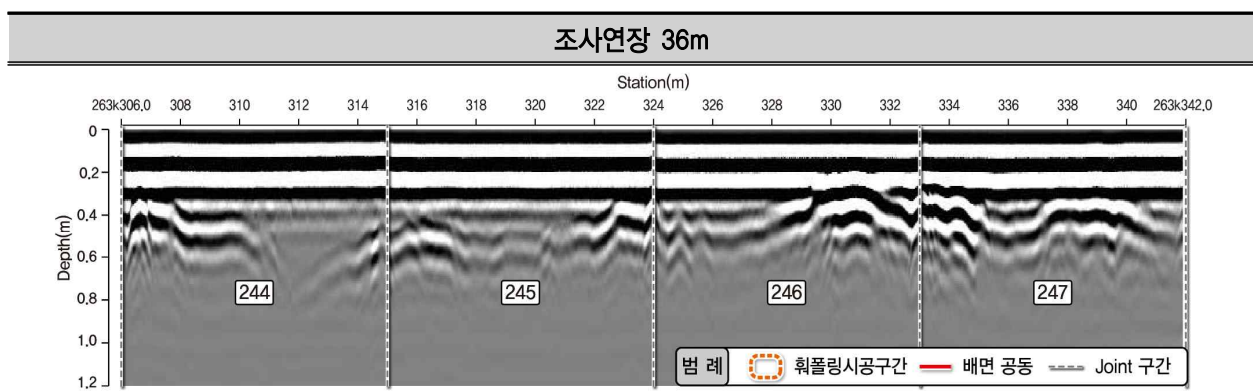
60) L-59(STA. 263K234.0 ~ 263K270.0)



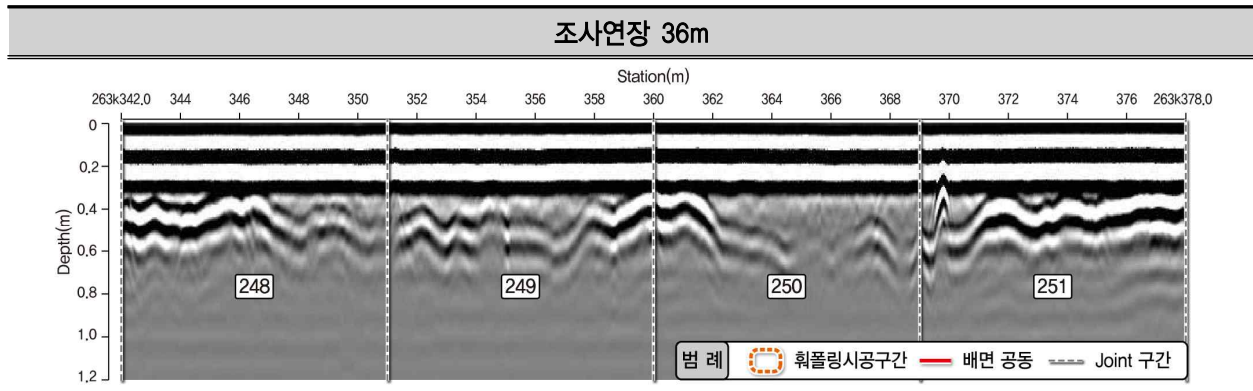
61) L-60(STA. 263K270.0 ~ 263K306.0)



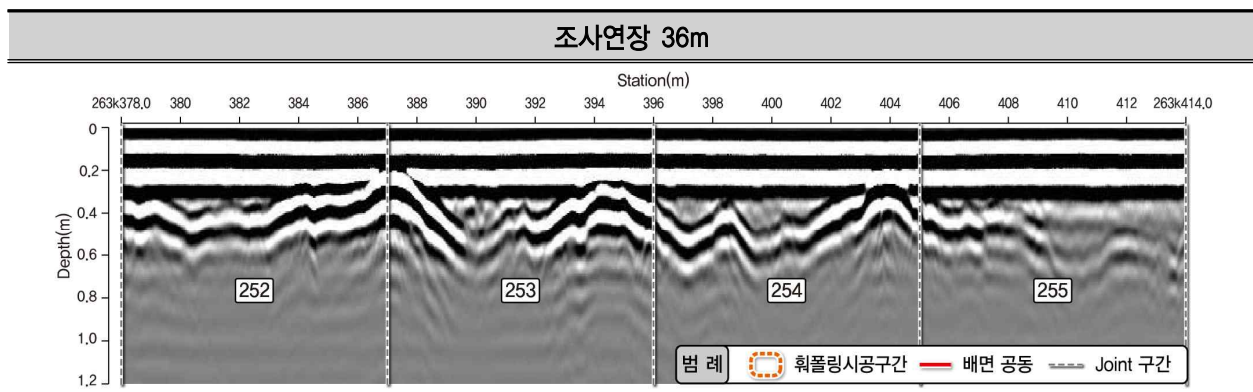
62) L-61(STA. 263K306.0 ~ 263K342.0)



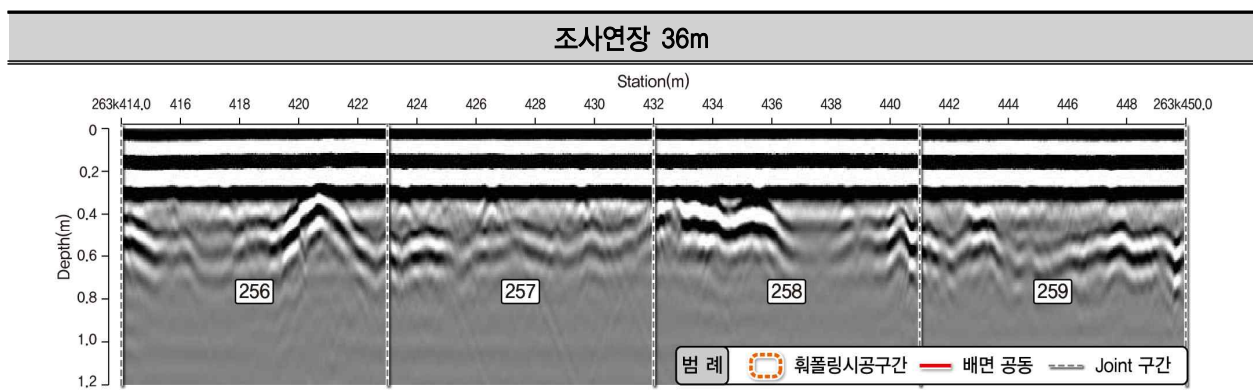
63) L-62(STA. 263K342.0 ~ 263K378.0)



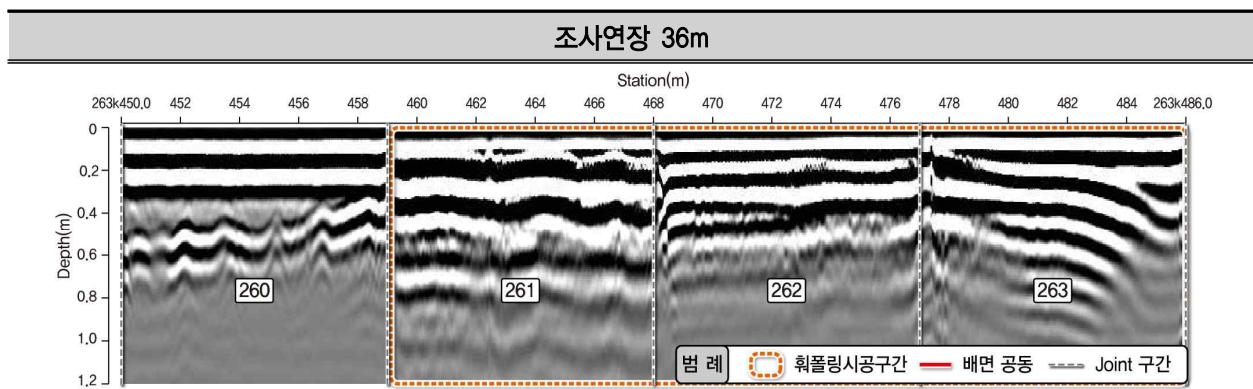
64) L-63(STA. 263K378.0 ~ 263K414.0)



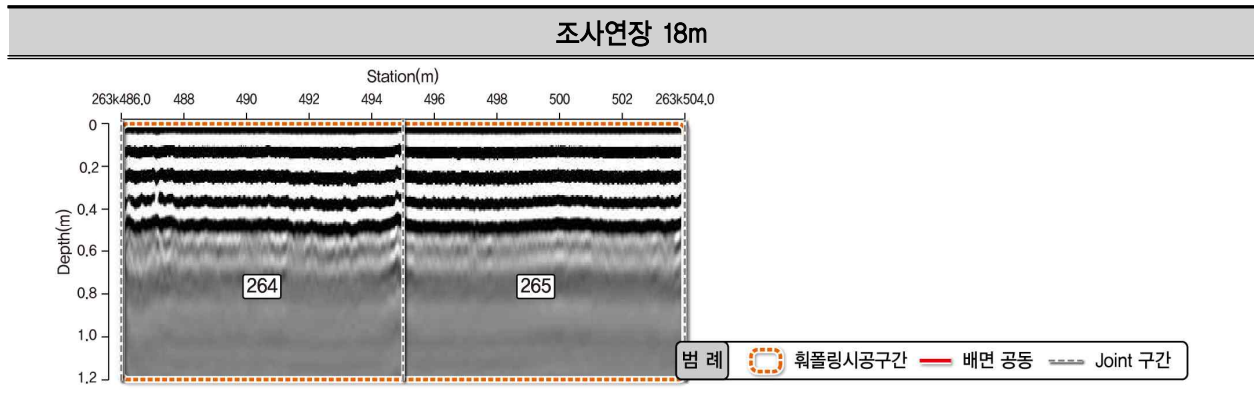
65) L-64(STA. 263K414.0 ~ 263K450.0)



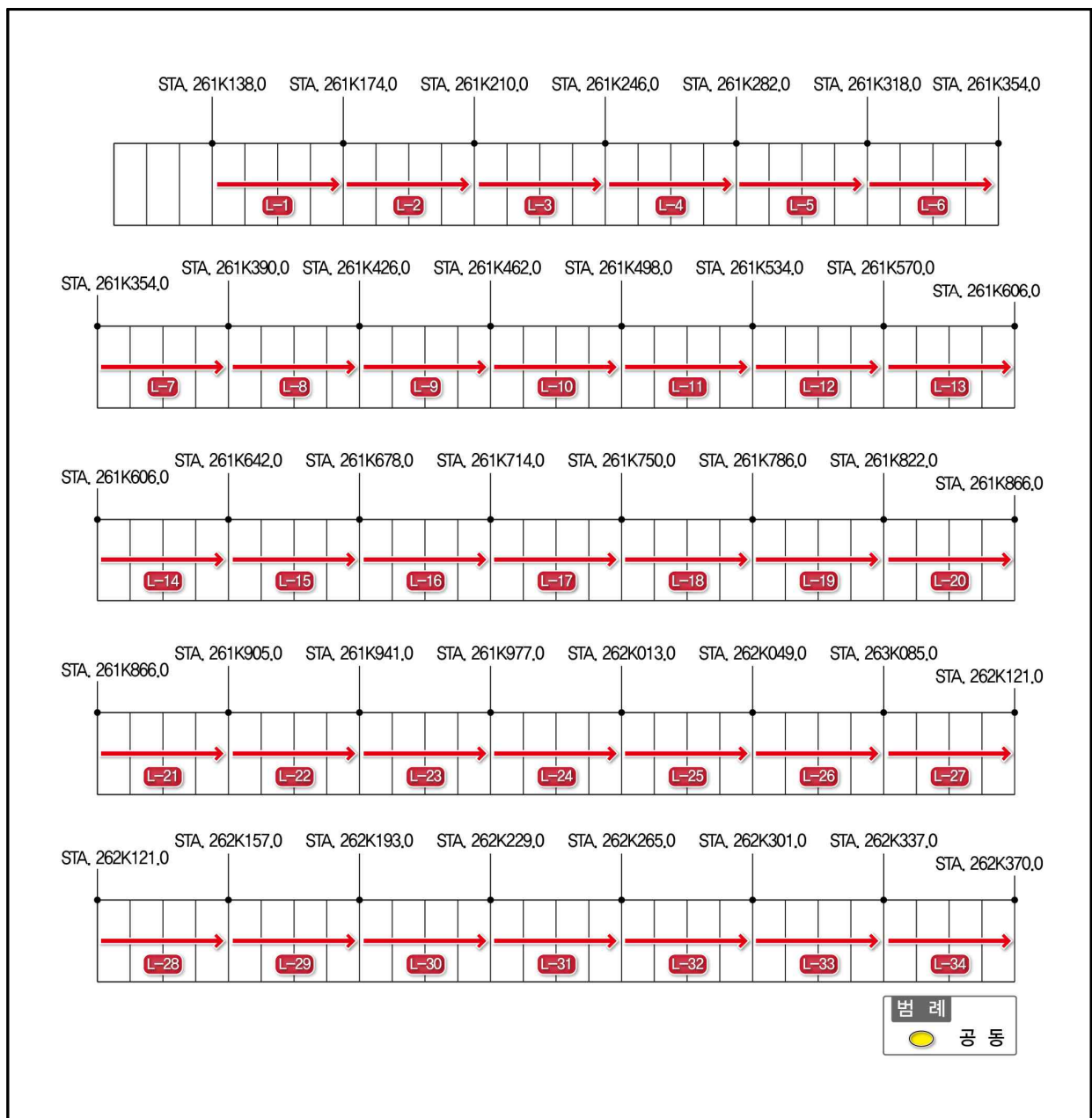
66) L-65(STA. 263K450.0 ~ 263K486.0)

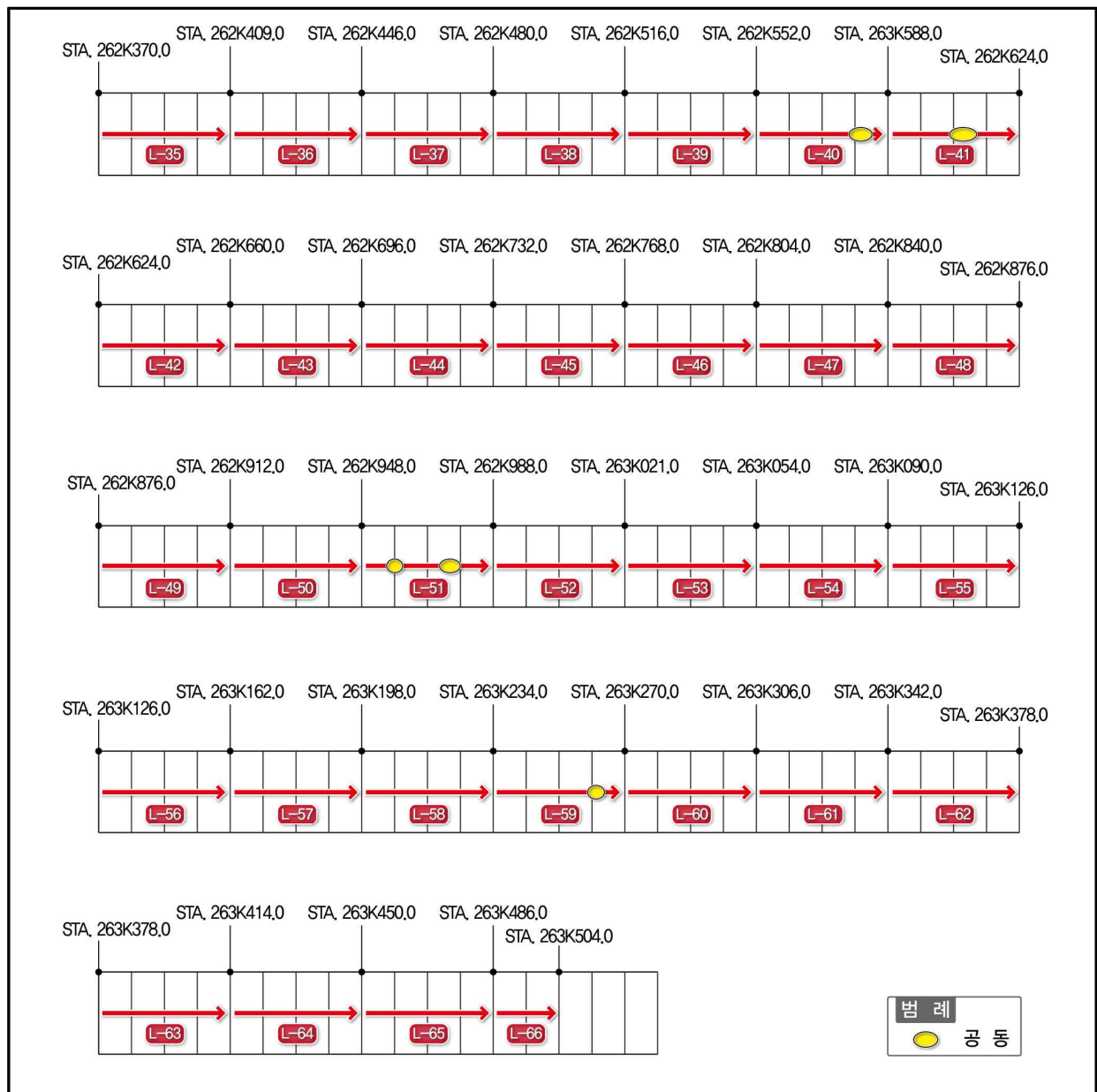


67) L-66(STA. 263K486.0 ~ 263K504.0)



68) 요약





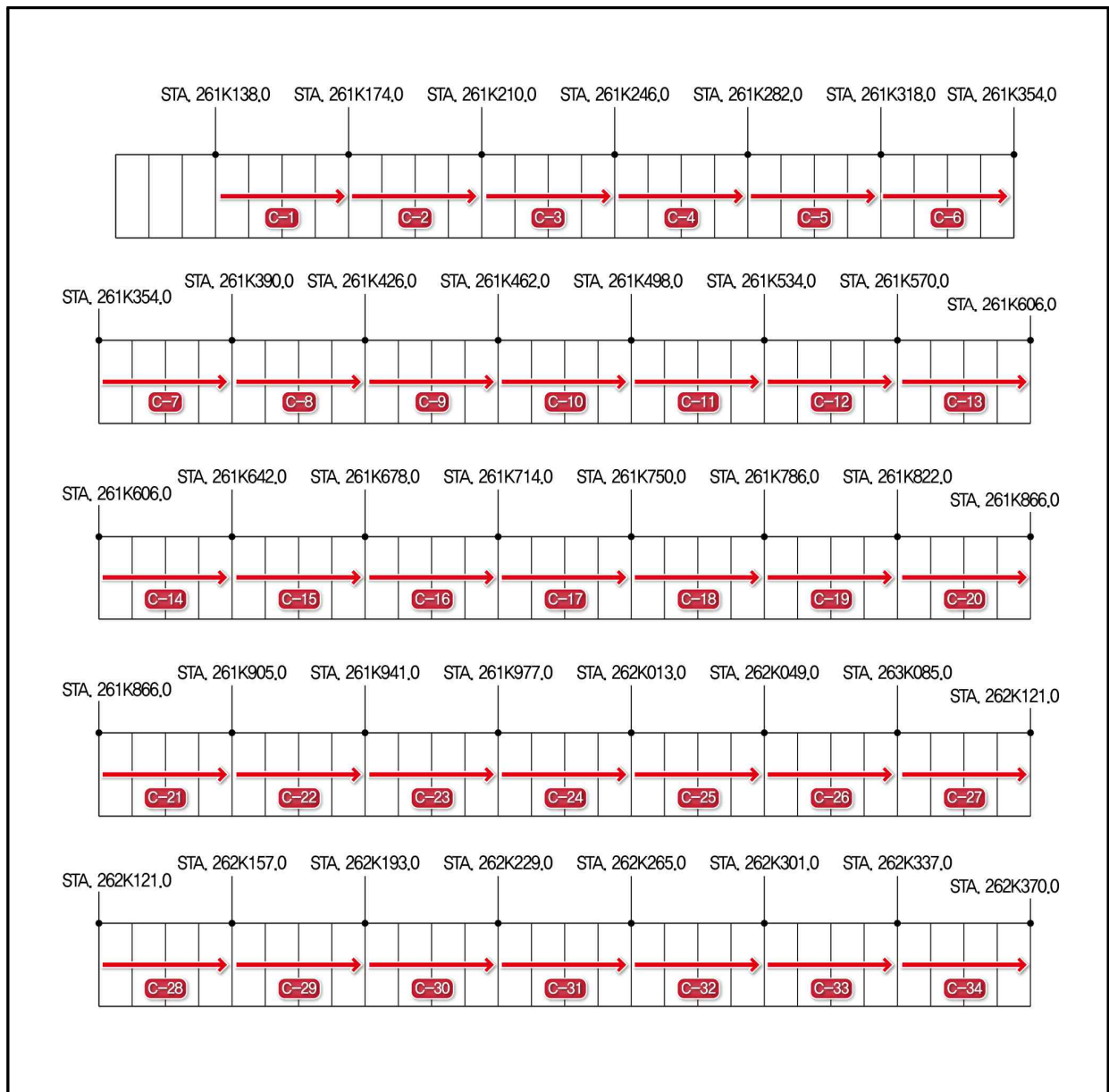
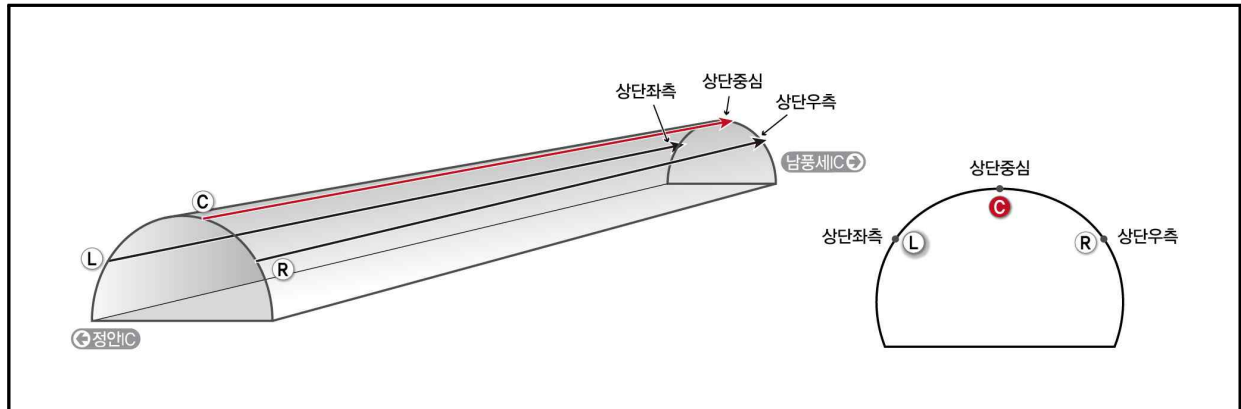
공동 탐지 축선	공동 위치(STA.)
L-40	262k 578.0 ~ 262k 582.0
L-41	262k 606.0 ~ 262k 610.0
L-51	262k 957.0 ~ 262k 961.0
L-51	262k 973.0 ~ 262k 977.0
L-59	263k 261.0 ~ 263.k 265.0

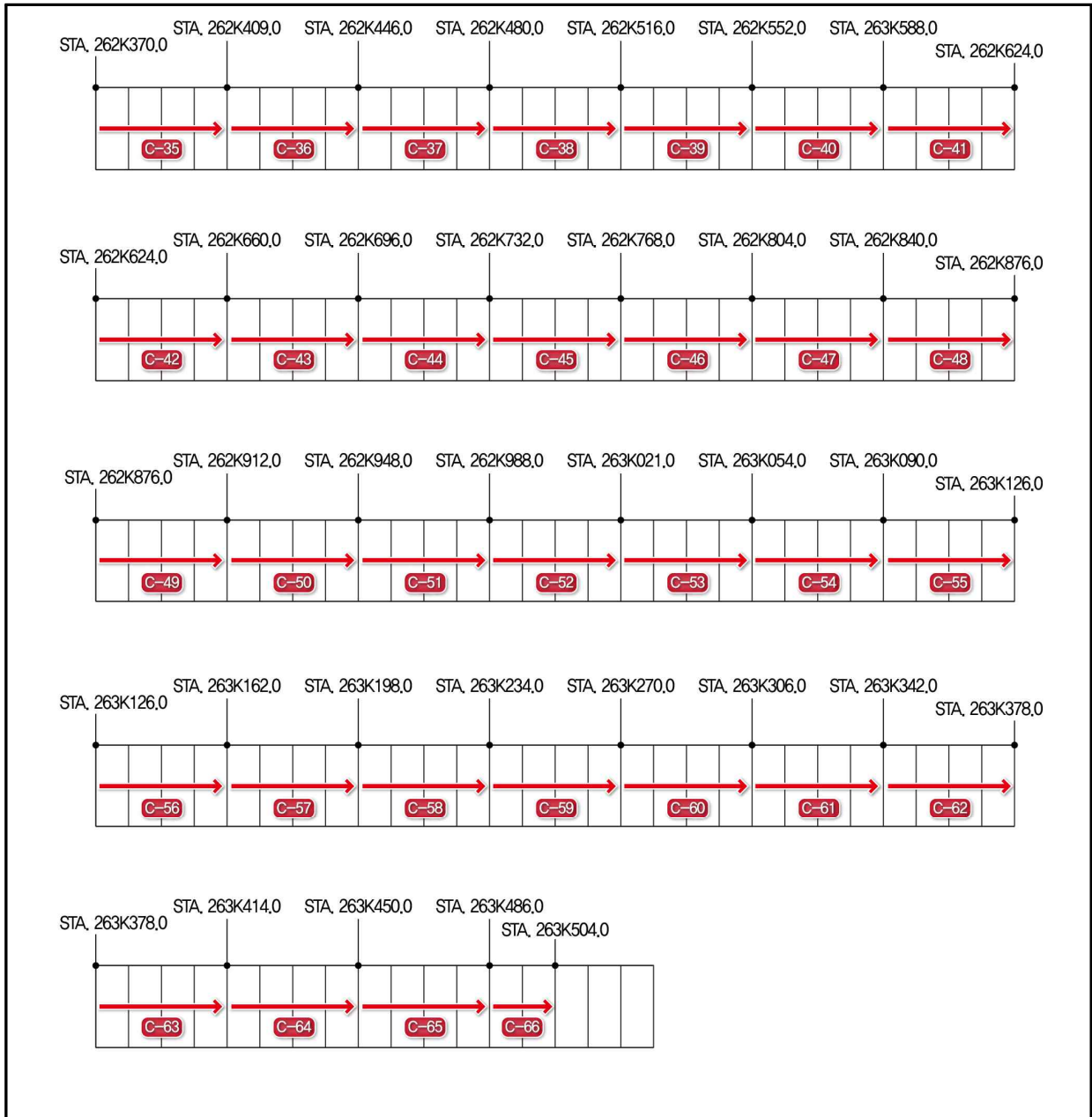
성과분석	• STA.261k138.0 ~ 263k504.0구간의 종방향으로 천단부 좌측 1개소를 설정하여 탐사한 결과임 • 탐사결과 라이닝두께는 대체로 0.2~0.7m 내외로 나타남 • 탐사결과 배면공동으로 예상되는 반응이 종단면에서 5개소 판단됨 • 휘폴링 시공구간에서는 PVC파이프나 와이어등의 영향으로 레이더 신호가 투과하지 못하여 반사파 이벤트를 얻지 못하였으며, 터널 천단부 일부 구간에서의 구조물과 접지단자 홈 등의 영향으로 신호가 양호하지 못한 구간이 존재
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1.2

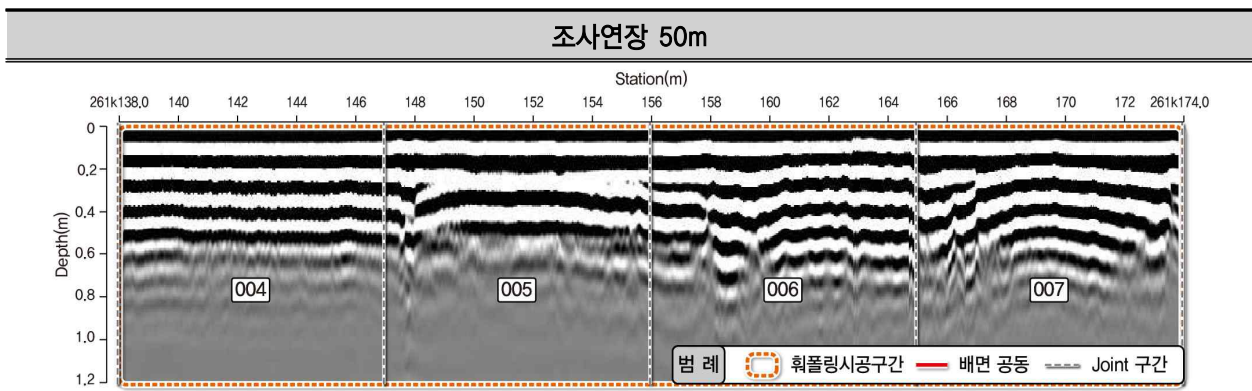
터널 종방향 상단중심

1) 측선설정

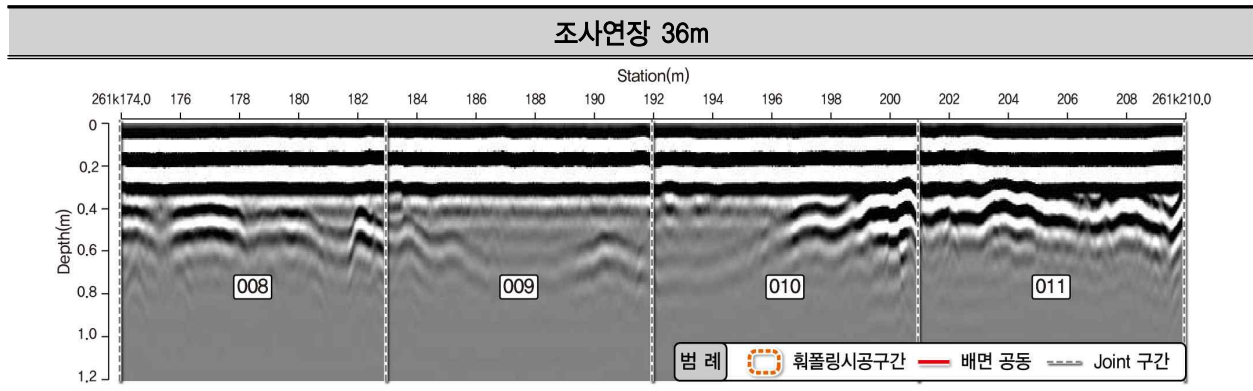




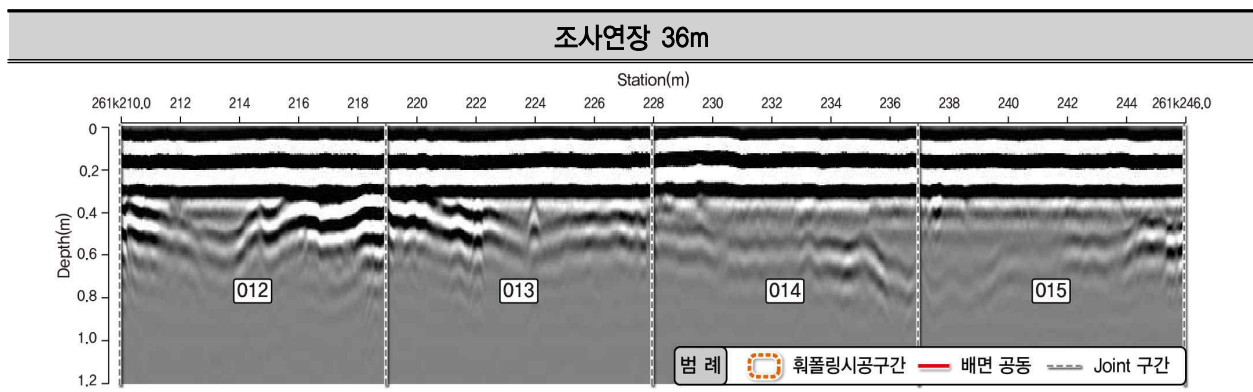
2)C-1(STA. 261K138.0 ~ 261K174.0)



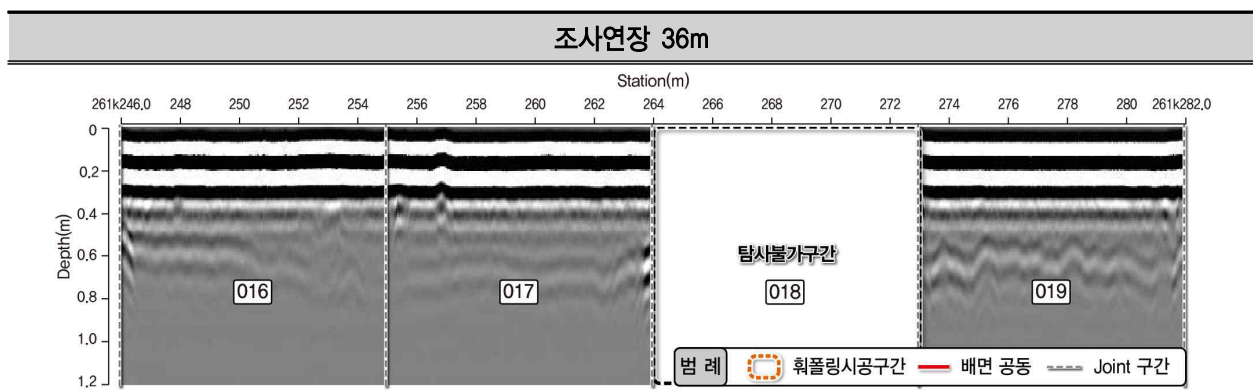
3) C-2(STA. 261K174.0 ~ 261K210.0)



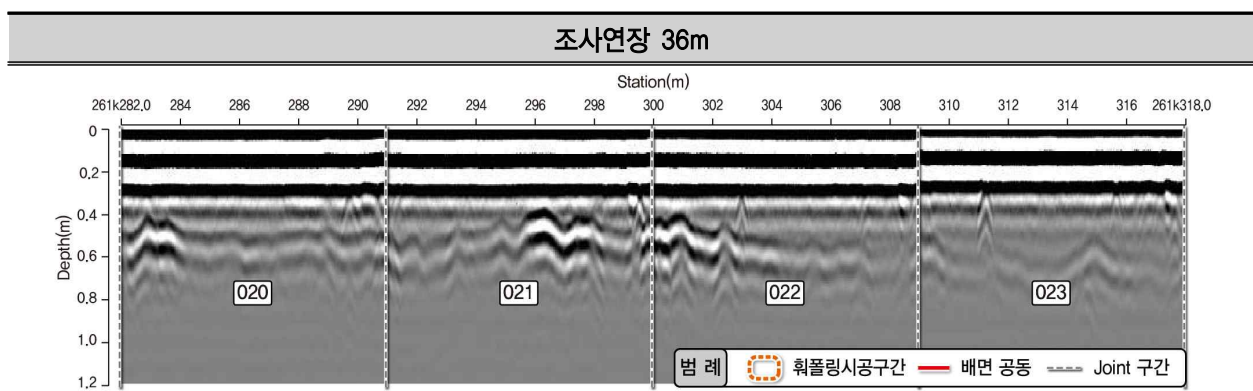
4) C-3(STA. 261K210.0 ~ 261K246.0)



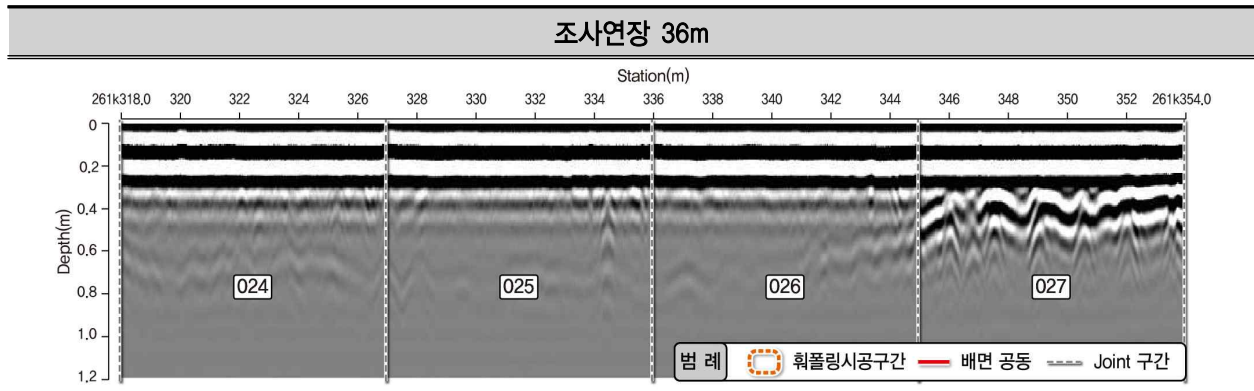
5) C-4(STA. 261K246.0 ~ 261K282.0)



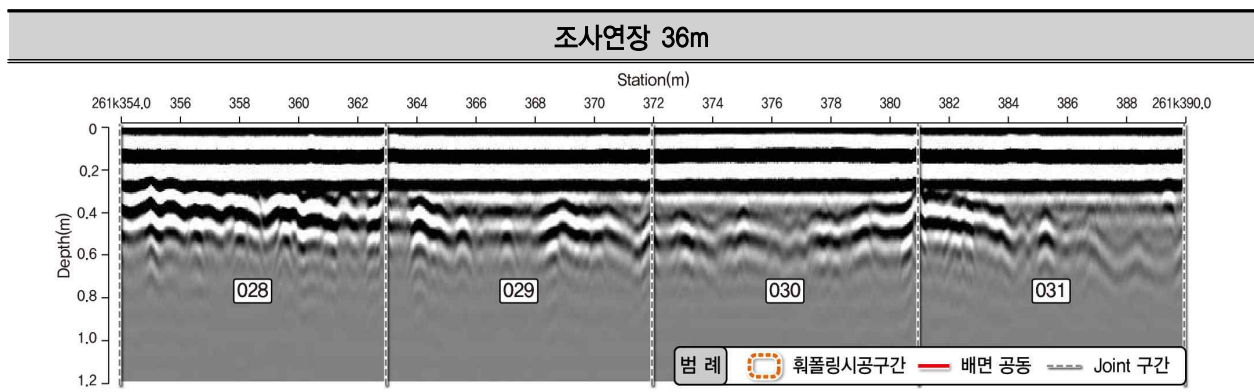
6) C-5(STA. 261K282.0 ~ 261K318.0)



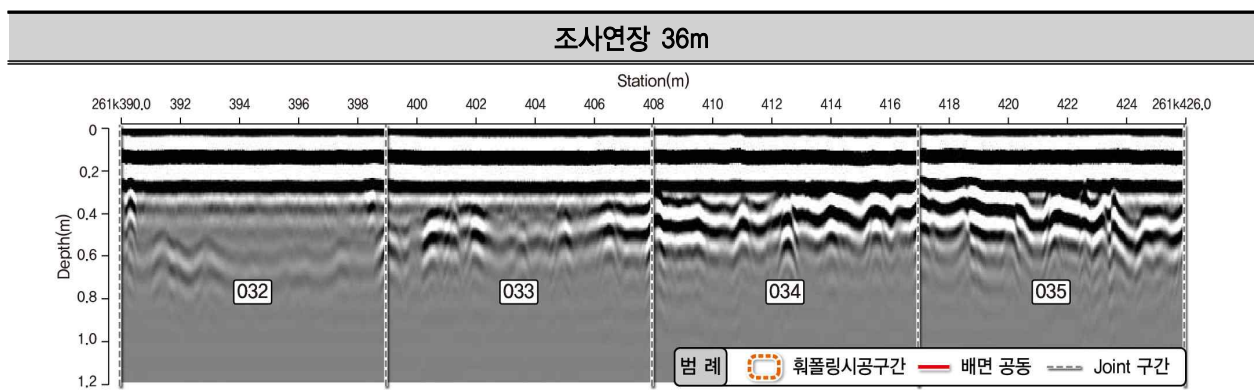
7) C-6(STA. 261K318.0 ~ 261K354.0)



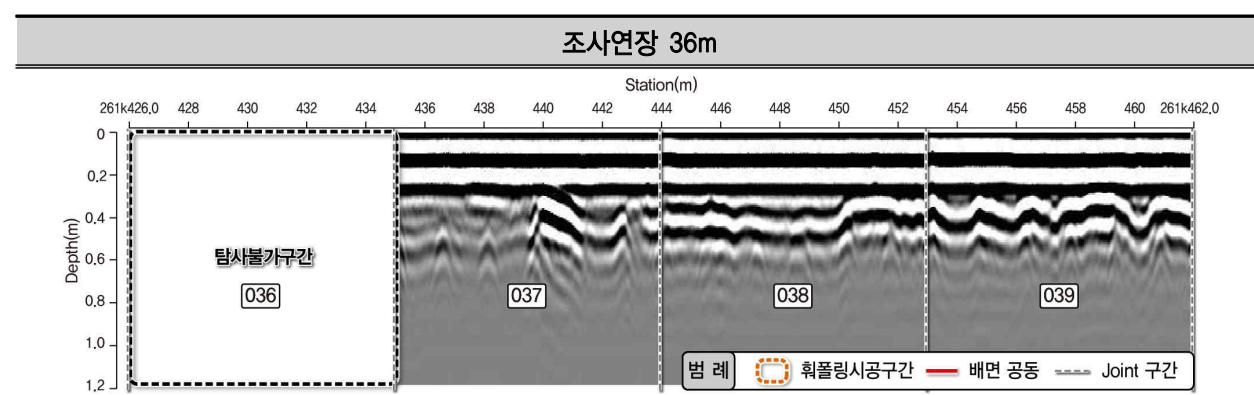
8) C-7(STA. 261K354.0 ~ 261K390.0)



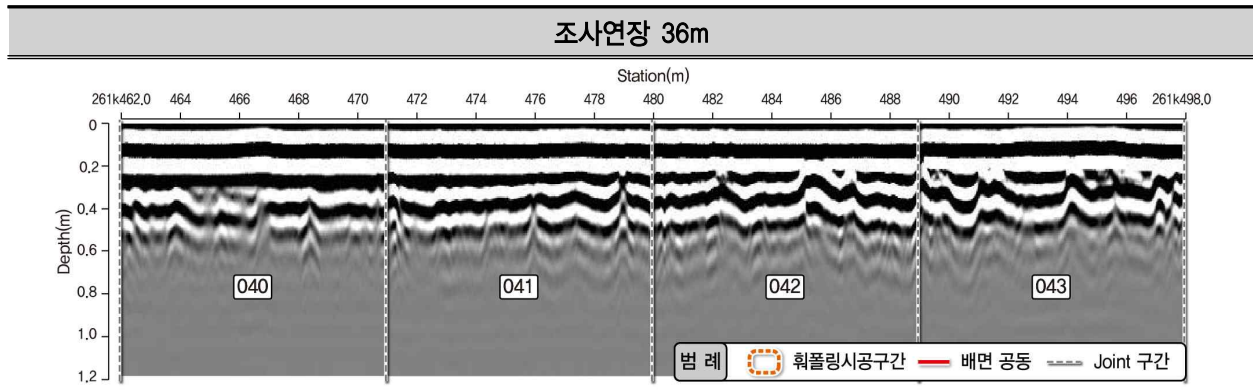
9) C-8(STA. 261K390.0 ~ 261K426.0)



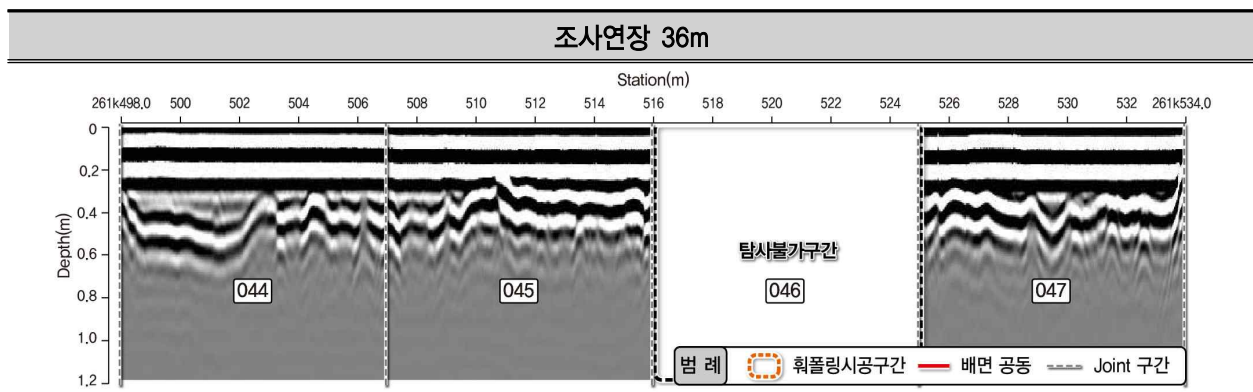
10) C-9(STA. 261K426.0 ~ 261K462.0)



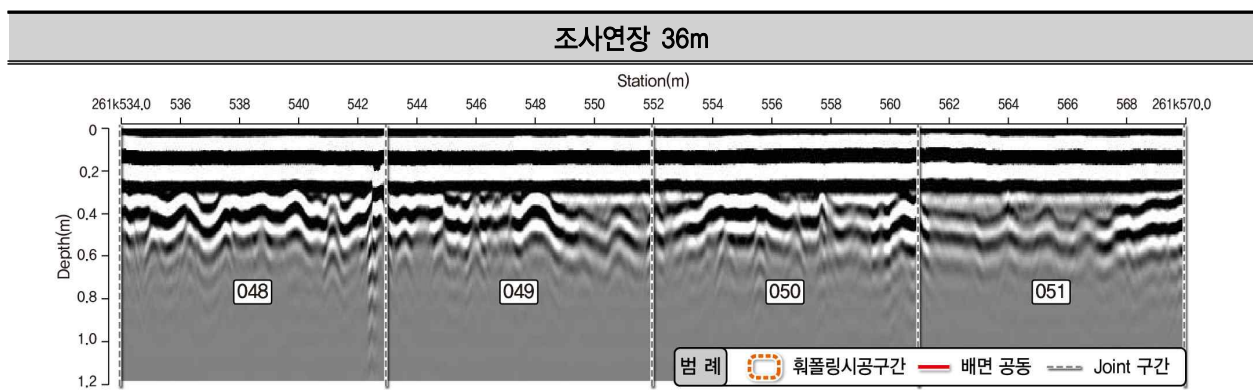
11) C-10(STA. 261K462.0 ~ 261K498.0)



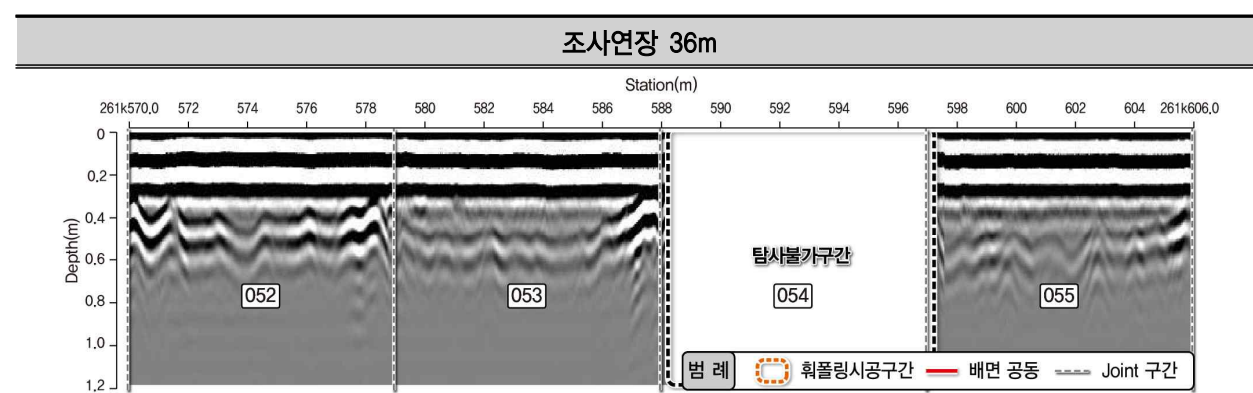
12) C-11(STA. 261K498.0 ~ 261K534.0)



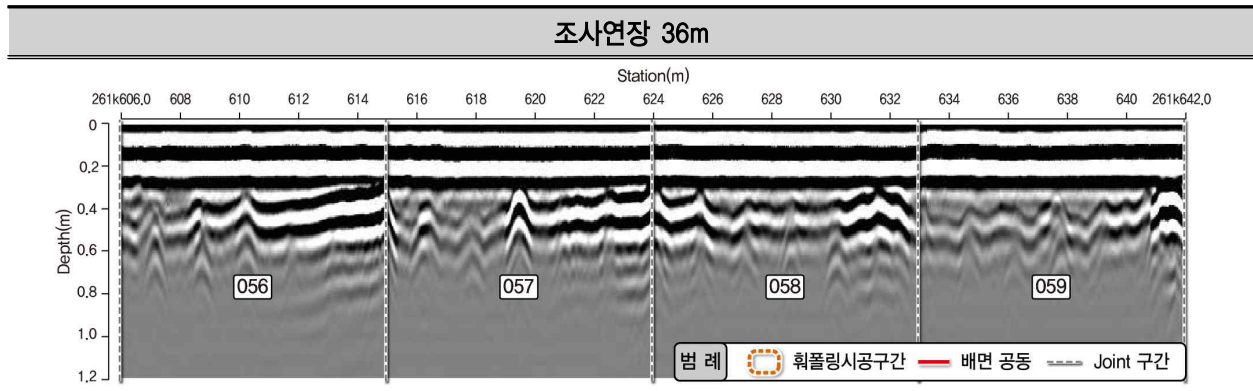
13) C-12(STA. 261K534.0 ~ 261K570.0)



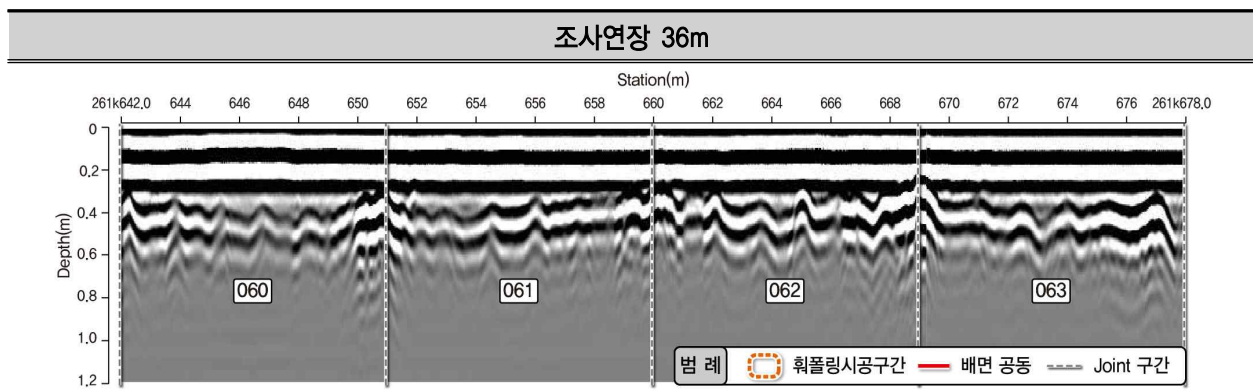
14) C-13(STA. 261K570.0 ~ 261K606.0)



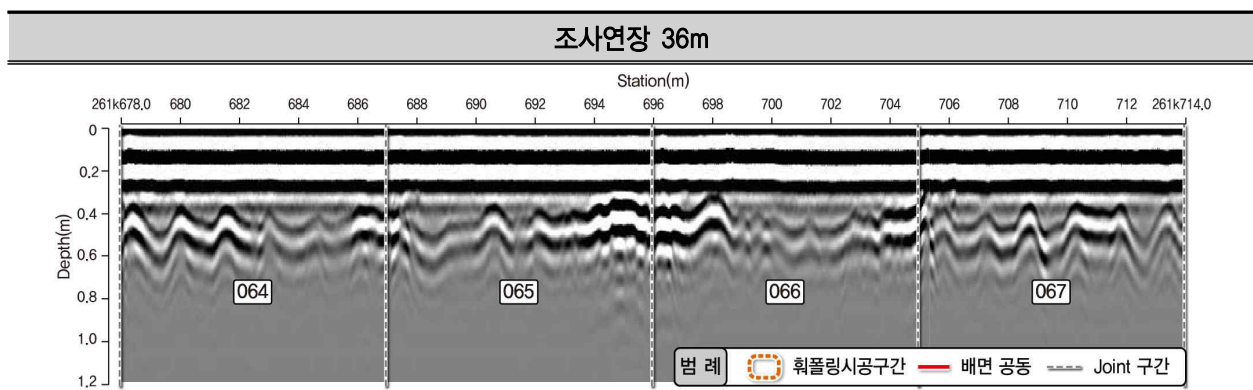
15) C-14(STA.261K606.0 ~ 261K642.0)



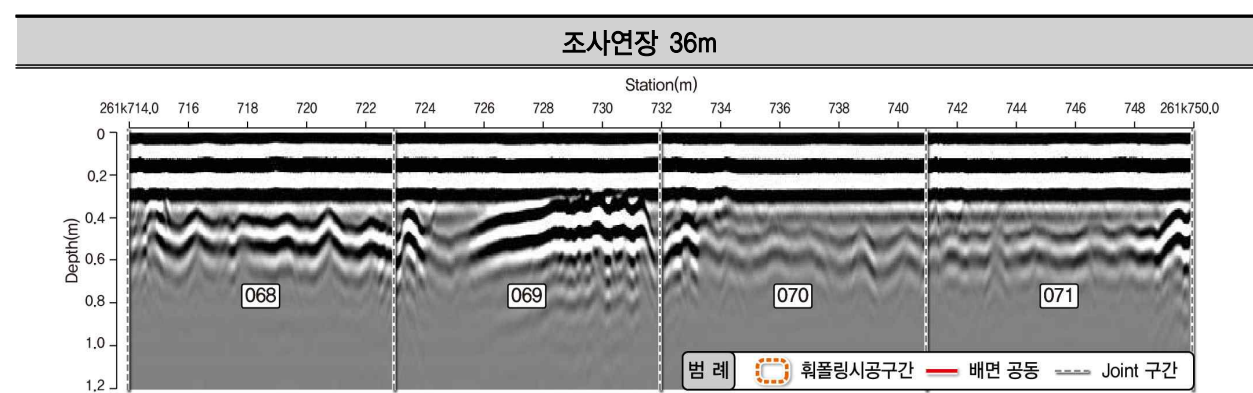
16) C-15(STA.261K642.0 ~ 261K678.0)



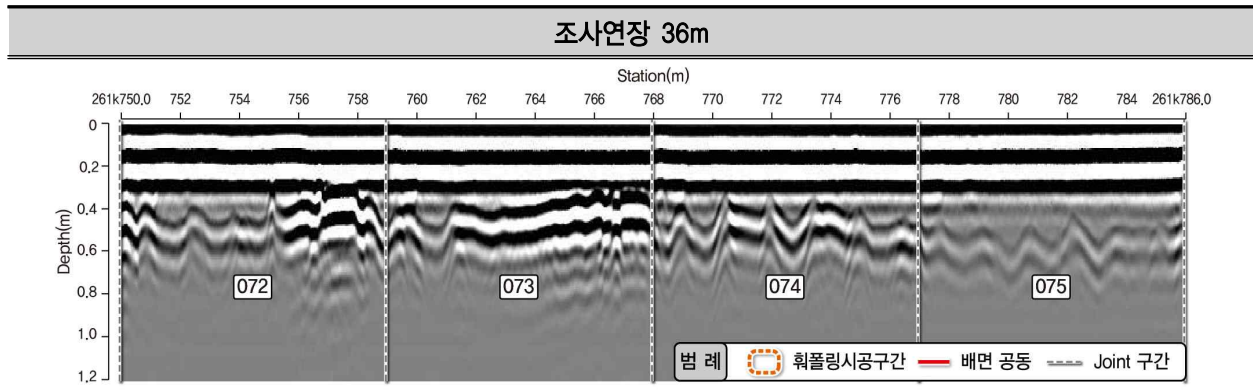
17) C-16(STA. 261K678.0 ~ 261K714.0)



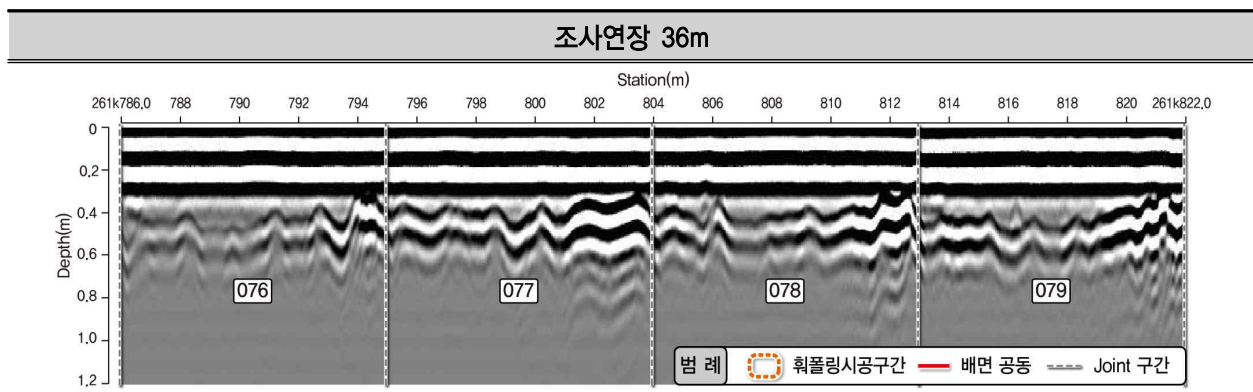
18) C-17(STA. 261K714.0 ~ 261K750.0)



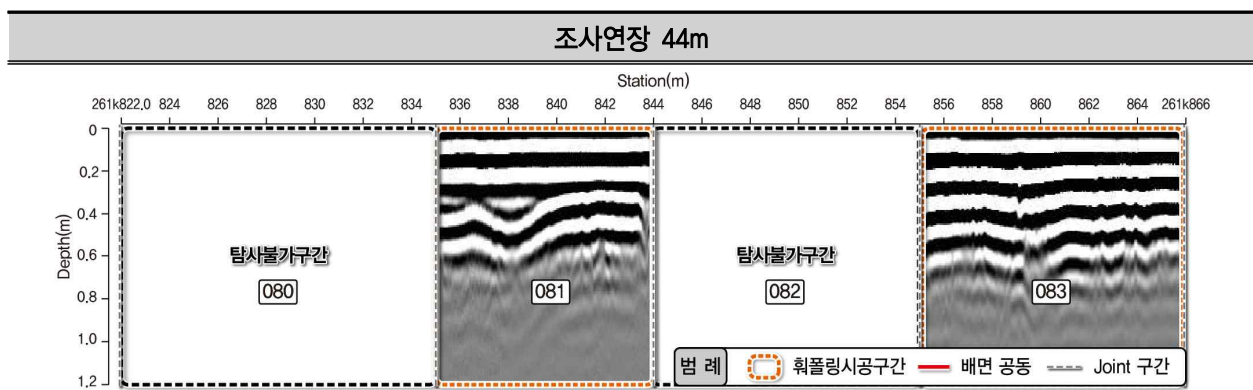
19) C-18(STA. 261K750.0 ~ 261K786.0)



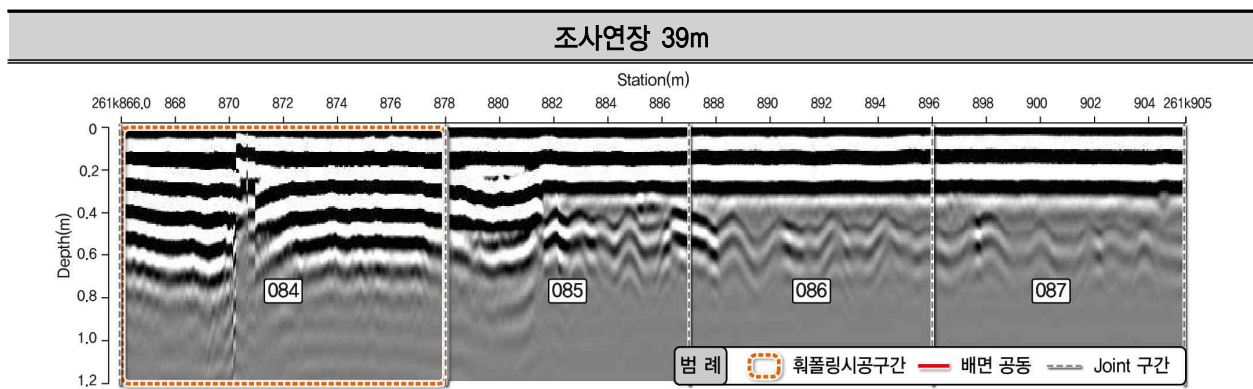
20) C-19(STA. 261K786.0 ~ 261K822.0)



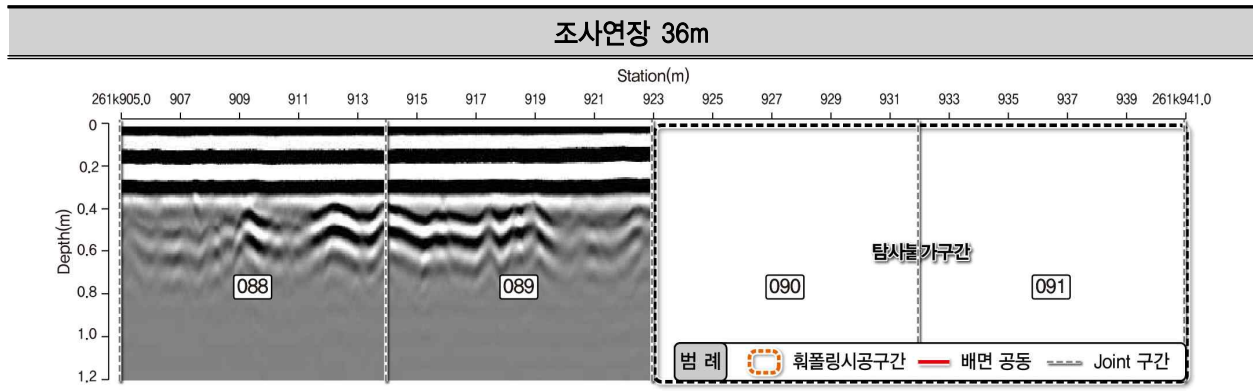
21) C-20(STA. 261K822.0 ~ 261K866.0)



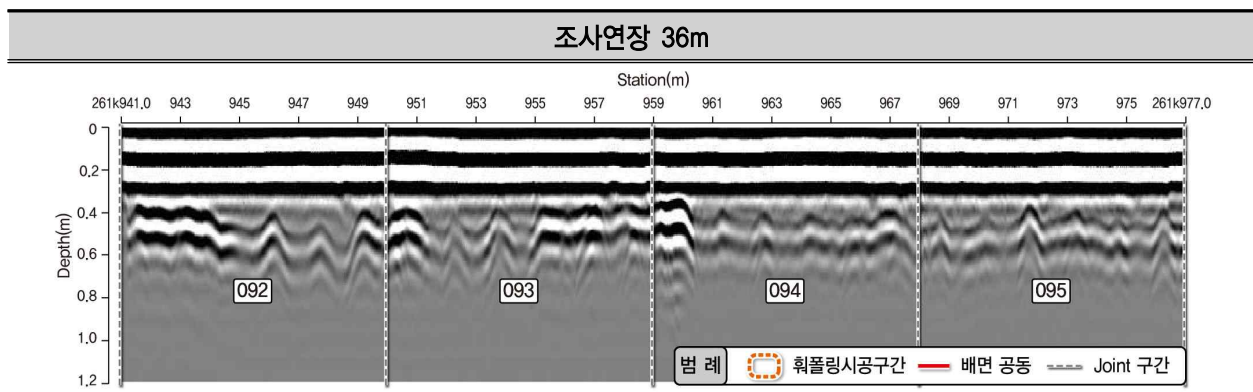
22) C-21(STA. 261K866.0 ~ 261K905.0)



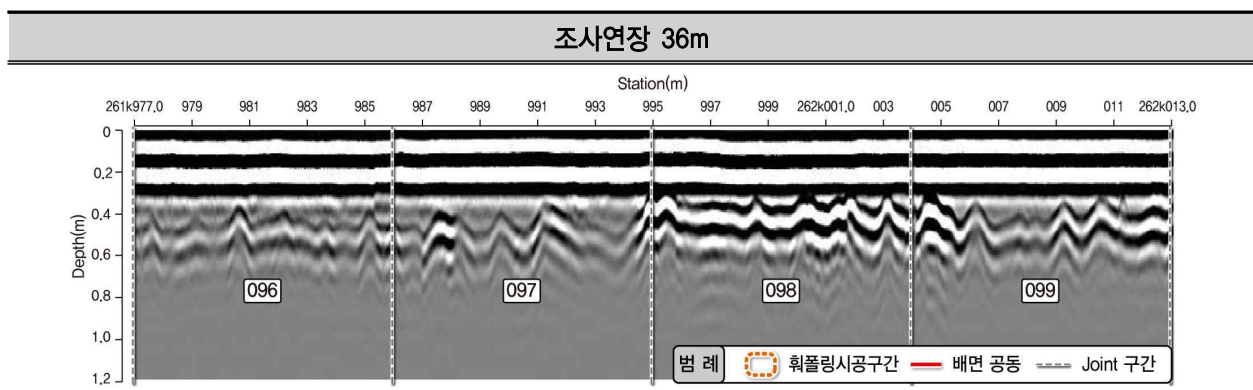
23) C-22(STA. 261K905.0 ~ 261K941.0)



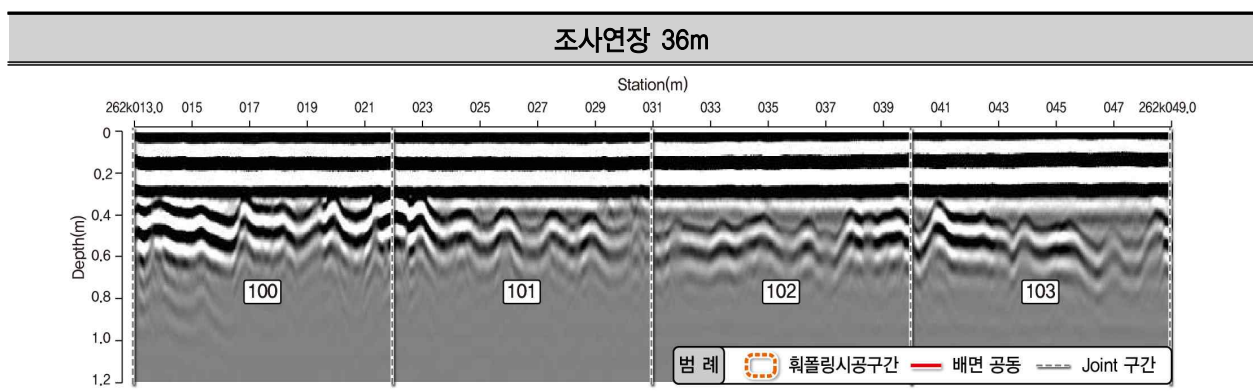
24) C-23(STA. 261K941.0 ~ 261K977.0)



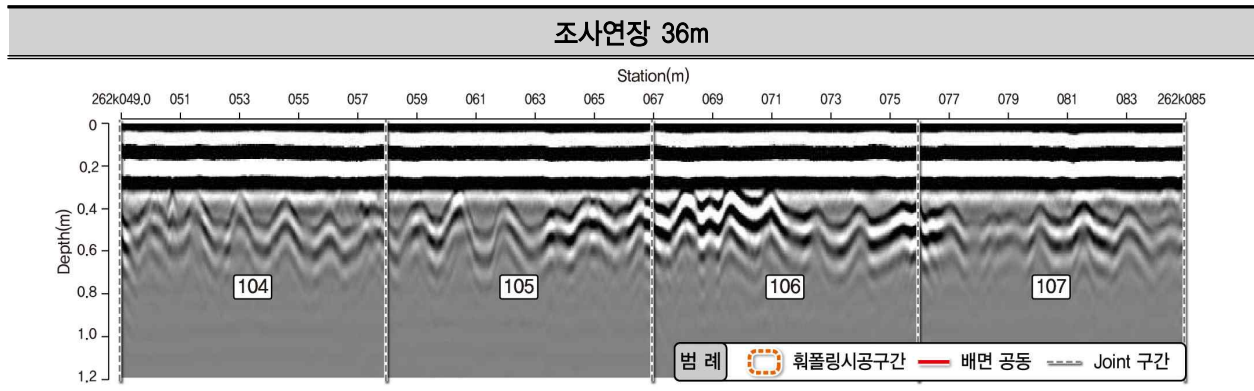
25) C-24(STA. 261K977.0 ~ 262K013.0)



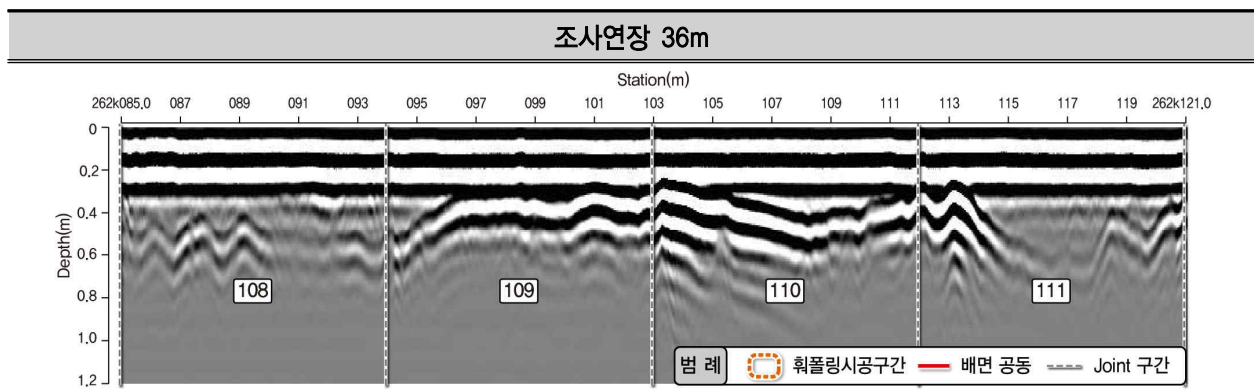
26) C-25(STA. 262K013.0 ~ 262K049.0)



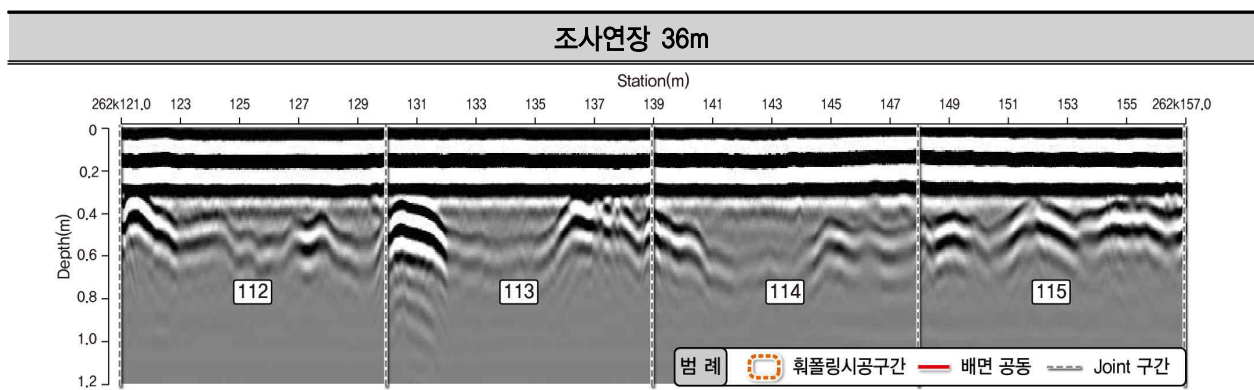
27) C-26(STA. 262K049.0 ~ 262K085.0)



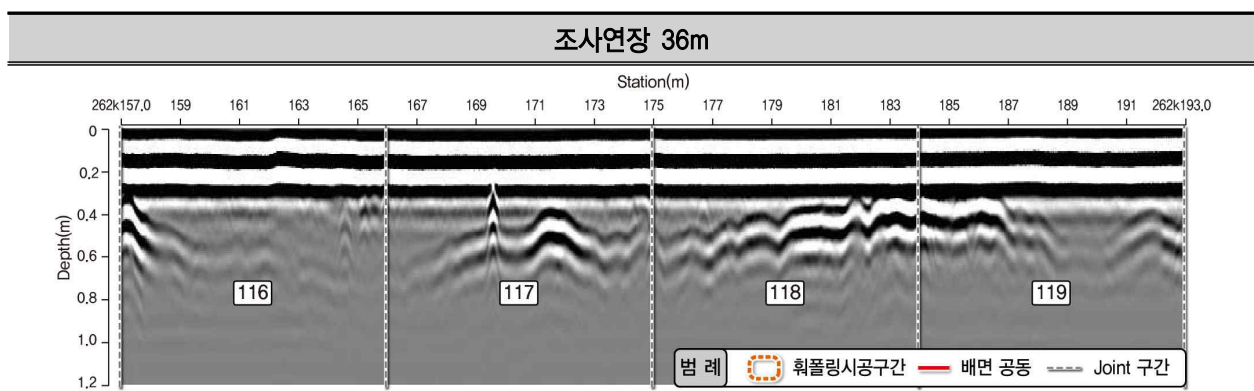
28) C-27(STA. 262K085.0 ~ 262K121.0)



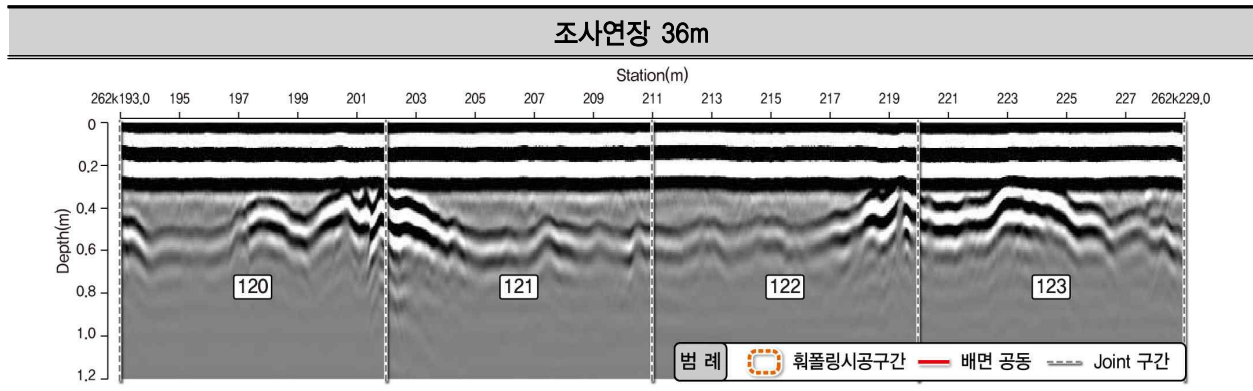
29) C-28(STA. 262K121.0 ~ 262K157.0)



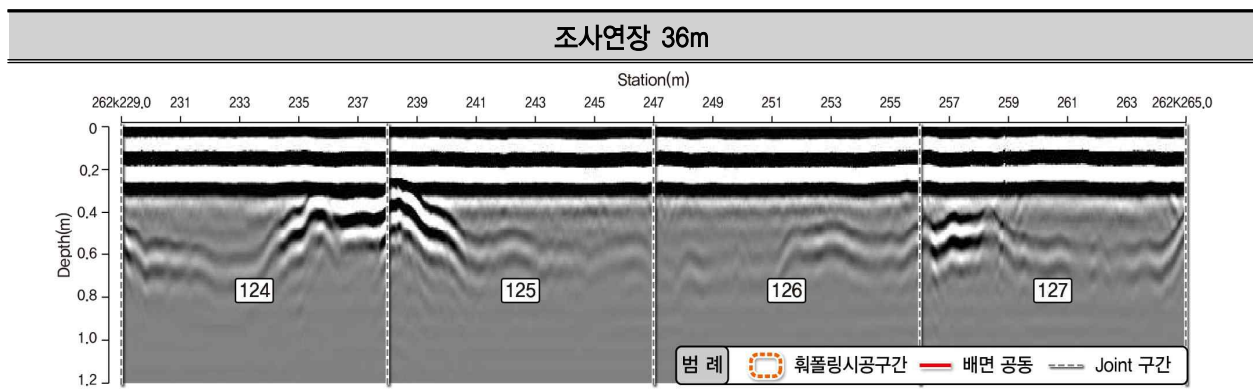
30) C-29(STA. 262K157.0 ~ 262K193.0)



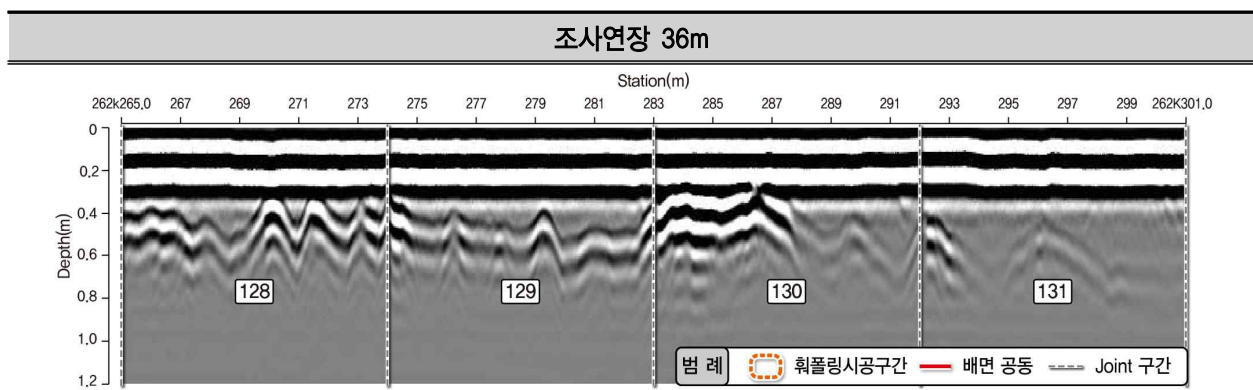
31) C-30(STA. 262K193.0 ~ 262K229.0)



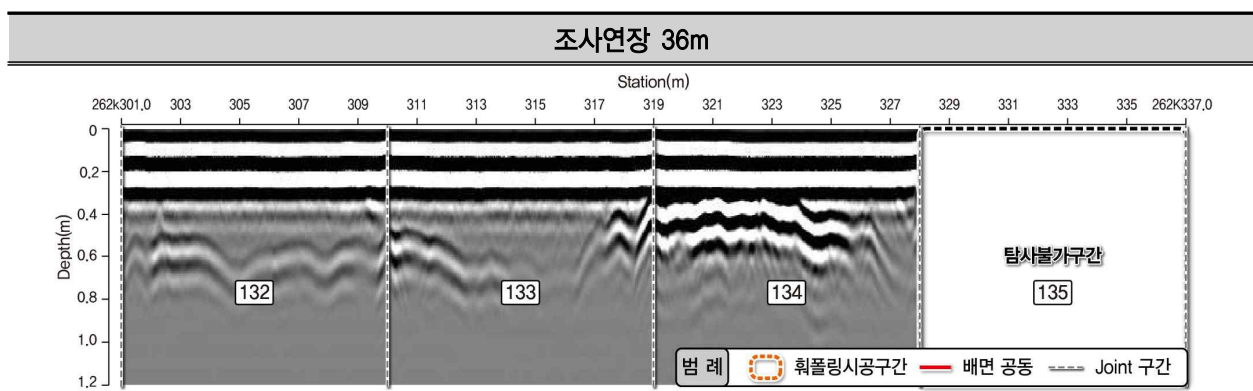
32) C-31(STA. 262K229.0 ~ 262K265.0)



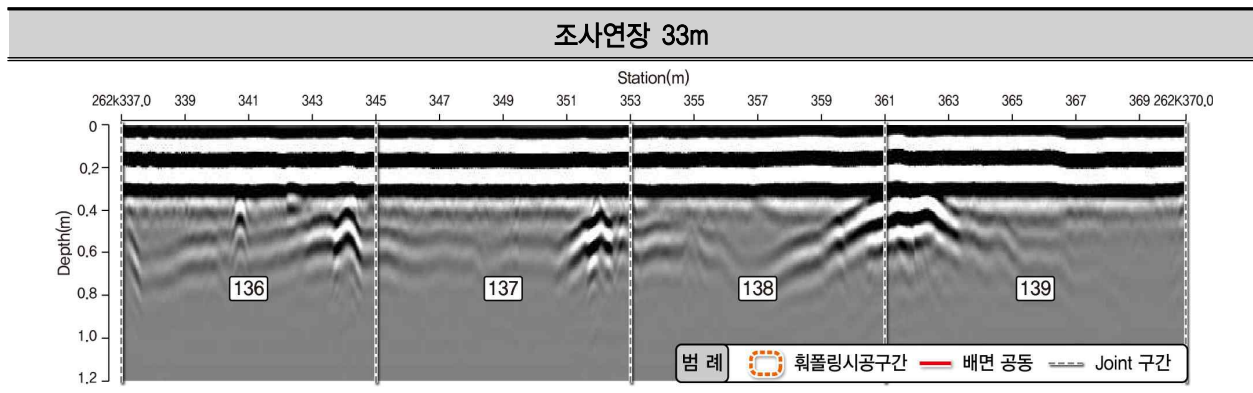
33) C-32(STA. 262K265.0 ~ 262K301.0)



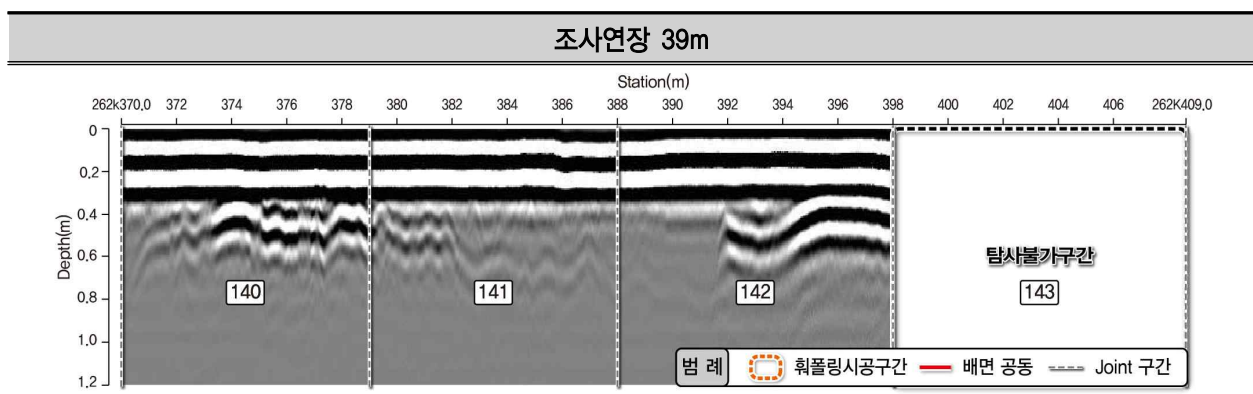
34) C-33(STA. 262K301.0 ~ 262K337.0)



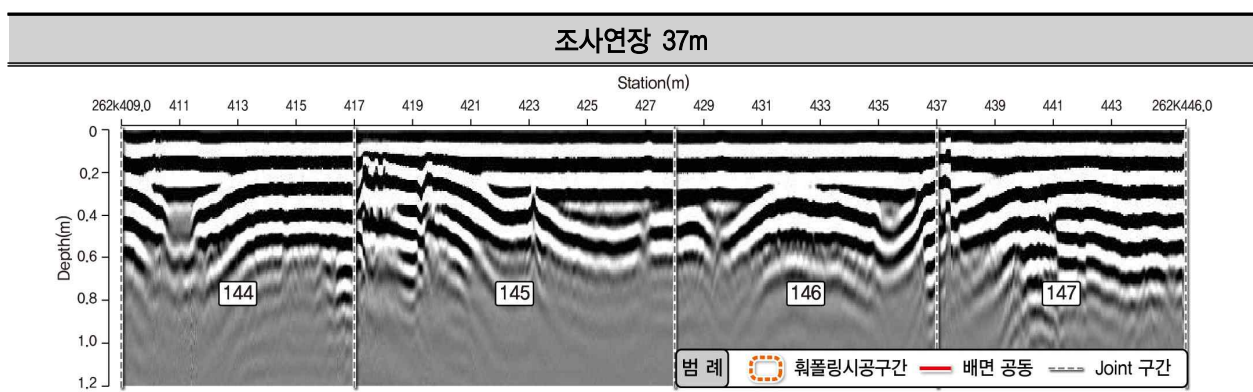
35) C-34(STA. 262K337.0 ~ 262K370.0)



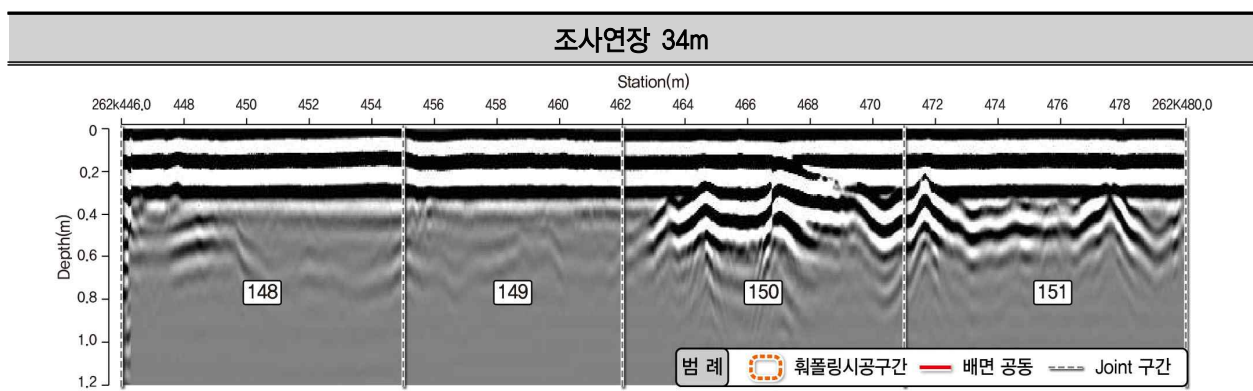
36) C-35(STA. 262K370.0 ~ 262K409.0)



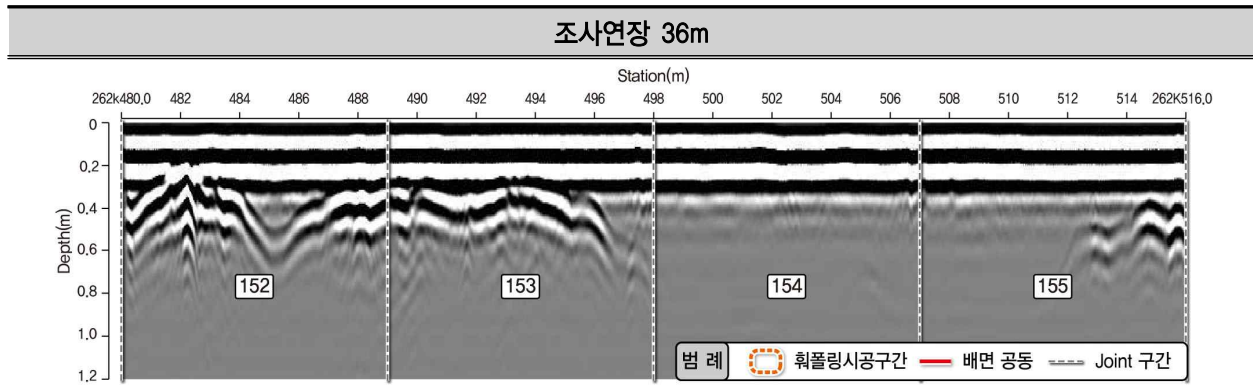
37) C-36(STA. 262K409.0 ~ 262K446.0)



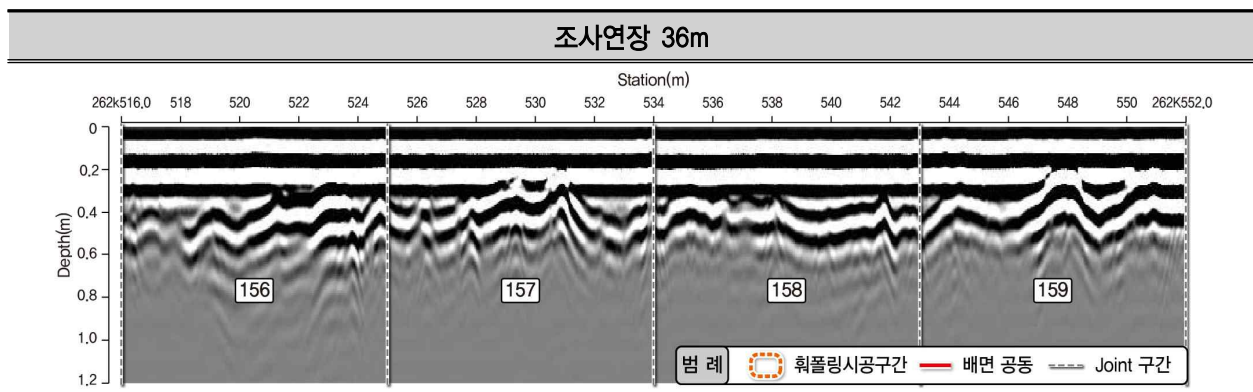
38) C-37(STA. 262K0446.0 ~ 262K480.0)



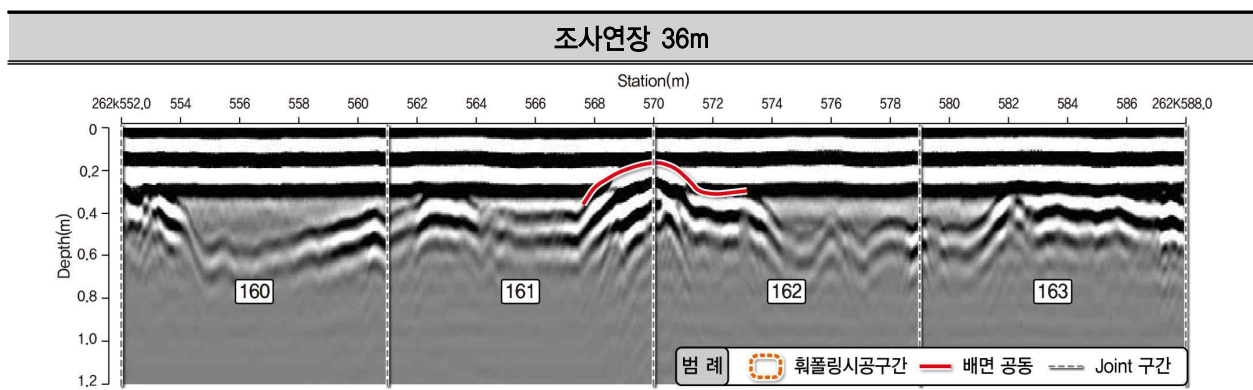
39) C-38(STA. 262K480.0 ~ 262K516.0)



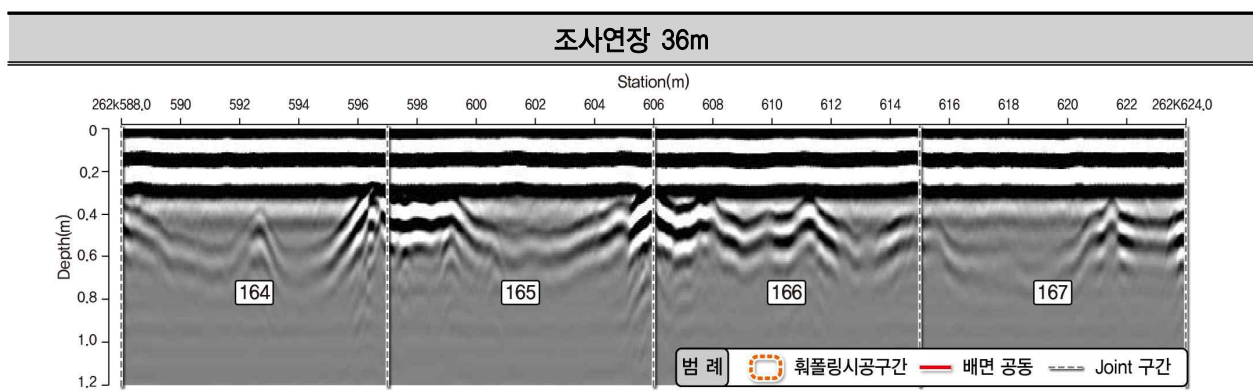
40) C-39(STA. 262K516.0 ~ 262K552.0)



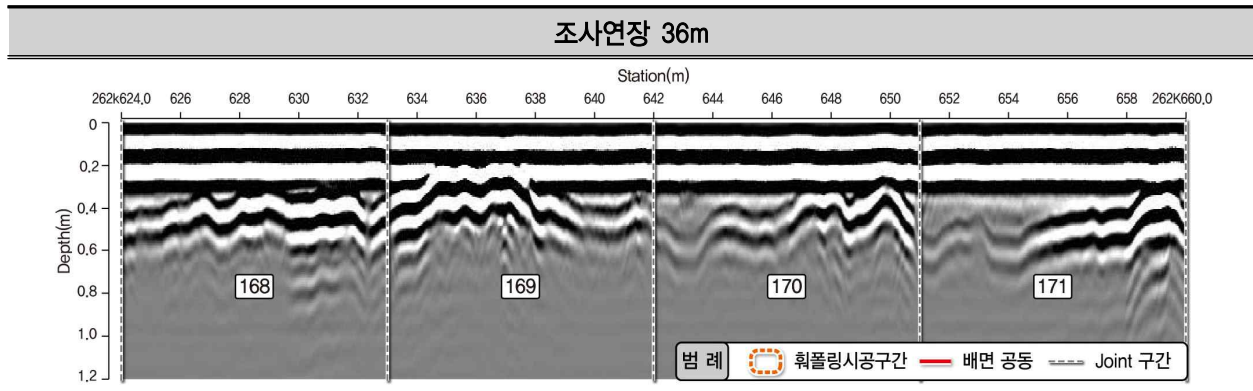
41) C-40(STA. 262K552.0 ~ 262K588.0)



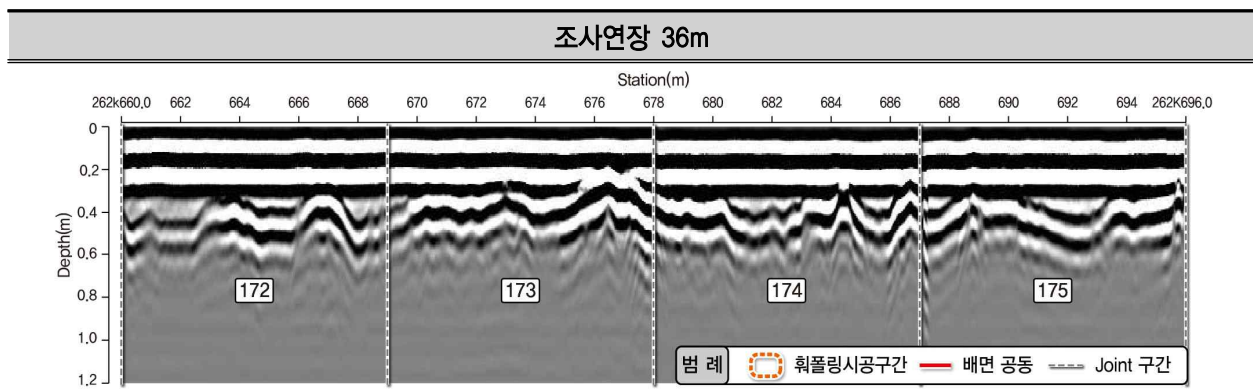
42) C-41(STA. 262K01588.0 ~ 262K624.0)



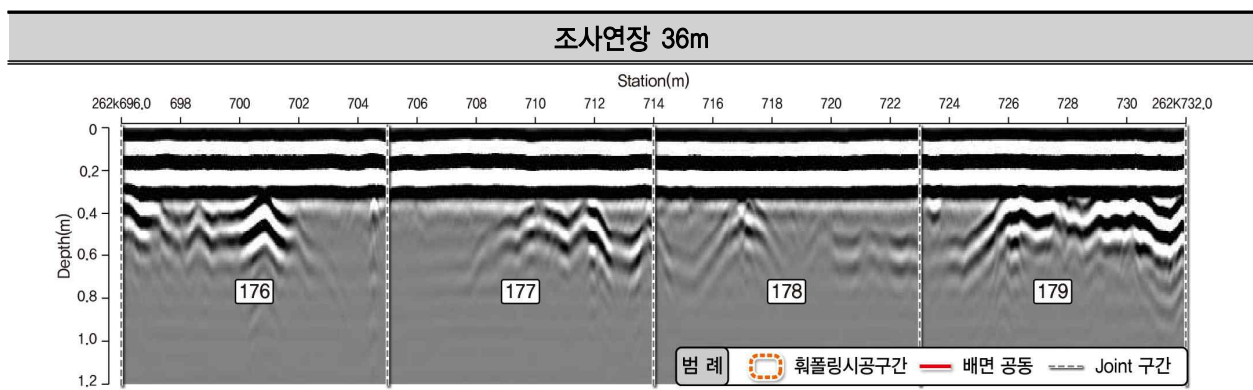
43) C-42(STA. 262K624.0 ~ 262K660.0)



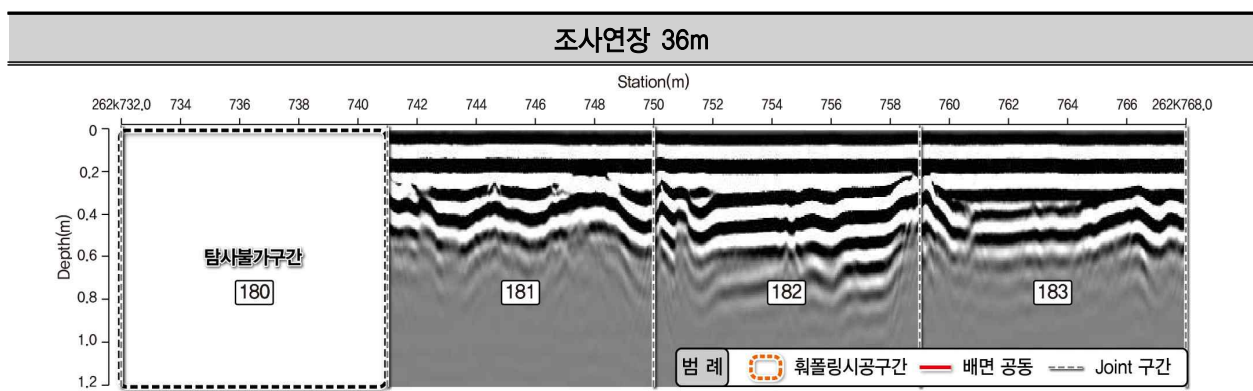
44) C-43(STA. 262K660.0 ~ 262K696.0)



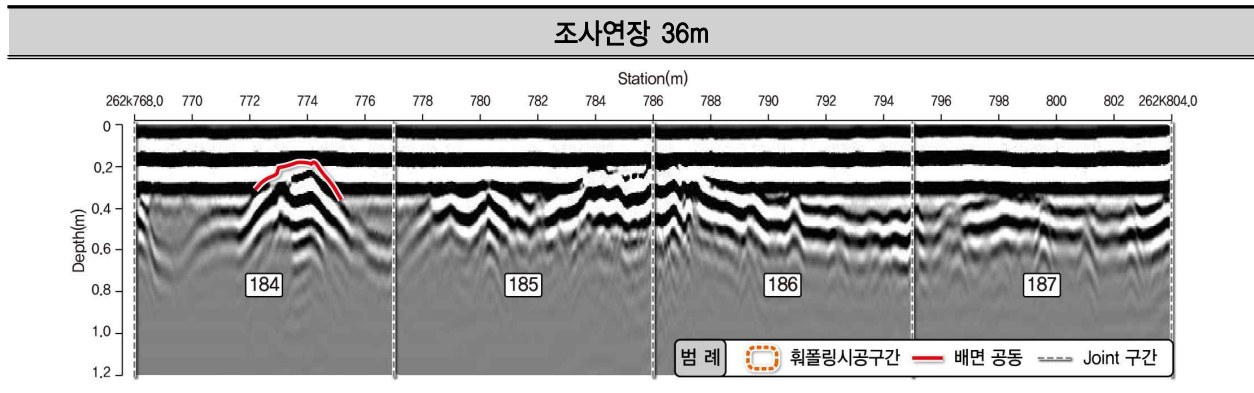
45) C-44(STA. 262K696.0 ~ 262K732.0)



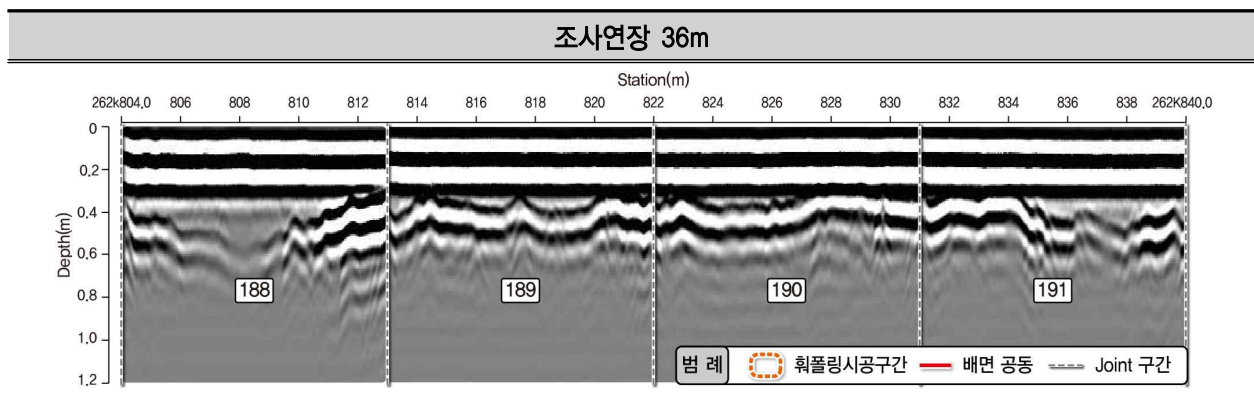
46) C-45(STA. 262K732.0 ~ 262K768.0)



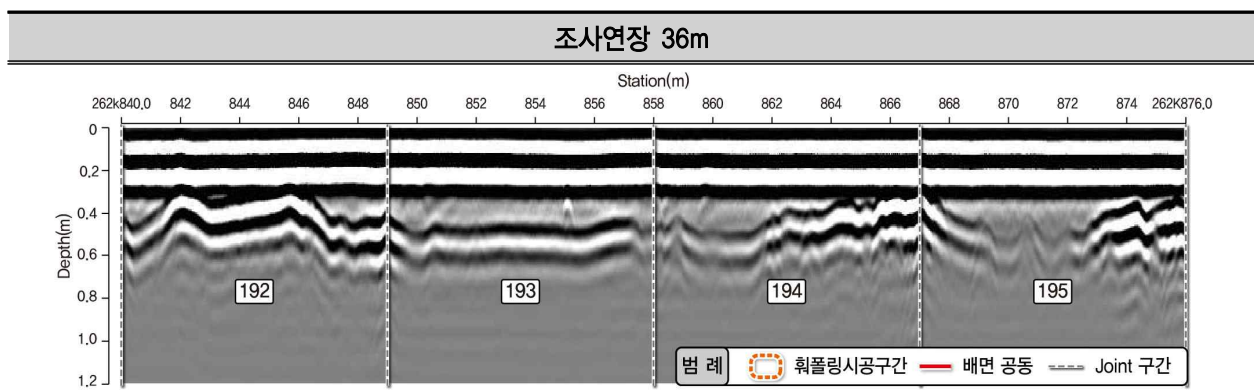
47) C-46(STA. 262K768.0 ~ 262K804.0)



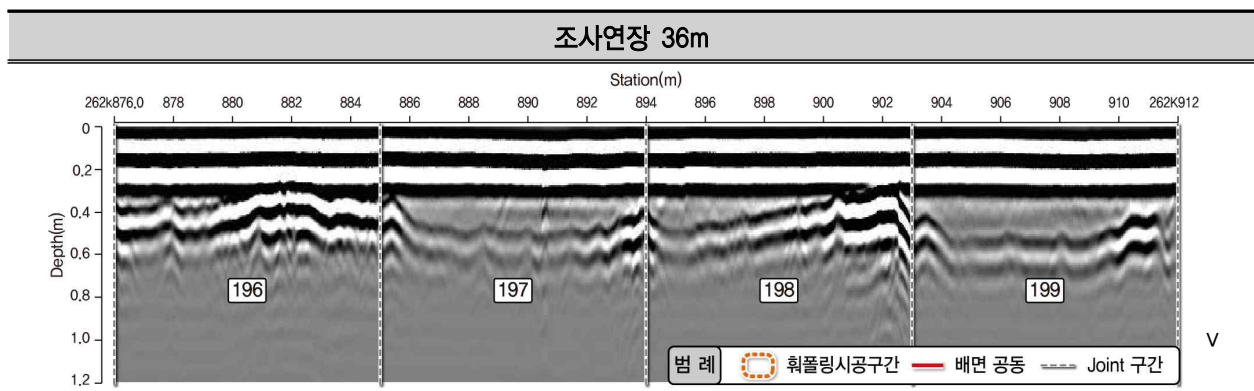
48) C-47(STA. 262K804.0 ~ 262K840.0)



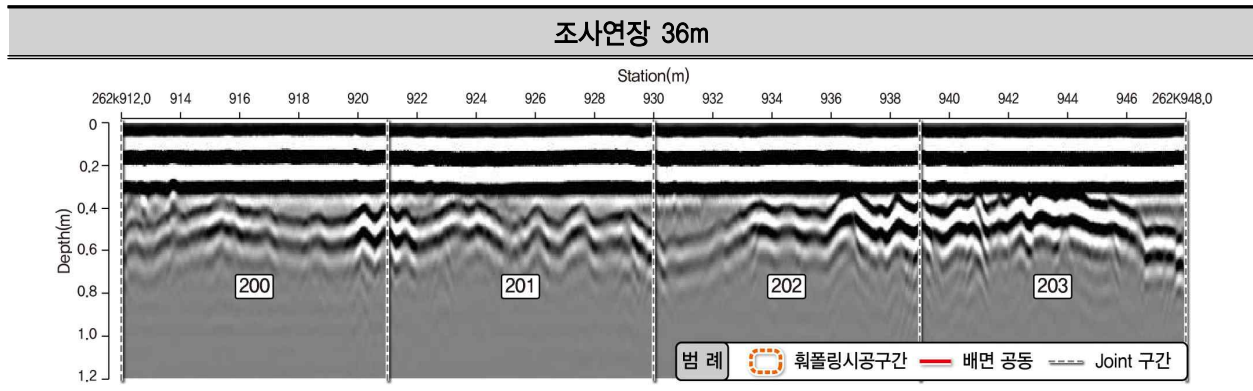
49) C-48(STA. 262K840.0 ~ 262K876.0)



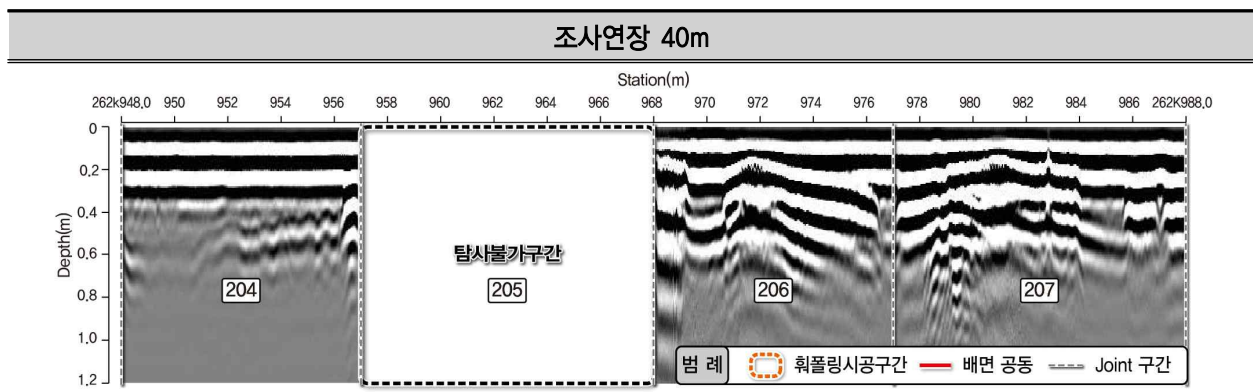
50) C-49(STA. 262K876.0 ~ 262K912.0)



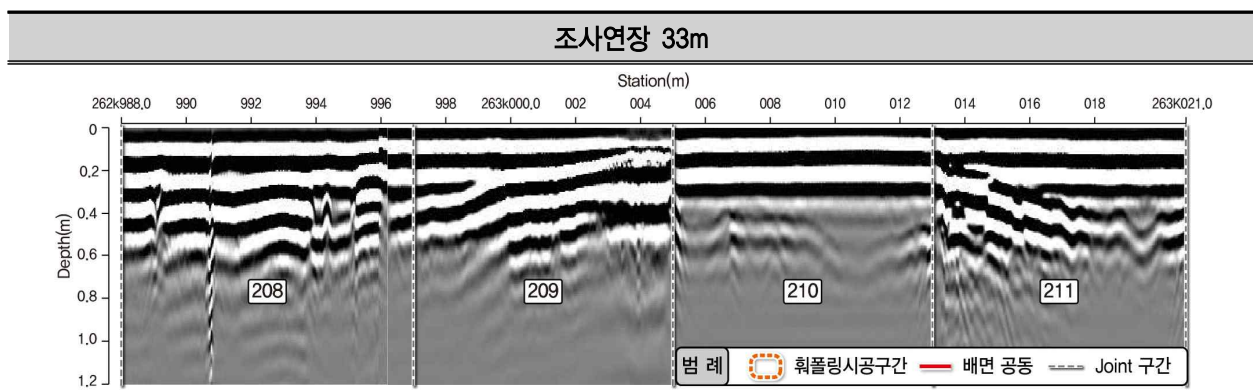
51) C-50(STA. 262K912.0 ~ 262K948.0)



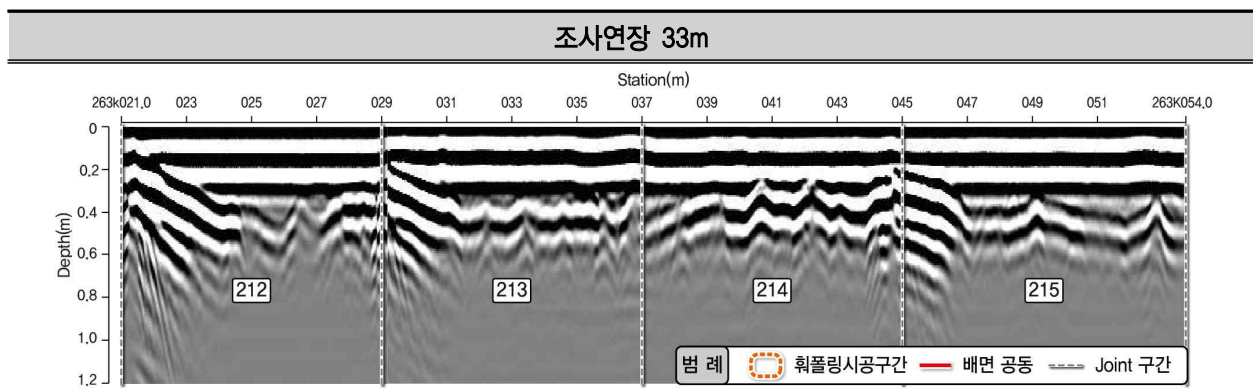
52) C-51(STA. 262K948.0 ~ 262K988.0)



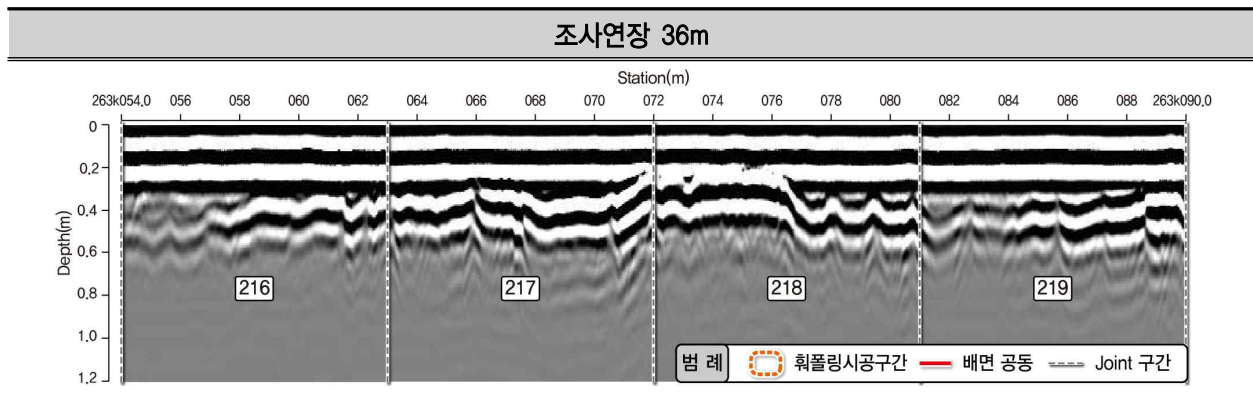
53) C-52(STA. 262K988.0 ~ 263K021.0)



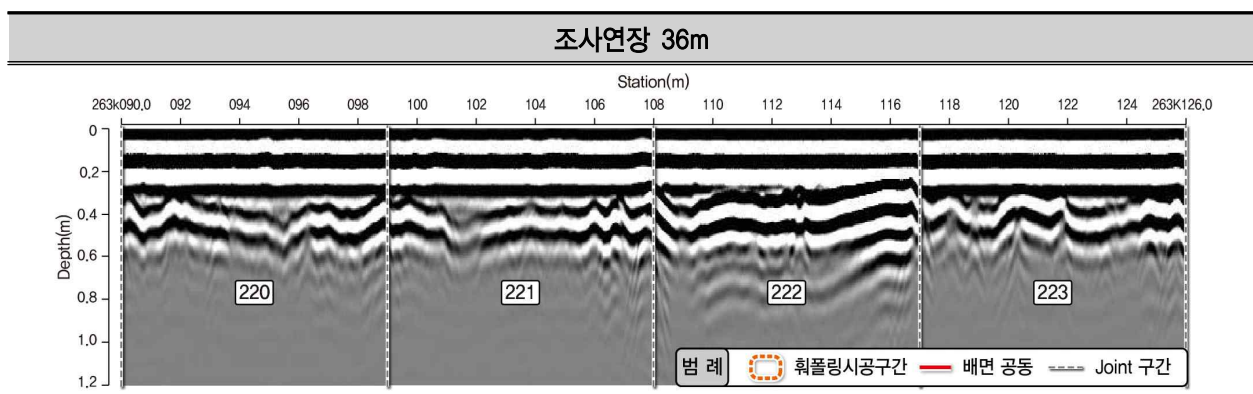
54) C-53(STA. 263K021.0 ~ 263K054.0)



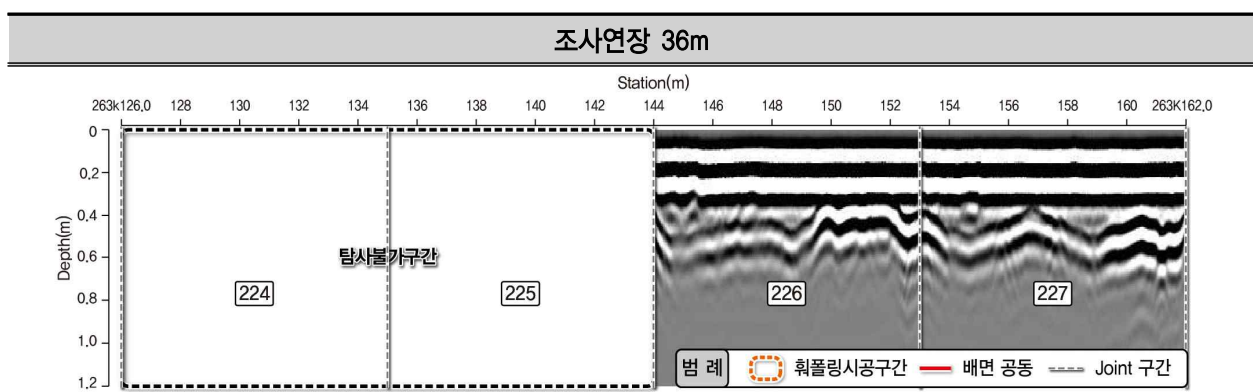
55) C-54(STA. 263K054.0 ~ 263K090.0)



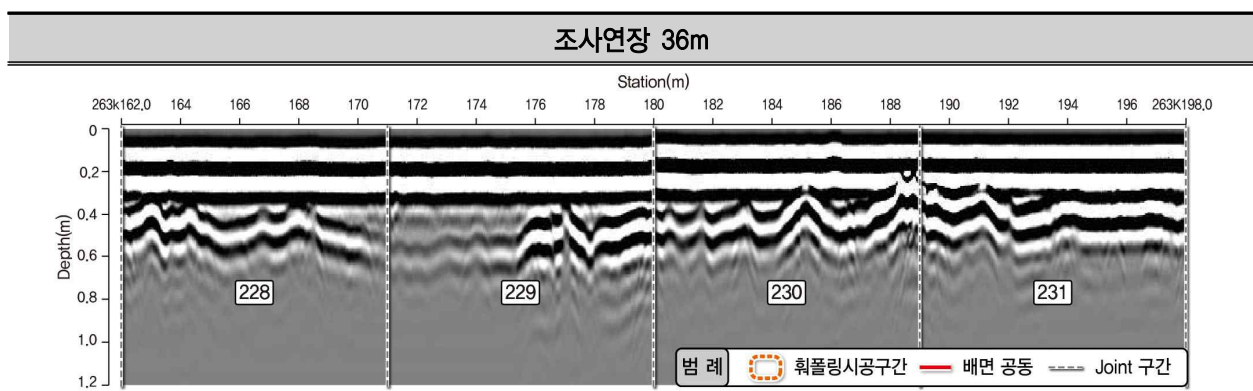
56) C-55(STA. 263K090.0 ~ 263K126.0)



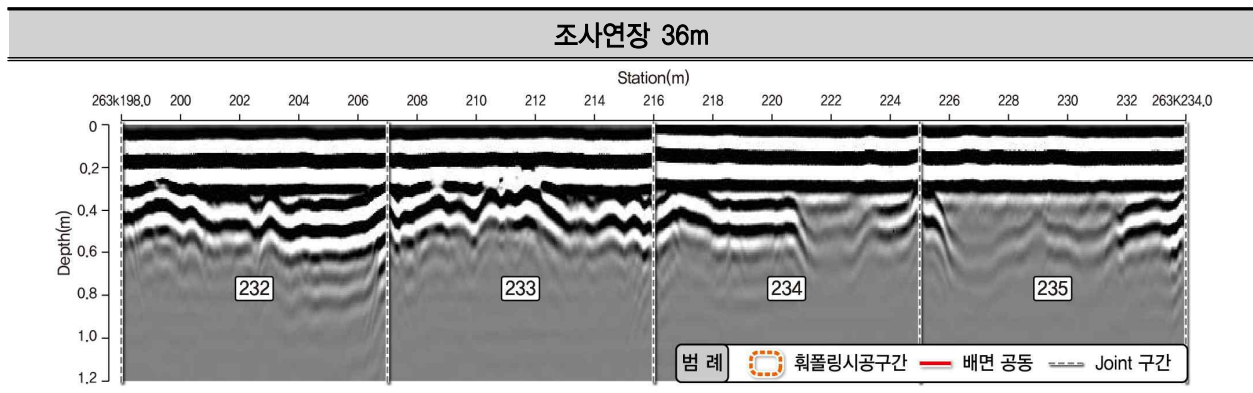
57) C-56(STA. 263K126.0 ~ 263K162.0)



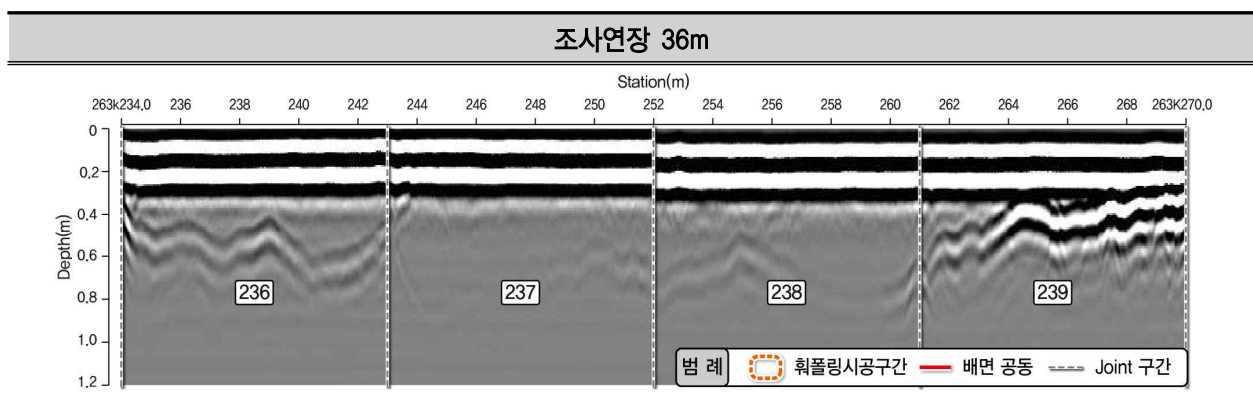
58) C-57(STA. 263K162.0 ~ 263K198.0)



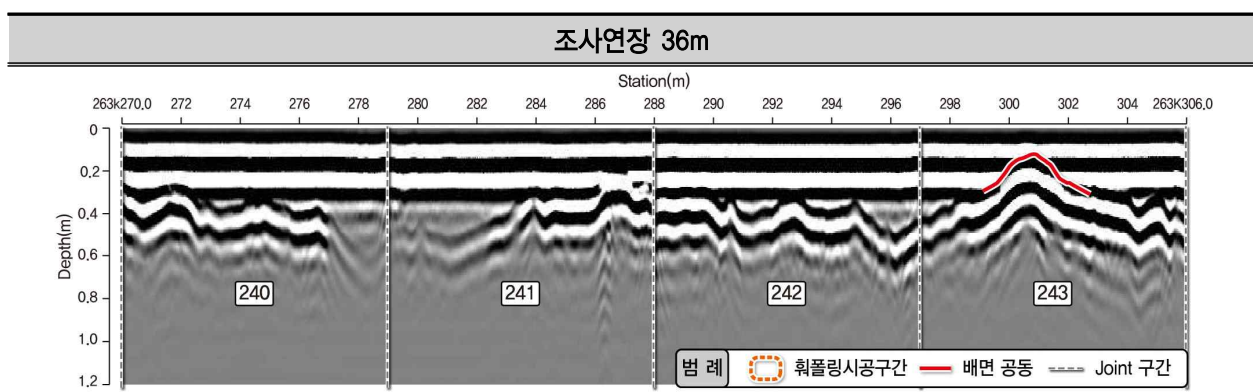
59) C-58(STA. 263K198.0 ~ 263K234.0)



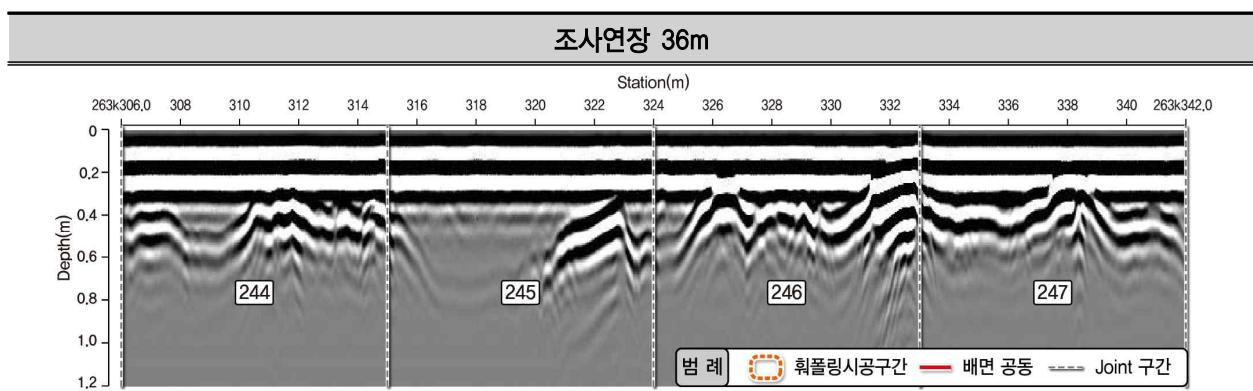
60) C-59(STA. 263K234.0 ~ 263K270.0)



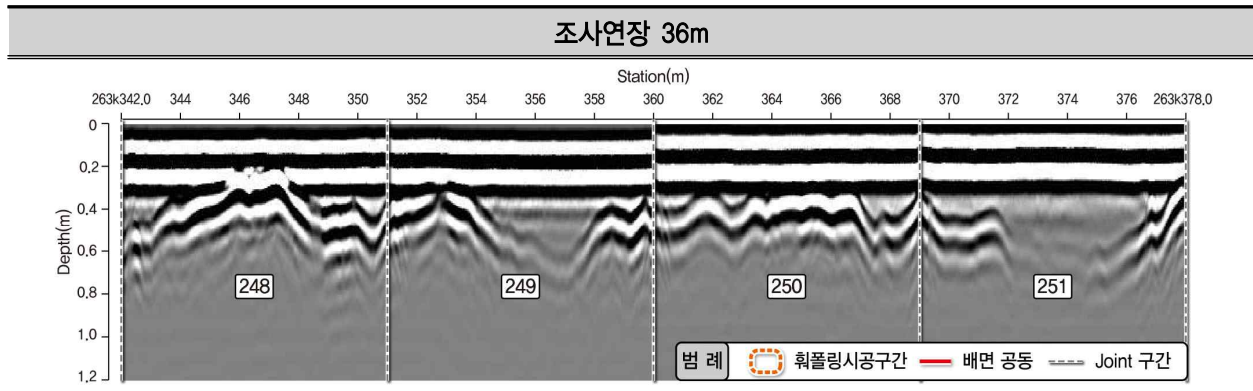
61) C-60(STA. 263K270.0 ~ 263K306.0)



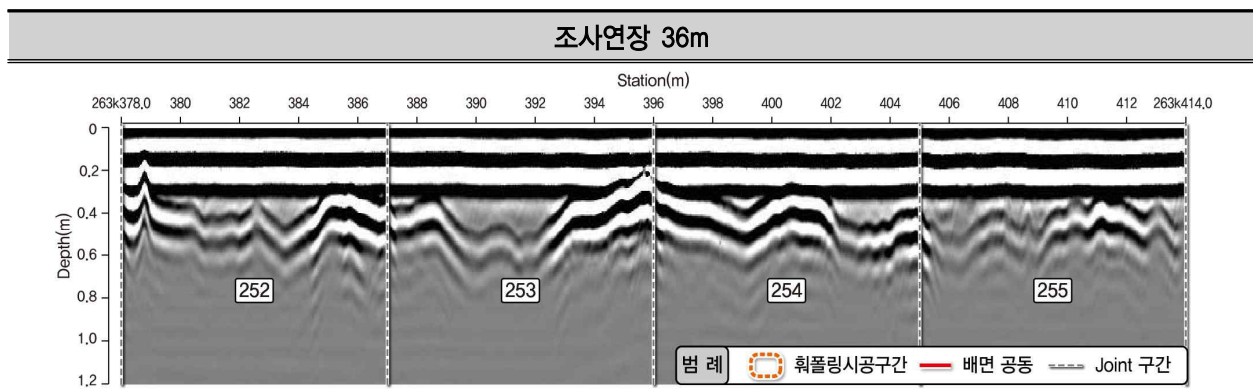
62) C-61(STA. 263K306.0 ~ 263K342.0)



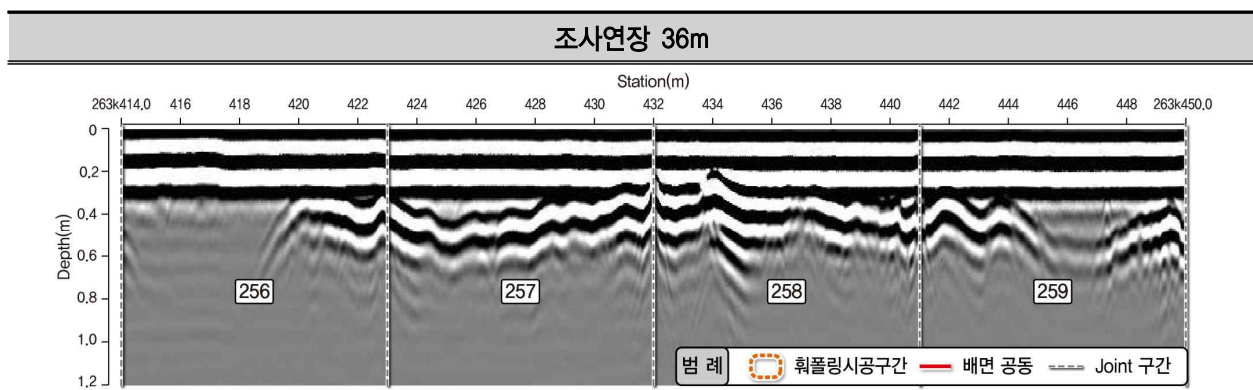
63) C-62(STA. 263K342.0 ~ 263K378.0)



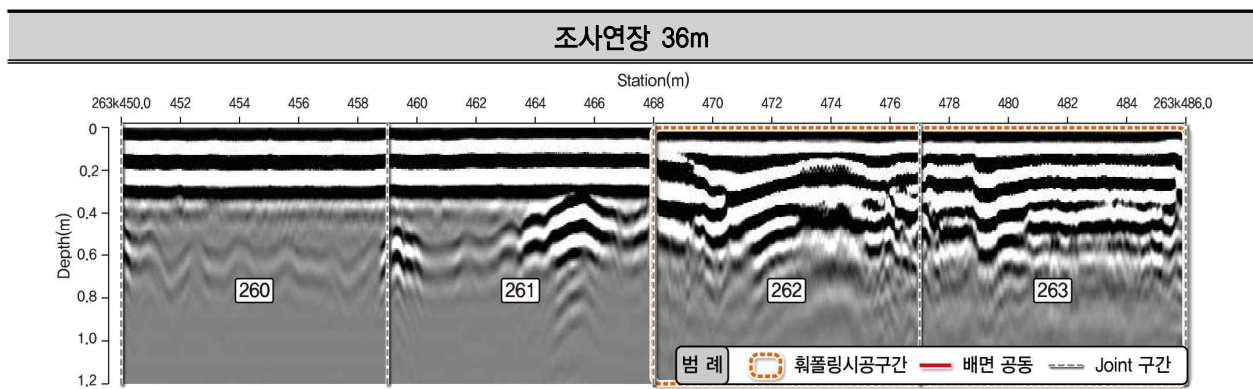
64) C-63(STA. 263K378.0 ~ 263K414.0)



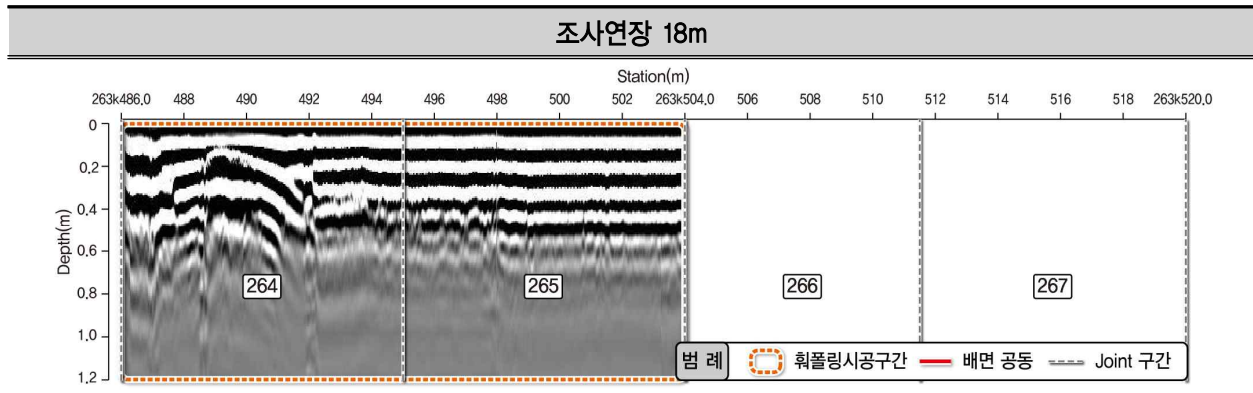
65) C-64(STA. 263K414.0 ~ 263K450.0)



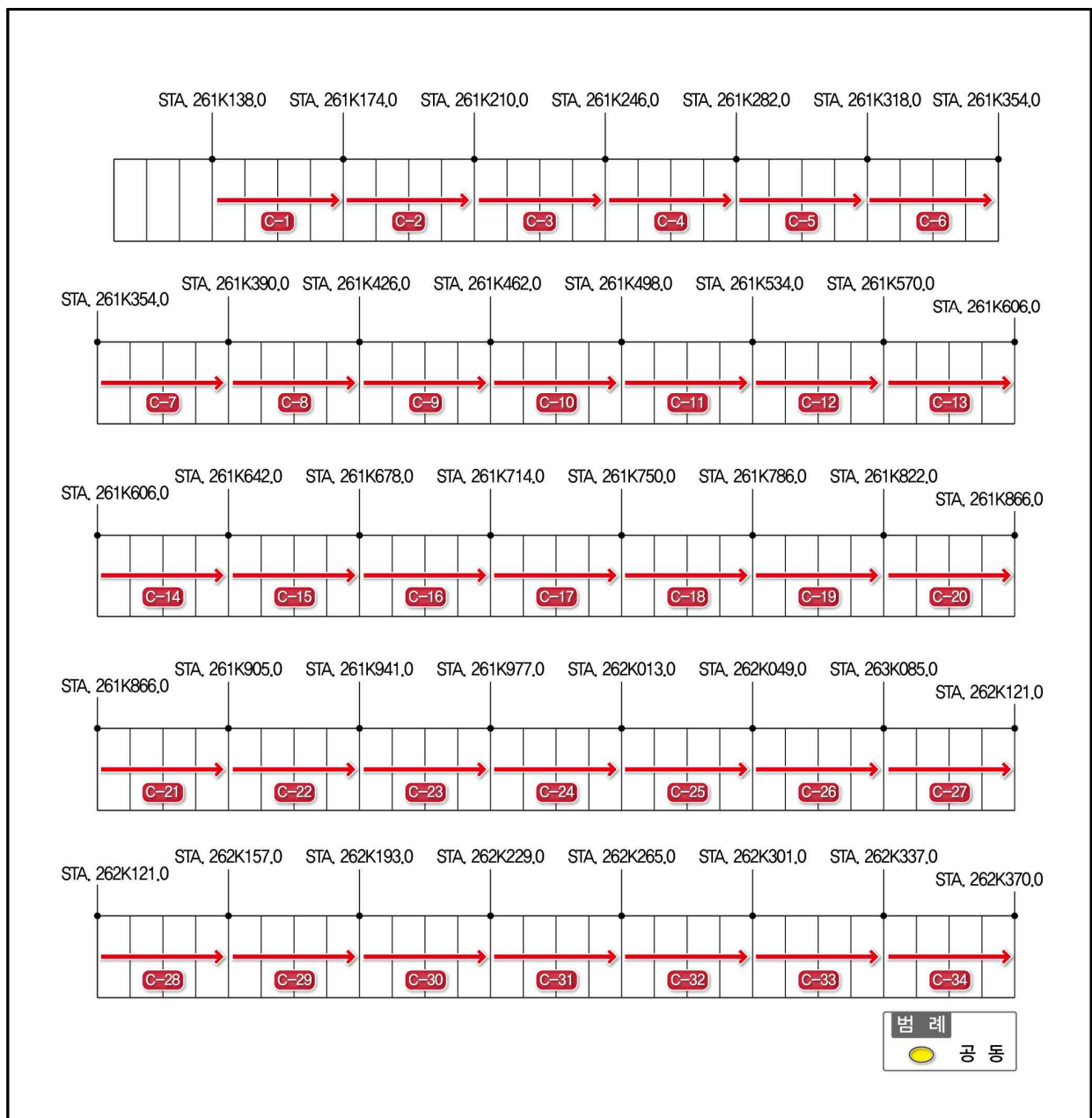
66) C-65(STA. 263K450.0 ~ 263K486.0)

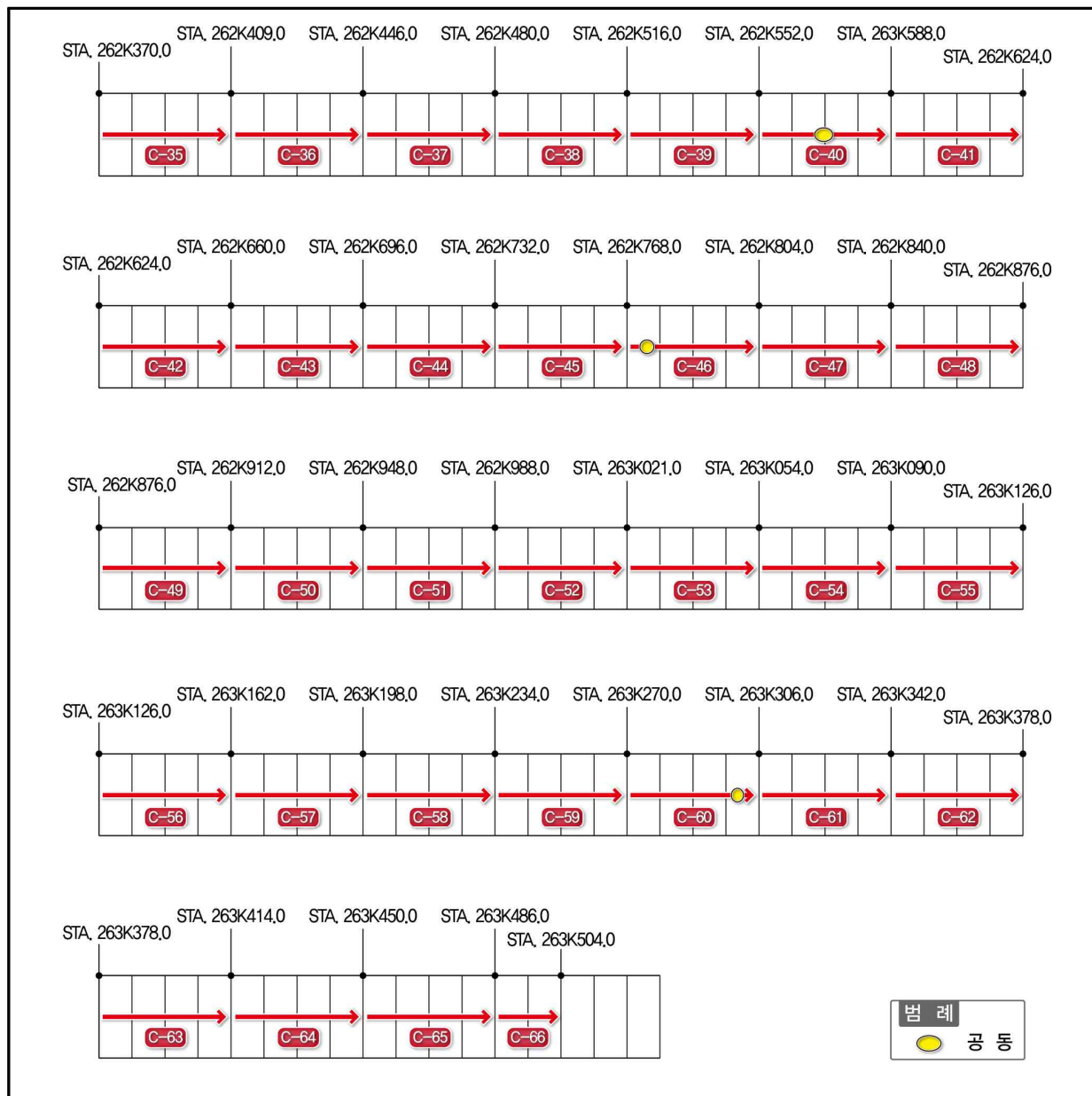


67) C-66(STA. 263K486.0 ~ 263K504.0)



68) 요약





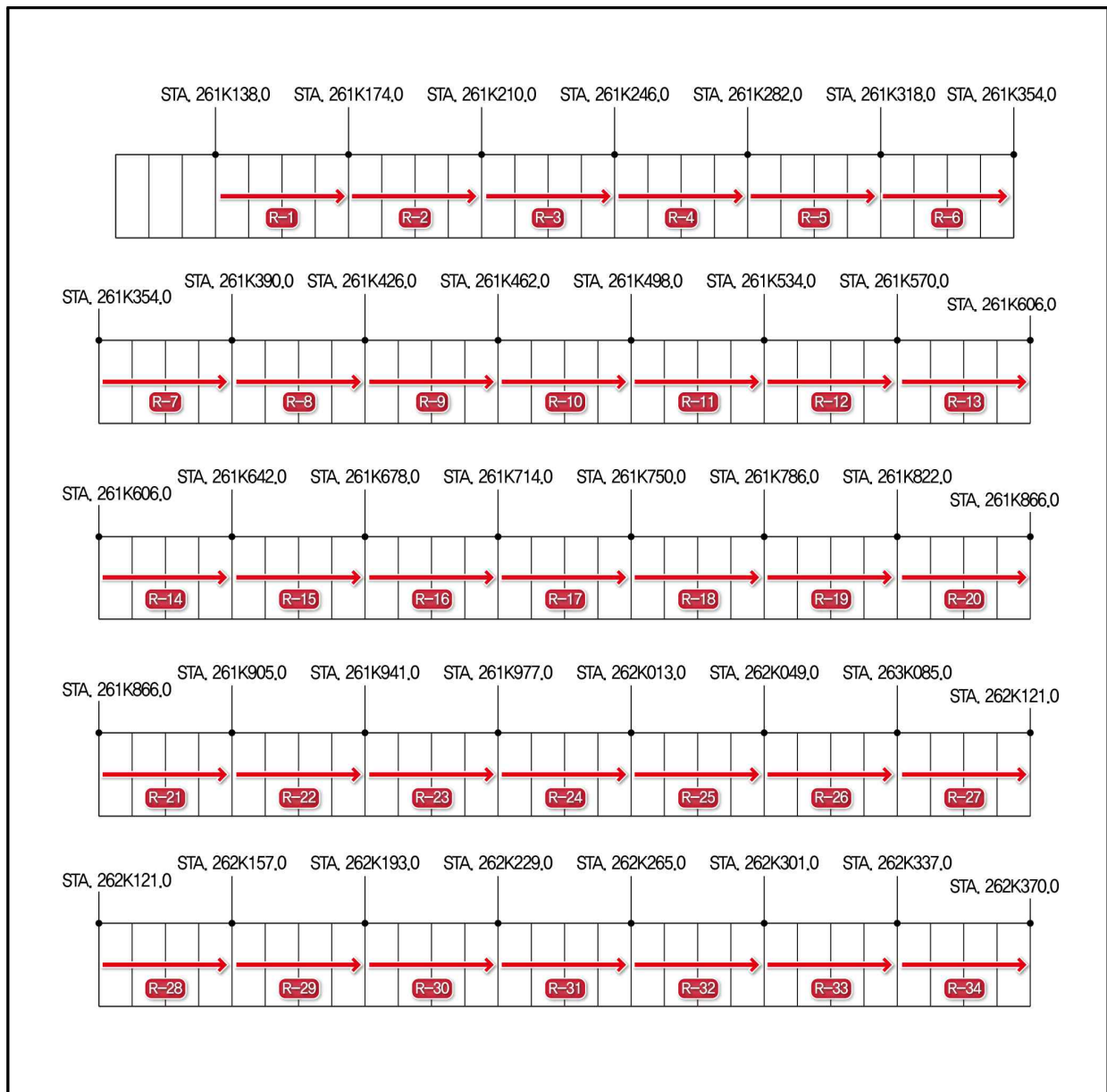
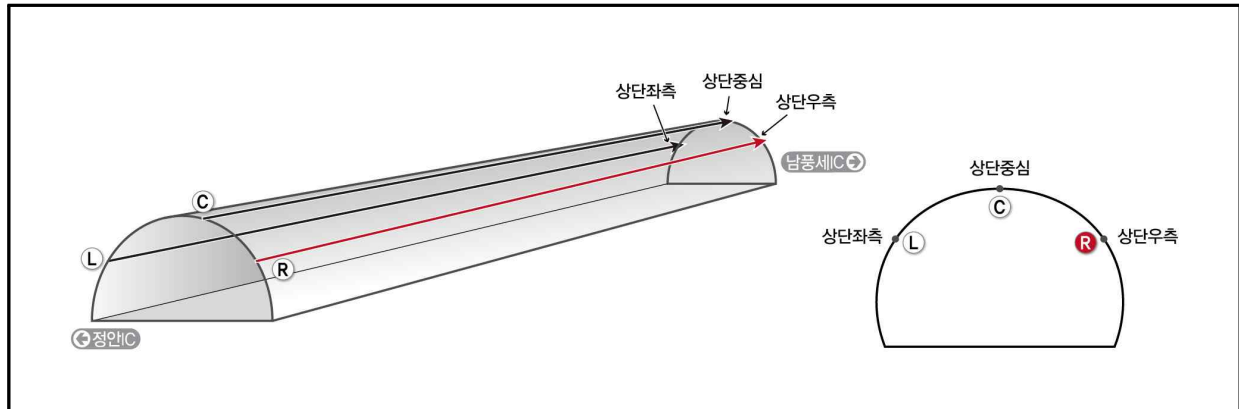
공동 탐지 축선	공동 위치(STA.)
C-40	262k 568.0 ~ 262k 572.0
C-46	262k 772.0 ~ 262k 775.0
C-60	263k 299.0 ~ 263k 302.0

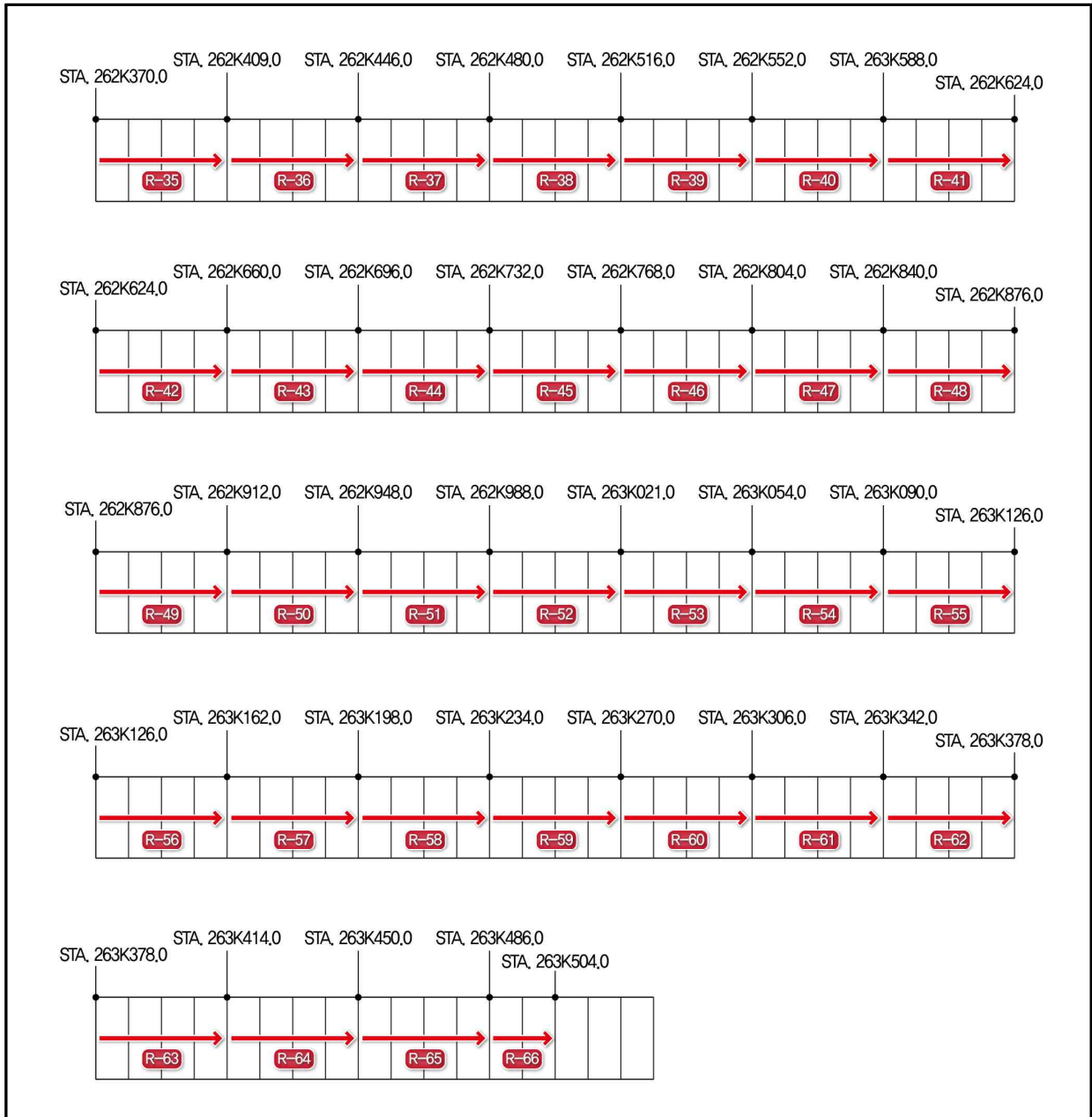
성과분석	• STA.261k138.0 ~ 263k504.0구간의 종방향으로 천단부 중심 1개소를 설정하여 탐사한 결과임 • 탐사결과 라이닝두께는 대체로 0.2~0.7m 내외로 나타남 • 탐사결과 배면공동으로 예상되는 반응이 종단면에서 3개소 판단됨 • 휘폴링 시공구간에서는 PVC파이프나 와이어등의 영향으로 레이더 신호가 투과하지 못하여 반사파 이벤트를 얻지 못하였으며, 터널 천단부 일부 구간에서의 구조물과 접지단자 홈 등의 영향으로 신호가 양호하지 못한 구간이 존재
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1.3

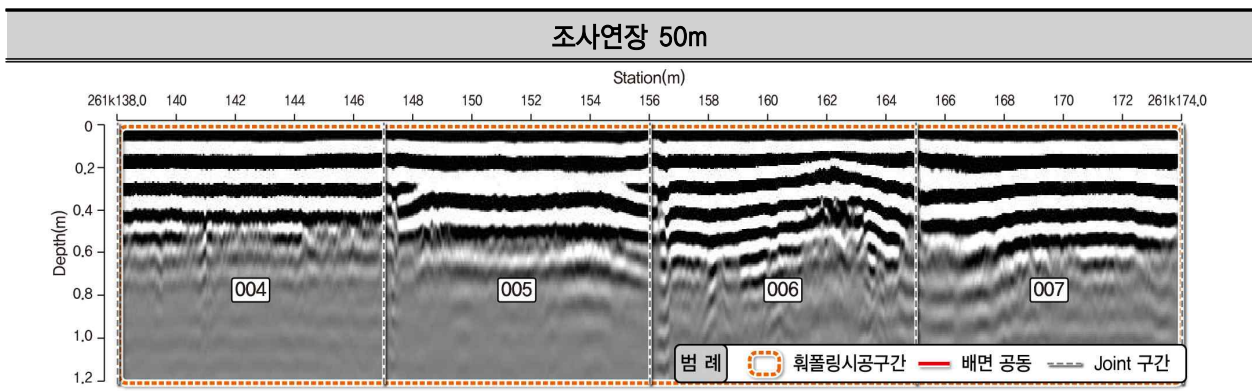
터널 종방향 상단우측

1) 측선설정

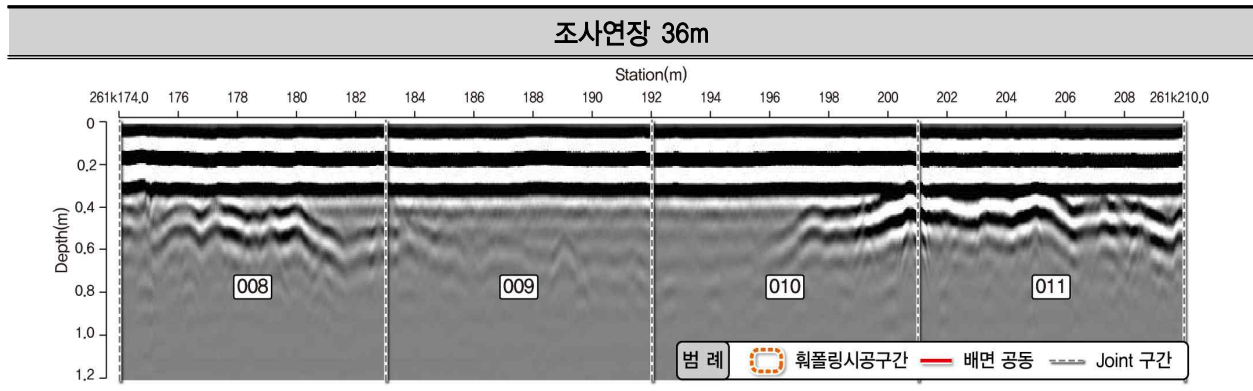




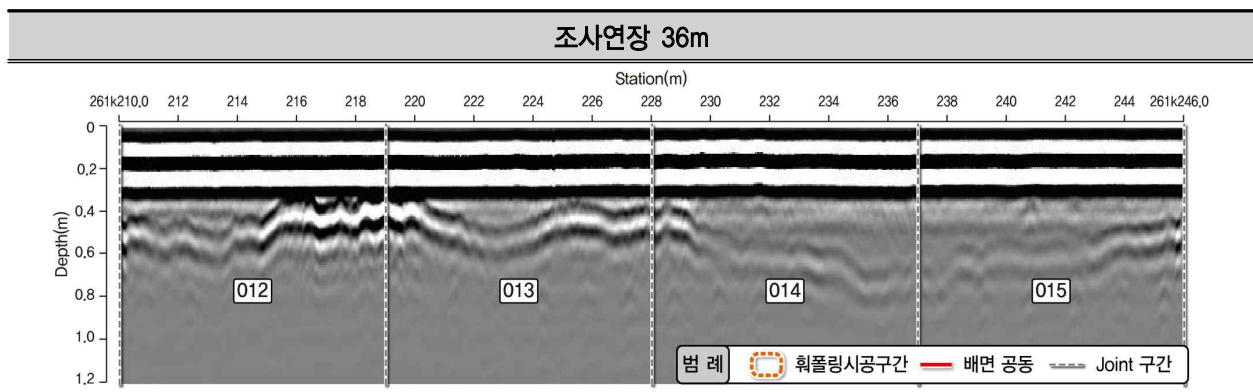
2) R-1(STA. 261K138.0 ~ 261K174.0)



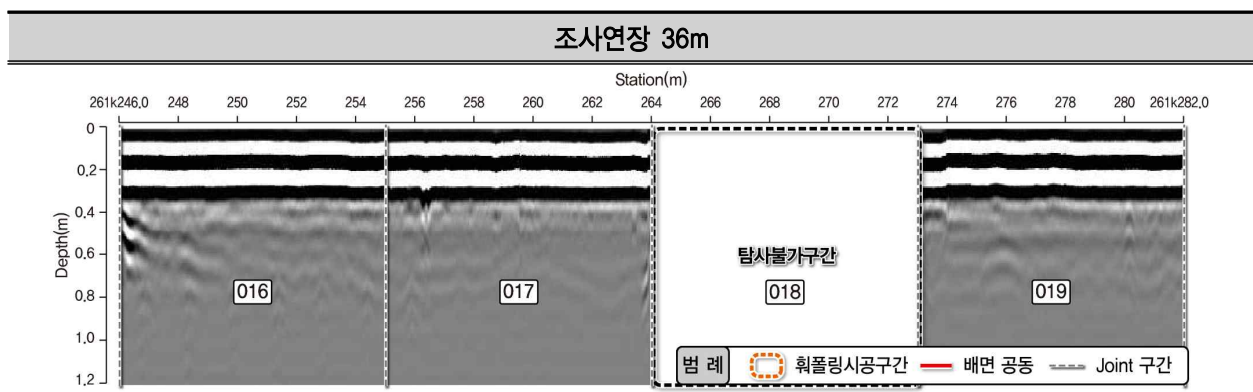
3) R-2(STA. 261K174.0 ~ 261K210.0)



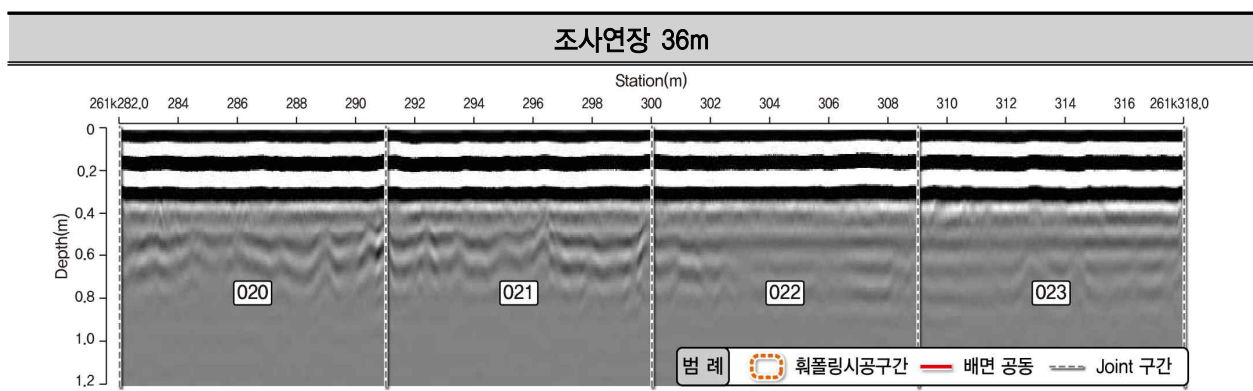
4) R-3(STA. 261K210.0 ~ 261K246.0)



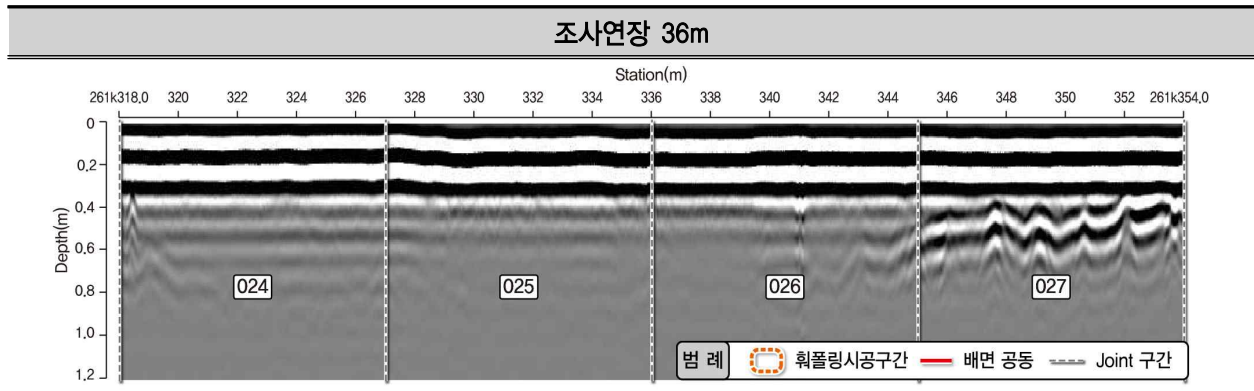
5) R-4(STA. 261K246.0 ~ 261K282.0)



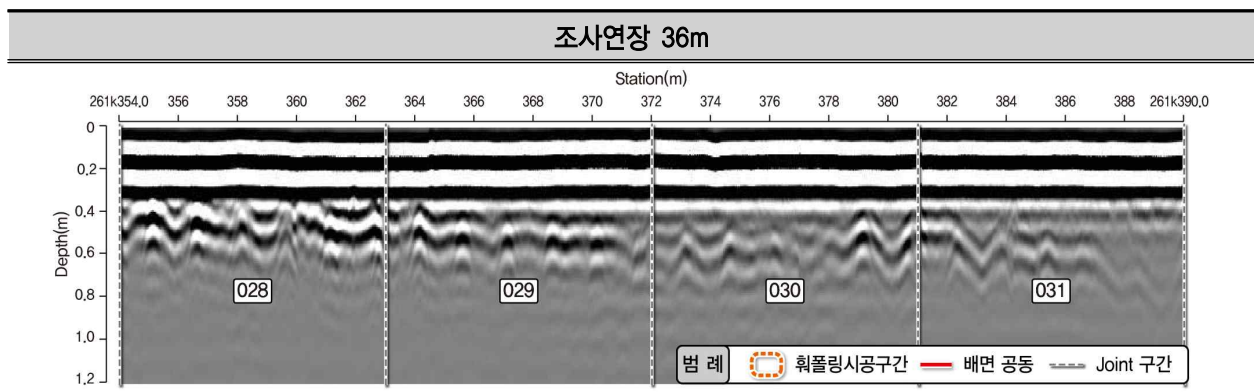
6) R-5(STA. 261K282.0 ~ 261K318.0)



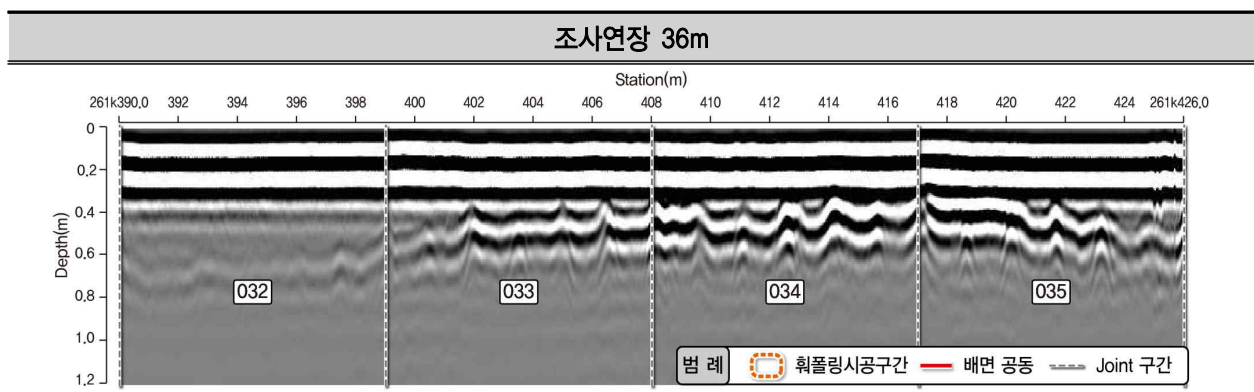
7) R-6(STA. 261K318.0 ~ 261K354.0)



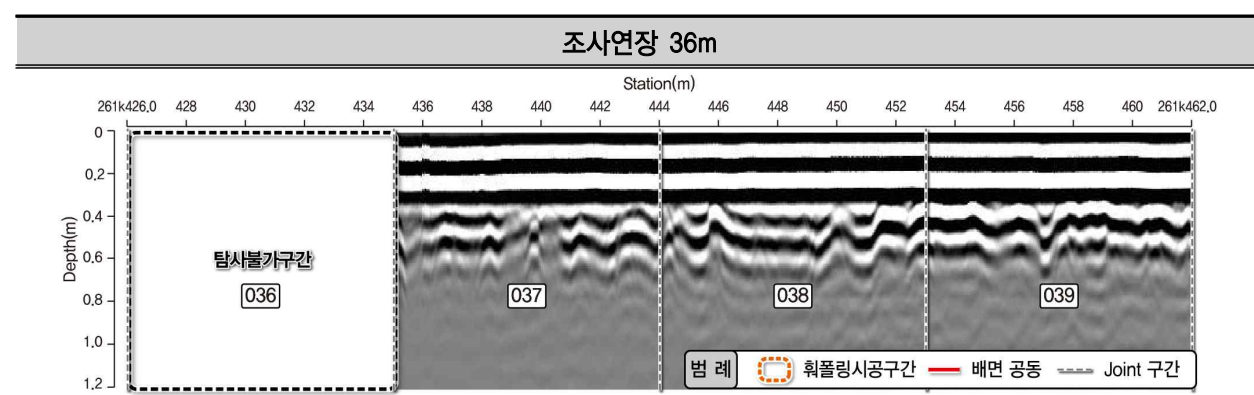
8) R-7(STA. 261K354.0 ~ 261K390.0)



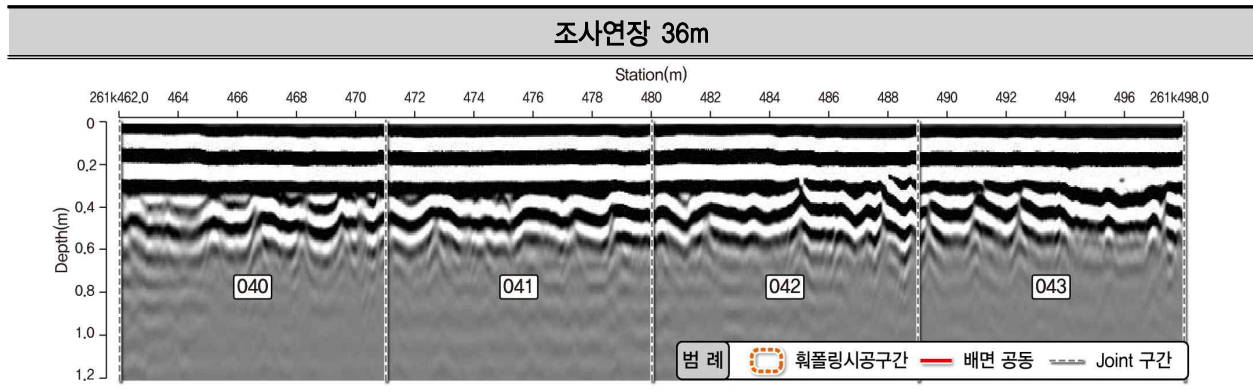
9) R-8(STA. 261K390.0~261K426.0)



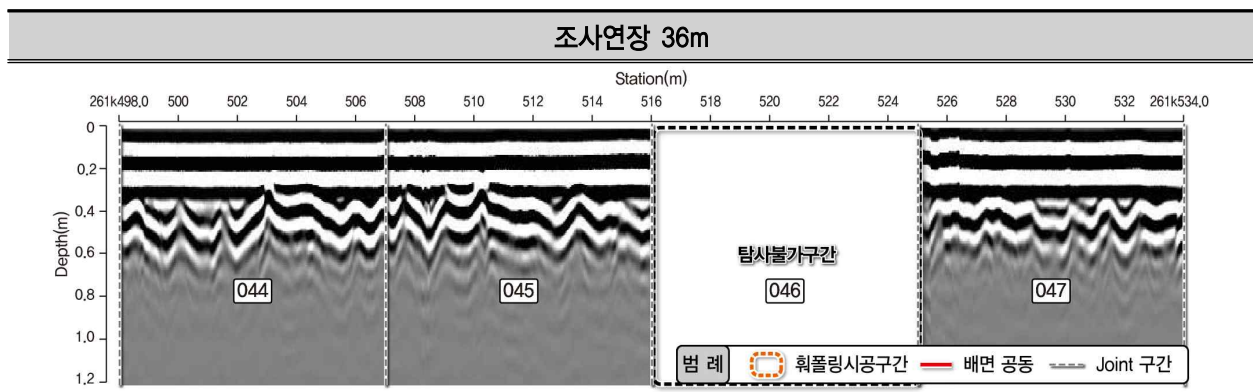
10) R-9(STA. 261K426.0~261K462.0)



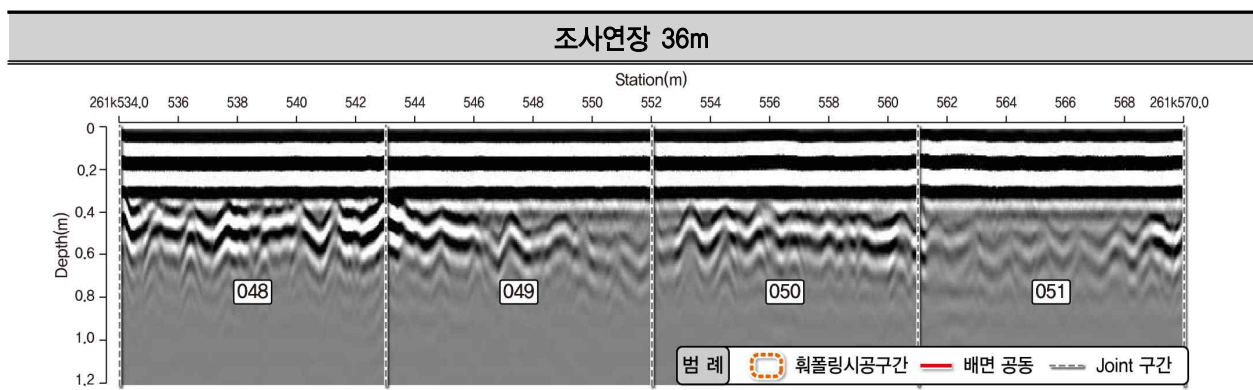
11) R-10(STA. 261K462.0~261K498.0)



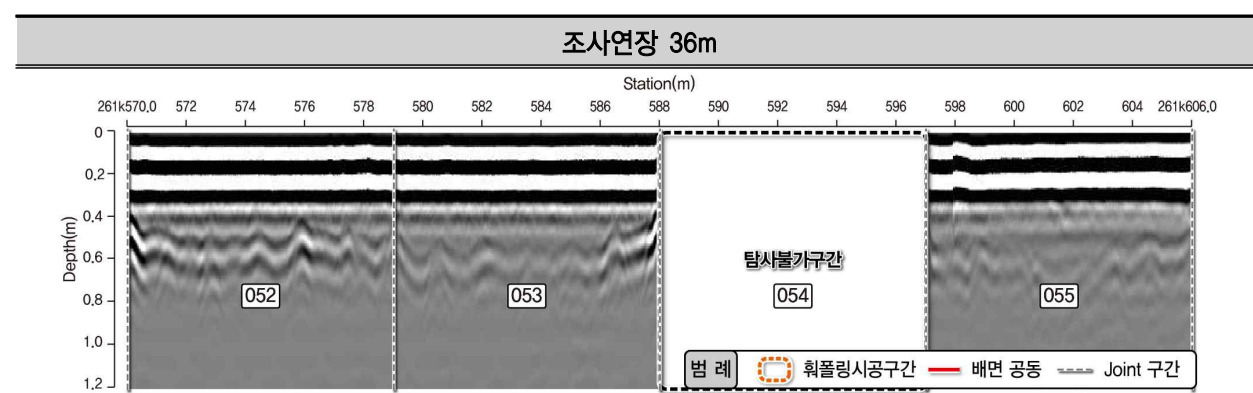
12) R-11(STA. 261K498.0~261K534.0)



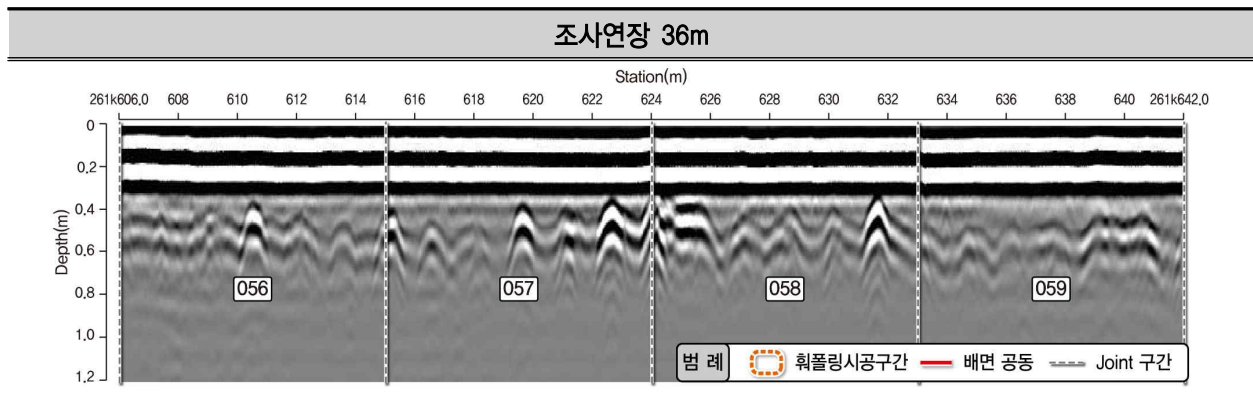
13) R-12(STA. 261K534.0~261K570.0)



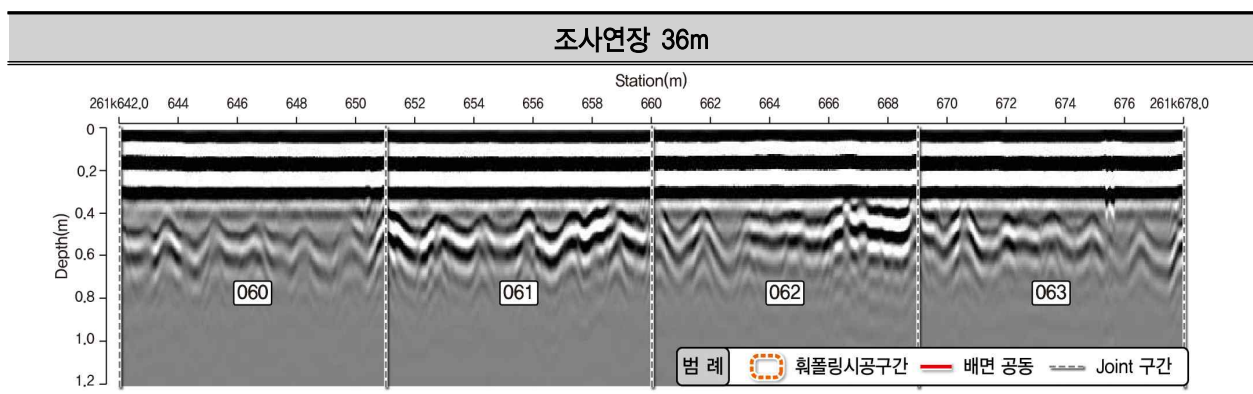
14) R-13(STA. 261K570.0~261K606.0)



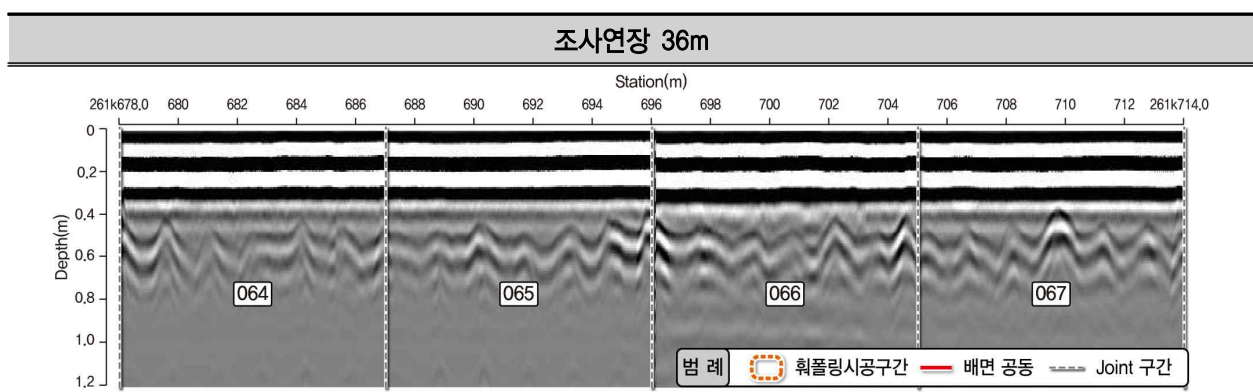
15) R-14(STA.261K606.0~261K642.0)



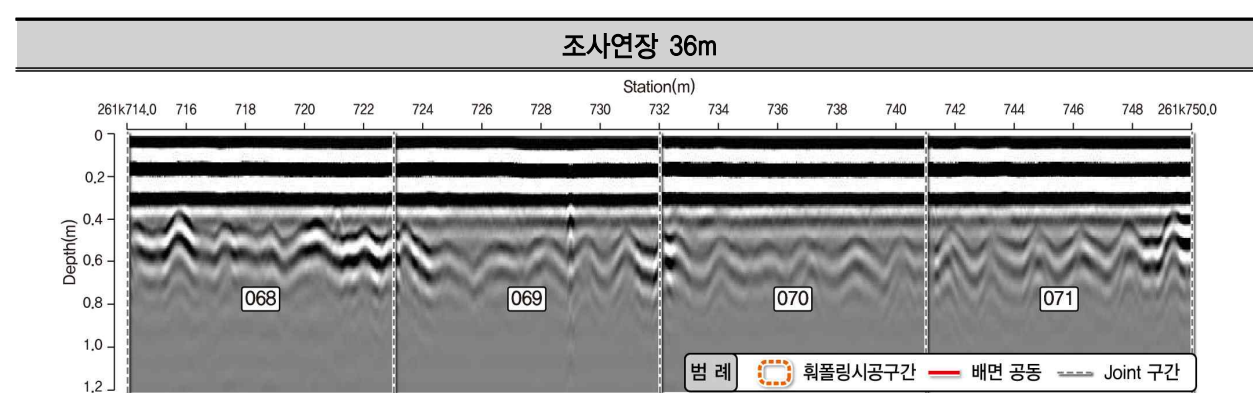
16) R-15(STA.261K642.0~261K678.0)



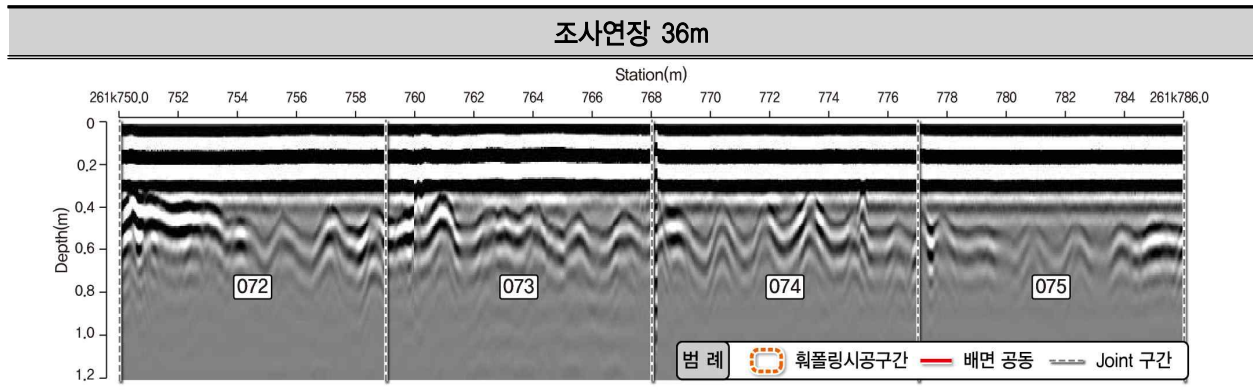
17) R-16(STA. 261K678.0~261K714.0)



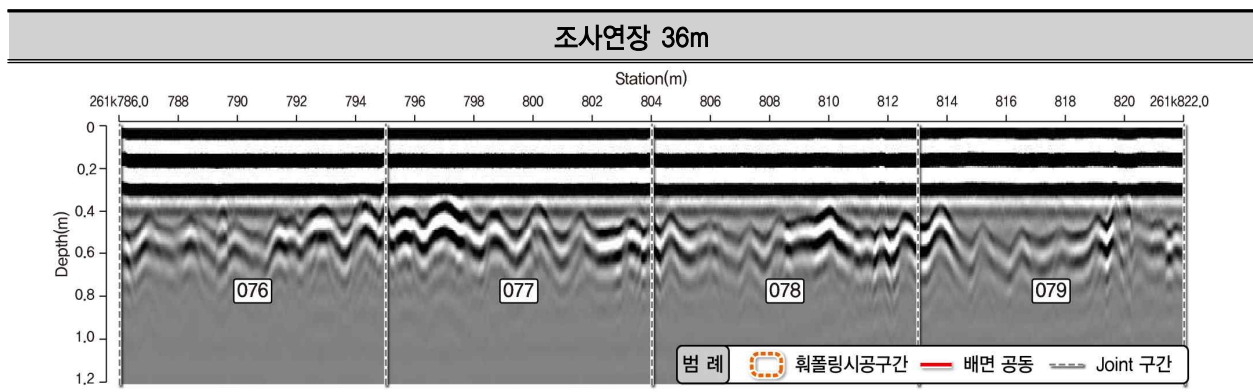
18) R-17(STA. 261K714.0~261K750.0)



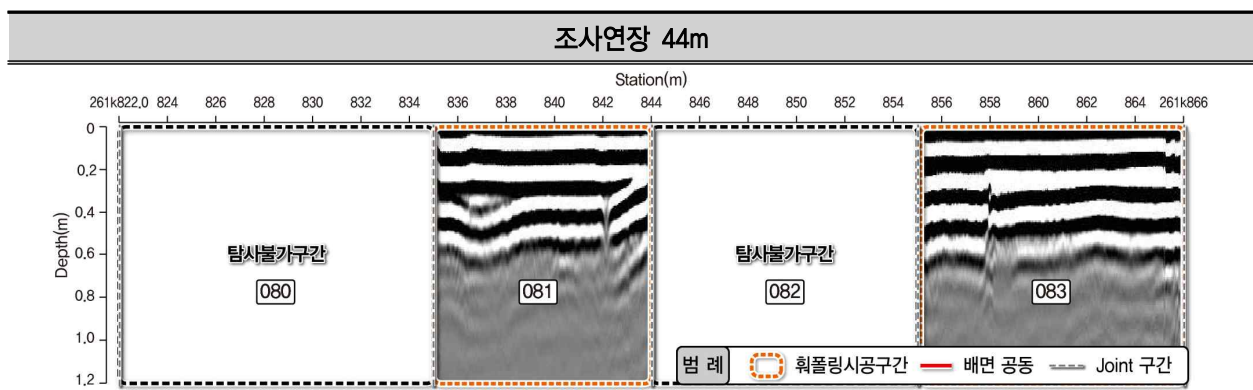
19) R-18(STA. 261K750.0~261K786.0)



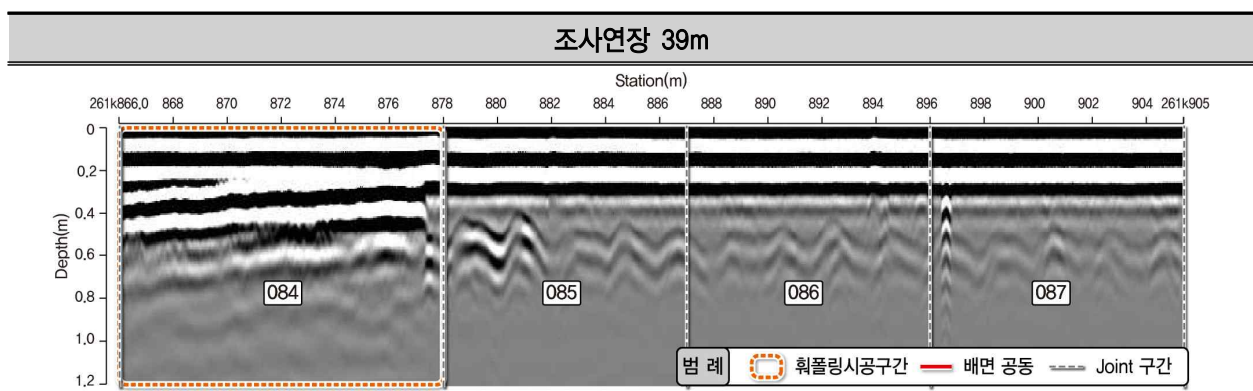
20) R-19(STA. 261K786.0~261K822.0)



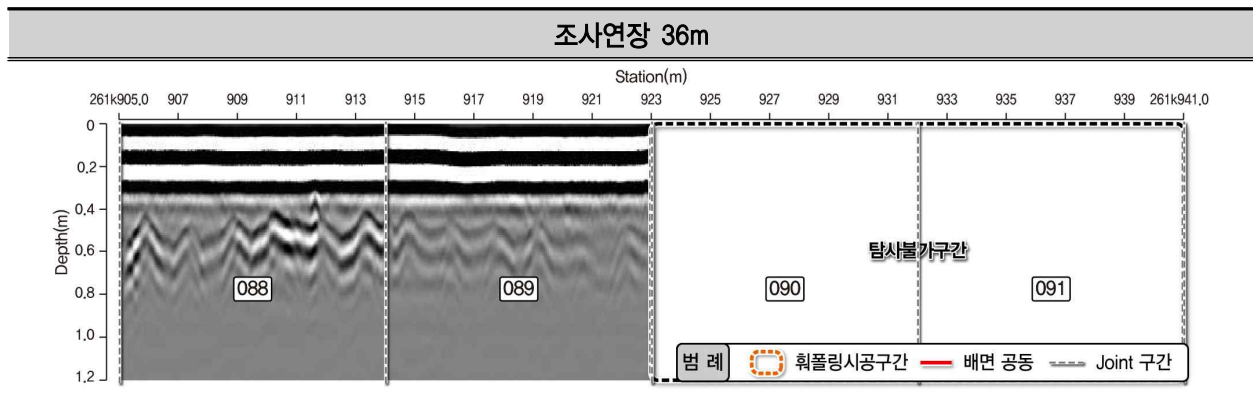
21) R-20(STA. 261K822.0~261K866.0)



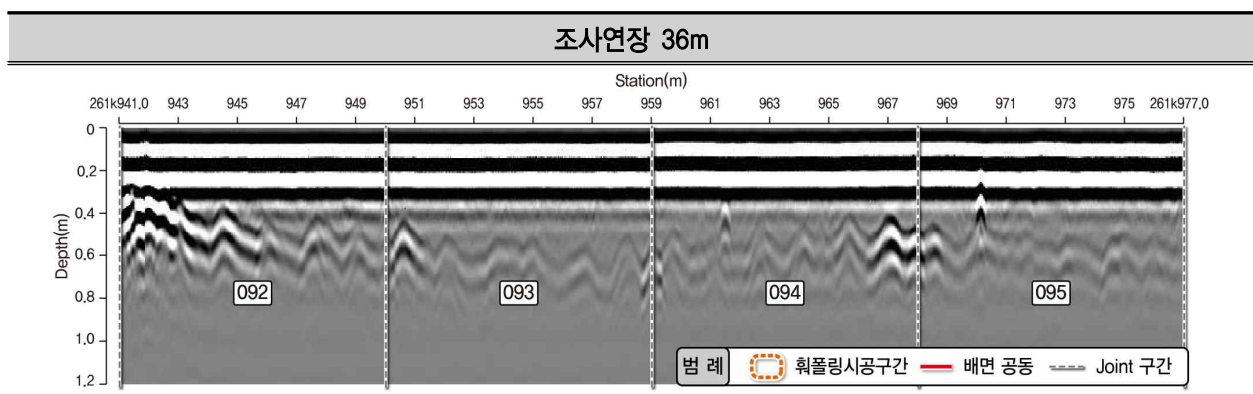
22) R-21(STA. 261K866.0~261K905.0)



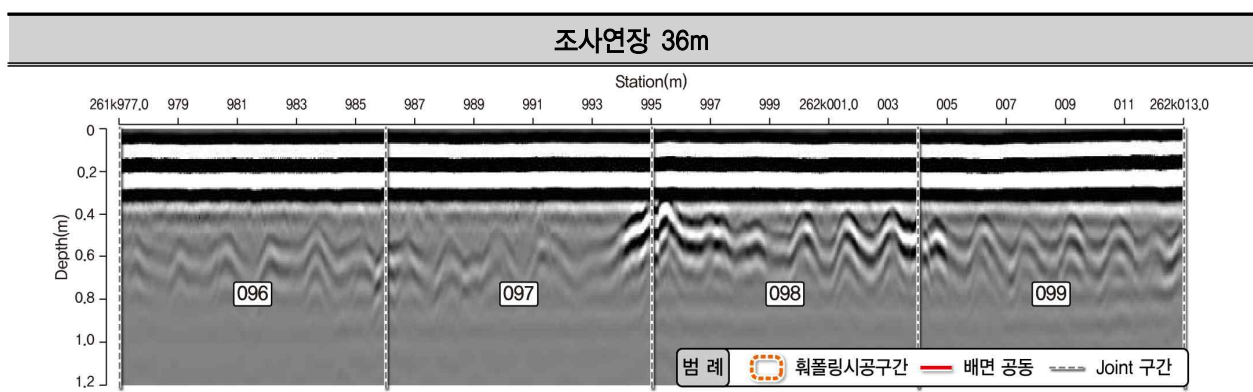
23) R-22(STA. 261K905.0~261K941.0)



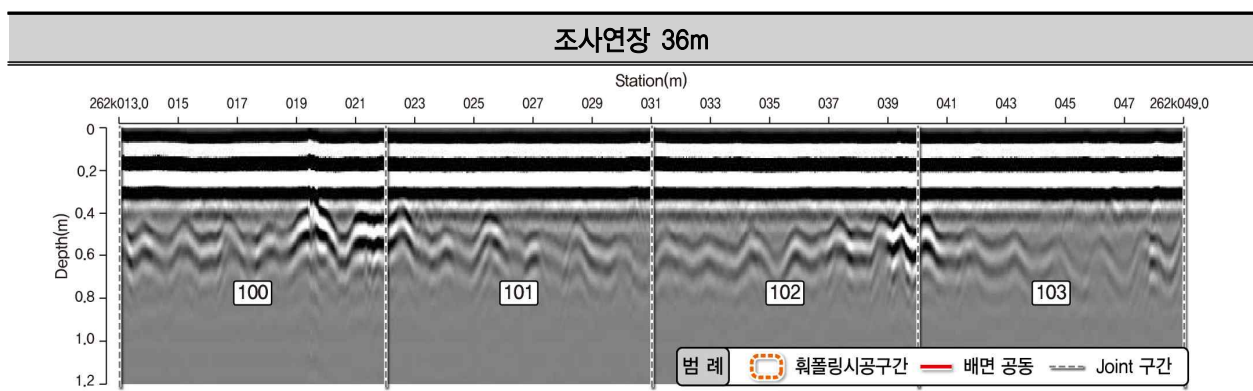
24) R-23(STA. 261K941.0~261K977.0)



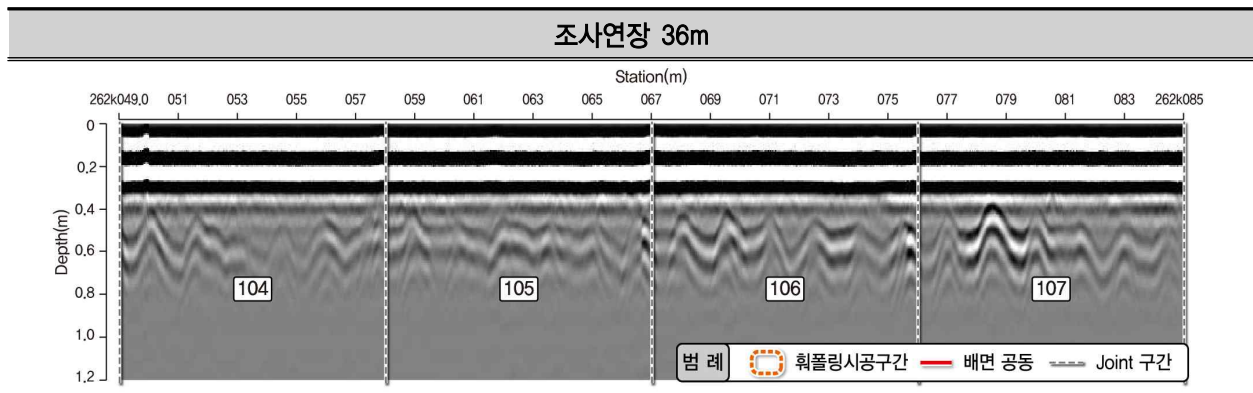
25) R-24(STA. 261K977.0~262K013.0)



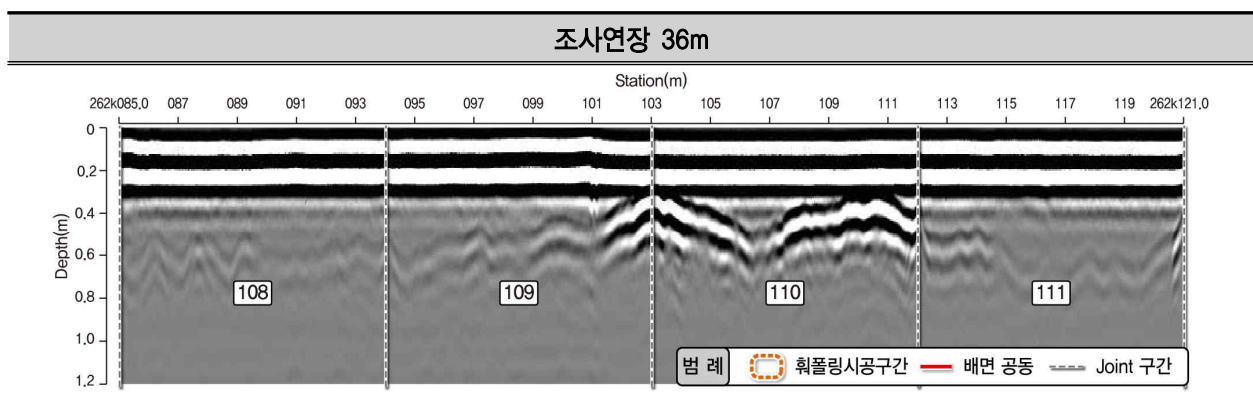
26) R-25(STA. 262K013.0~262K049.0)



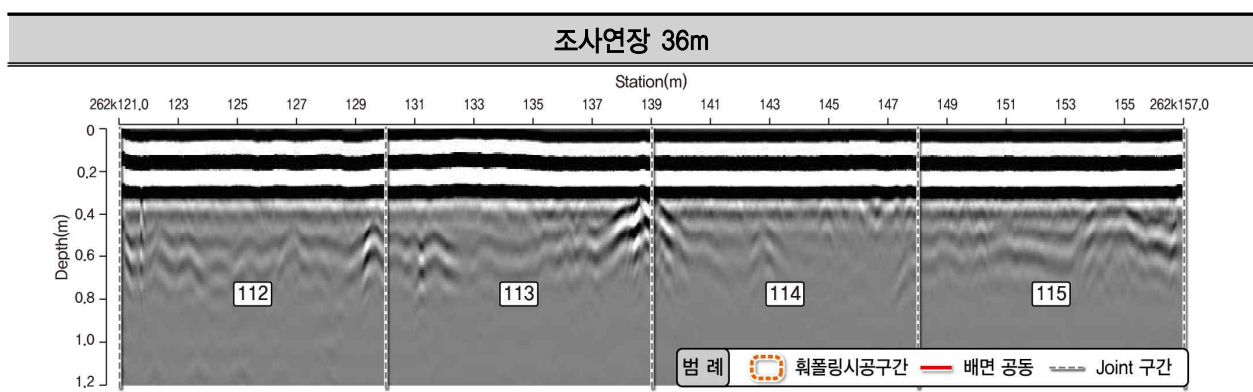
27) R-26(STA. 262K049.0~262K085.0)



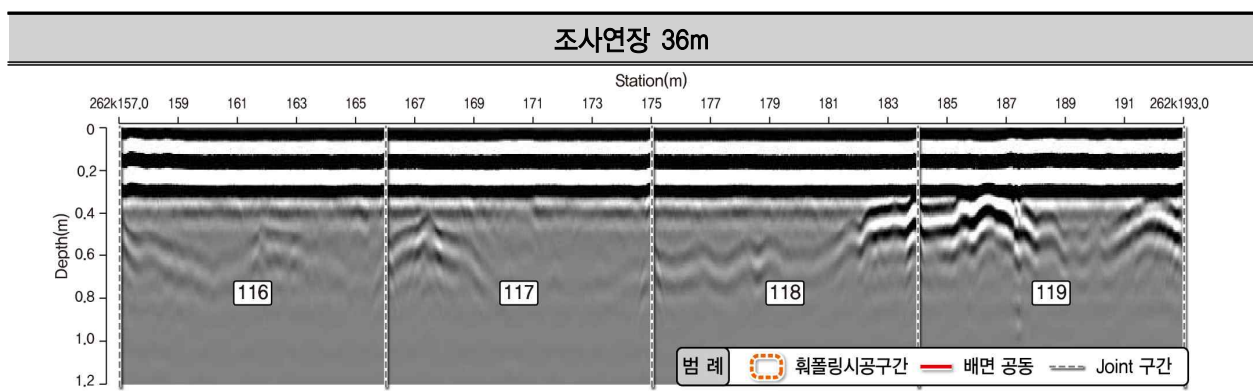
28) R-27(STA. 262K085.0~262K121.0)



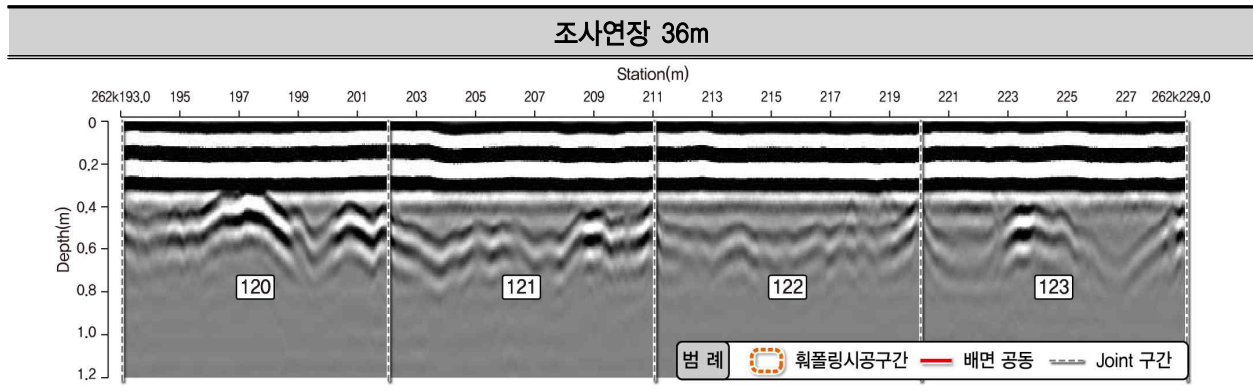
29) R-28(STA. 262K121.0~262K157.0)



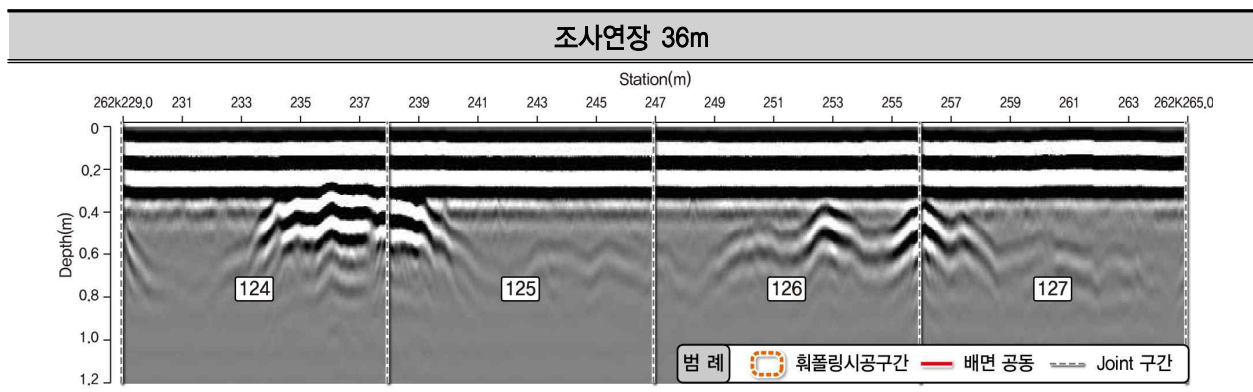
30) R-29(STA. 262K157.0~262K193.0)



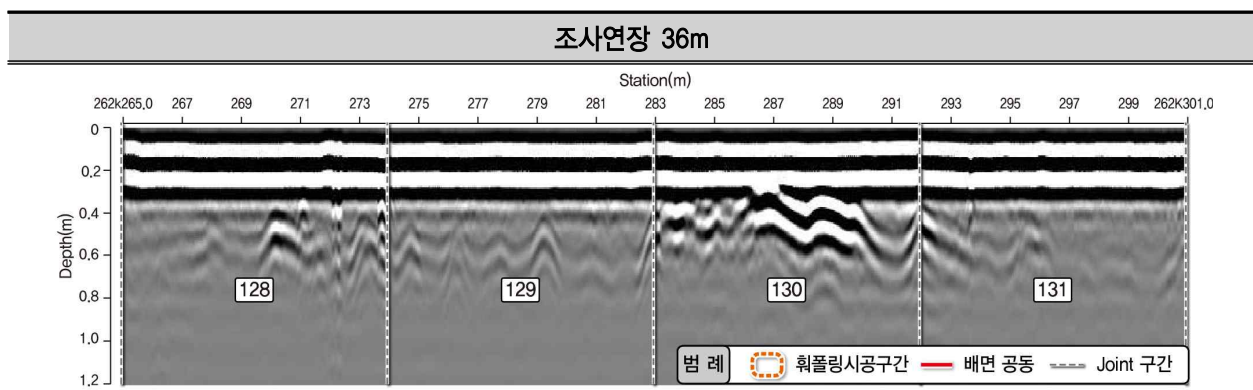
31) R-30(STA. 262K193.0~262K229.0)



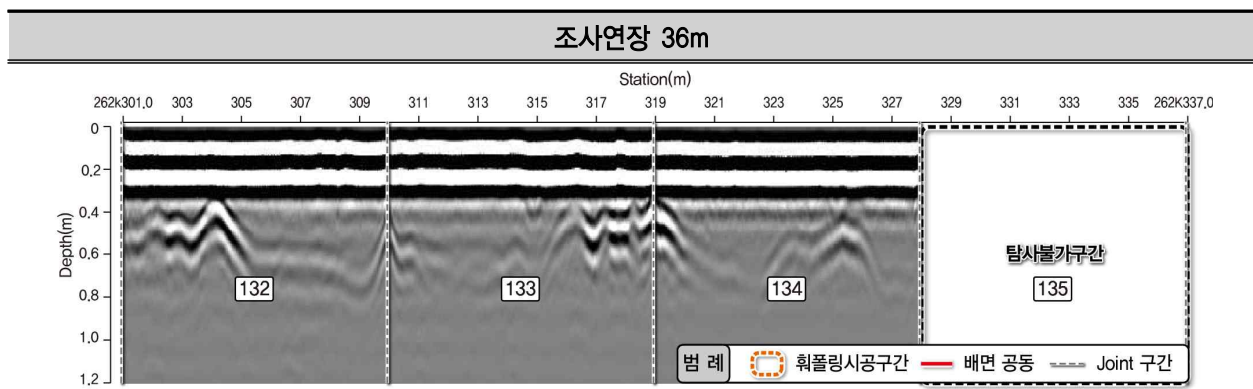
32) R-31(STA. 262K229.0~262K265.0)



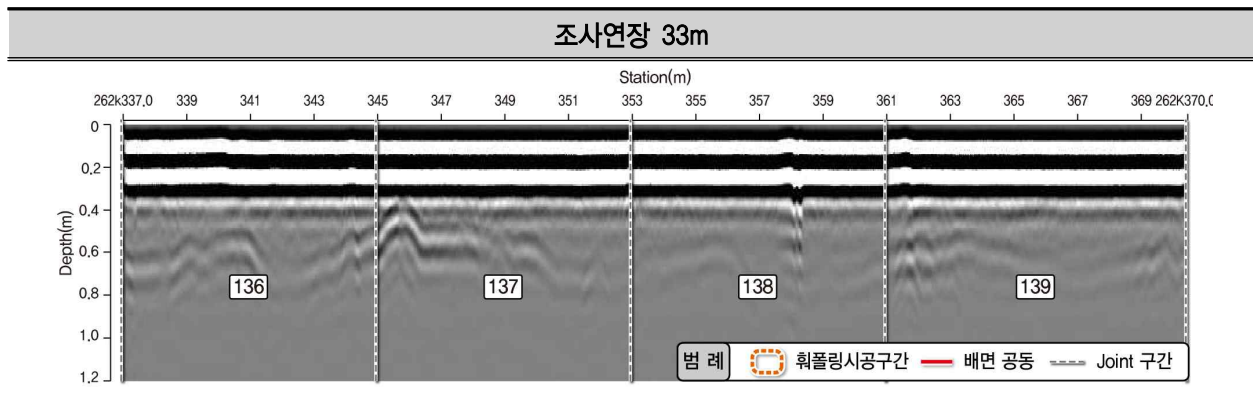
33) R-32(STA. 262K265.0~262K301.0)



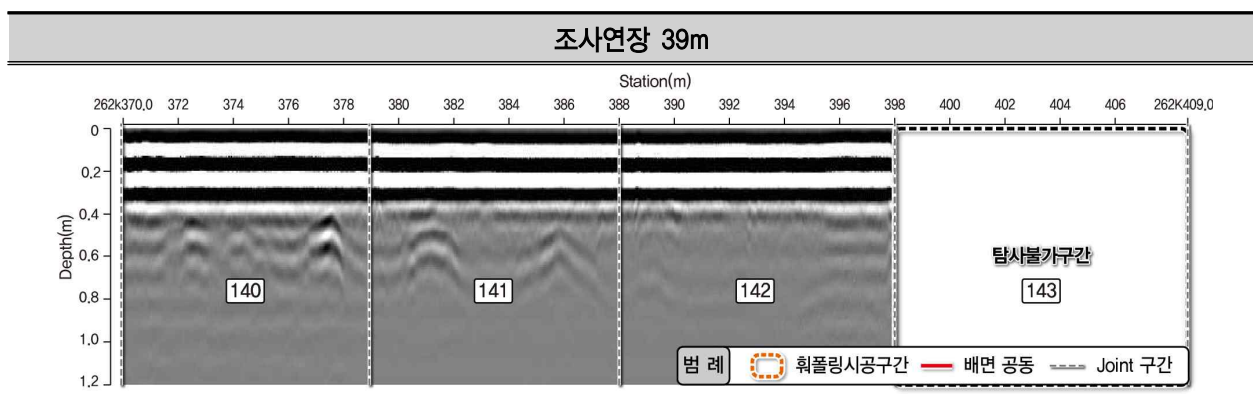
34) R-33(STA. 262K301.0~262K337.0)



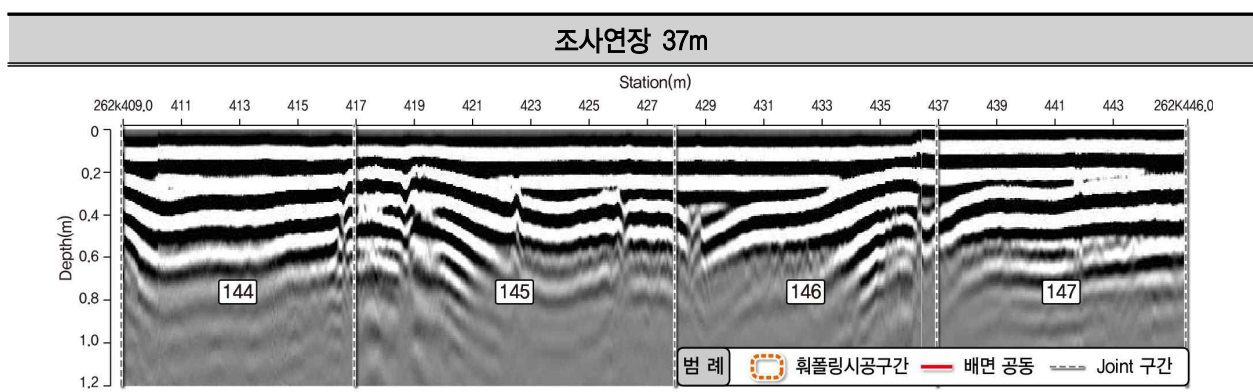
35) R-34(STA. 262K337.0~262K370.0)



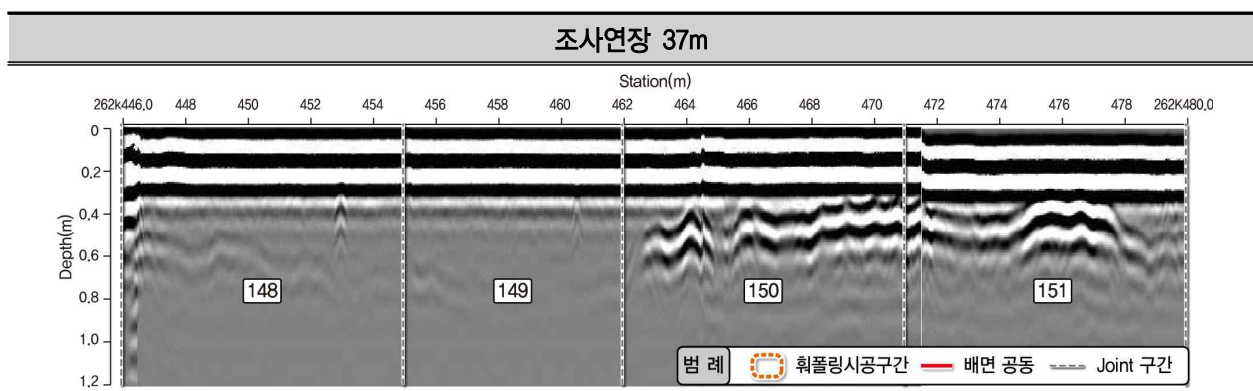
36) R-35(STA. 262K370.0~262K409.0)



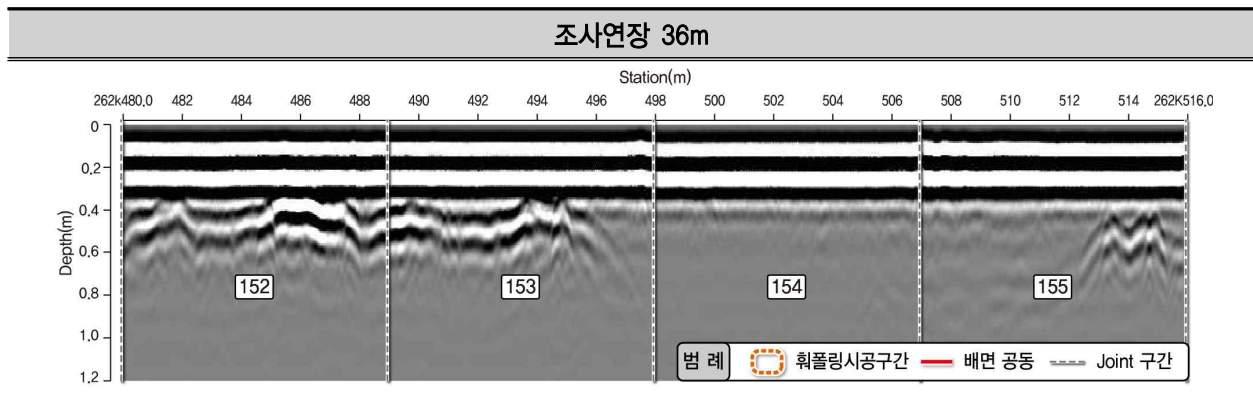
37) R-36(STA. 262K409.0~262K446.0)



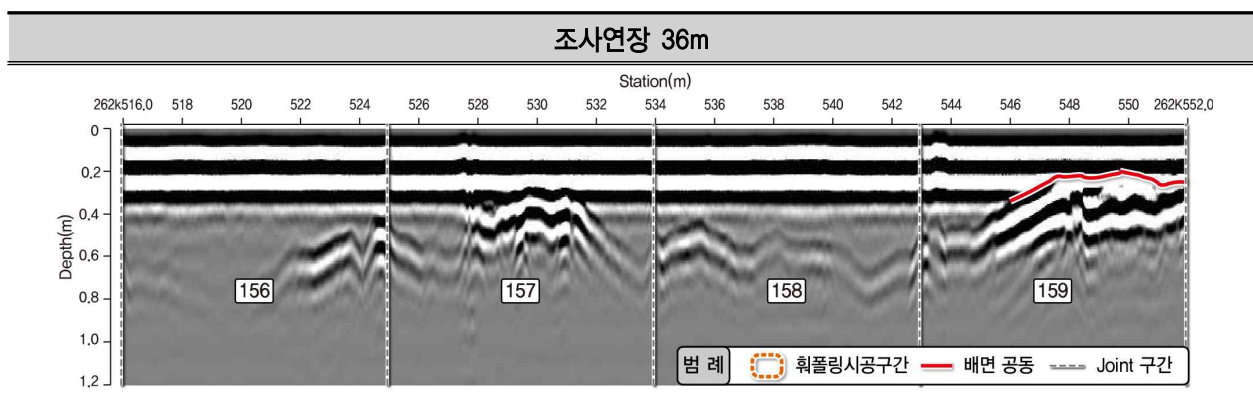
38) R-37(STA. 262K0446.0~262K480.0)



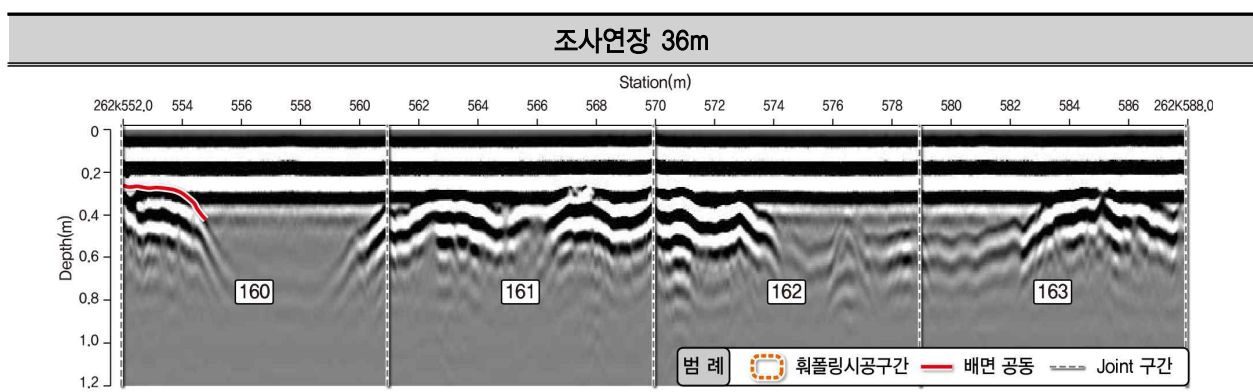
39) R-38(STA. 262K480.0~262K516.0)



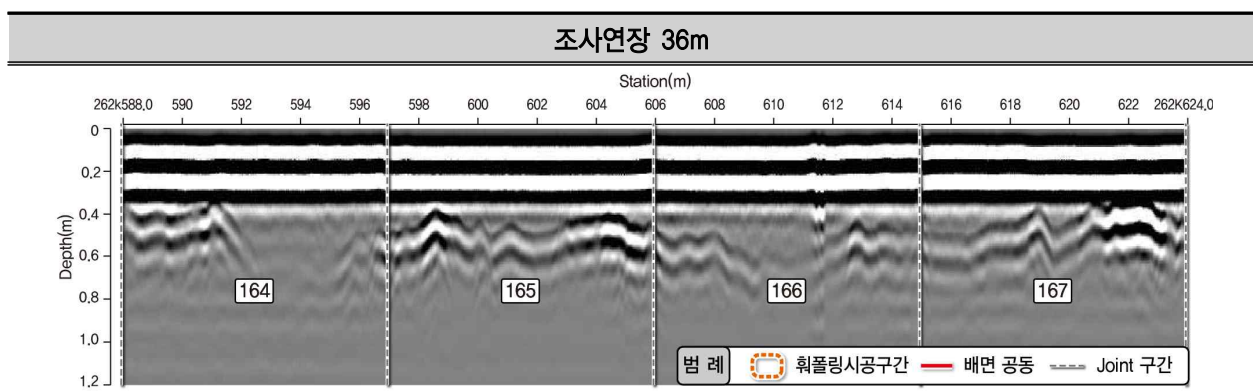
40) R-39(STA. 262K516.0~262K552.0)



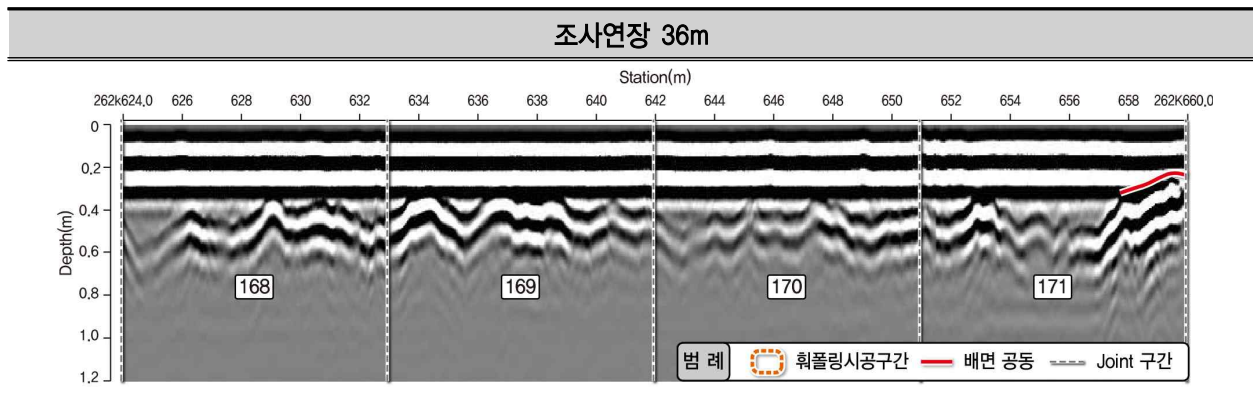
41) R-40(STA. 262K552.0~262K588.0)



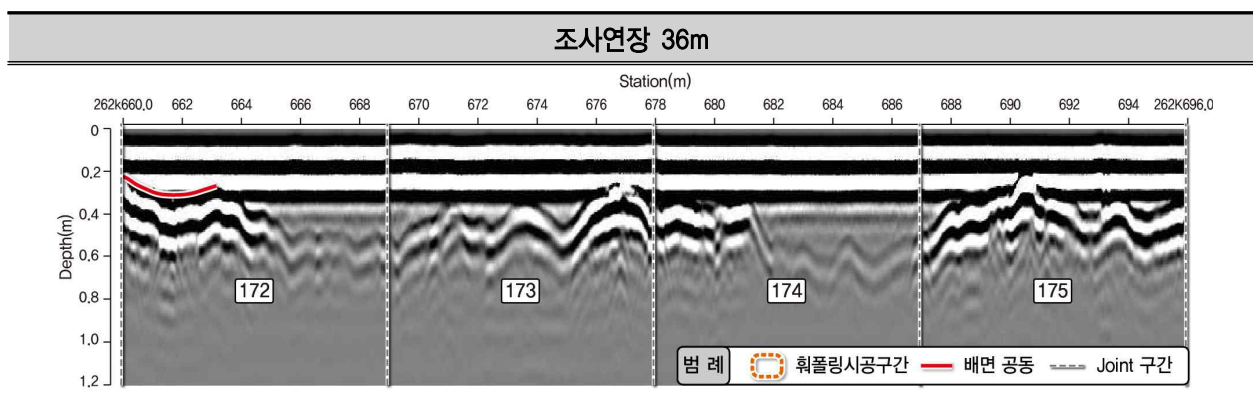
42) R-41(STA. 262K01588.0~262K624.0)



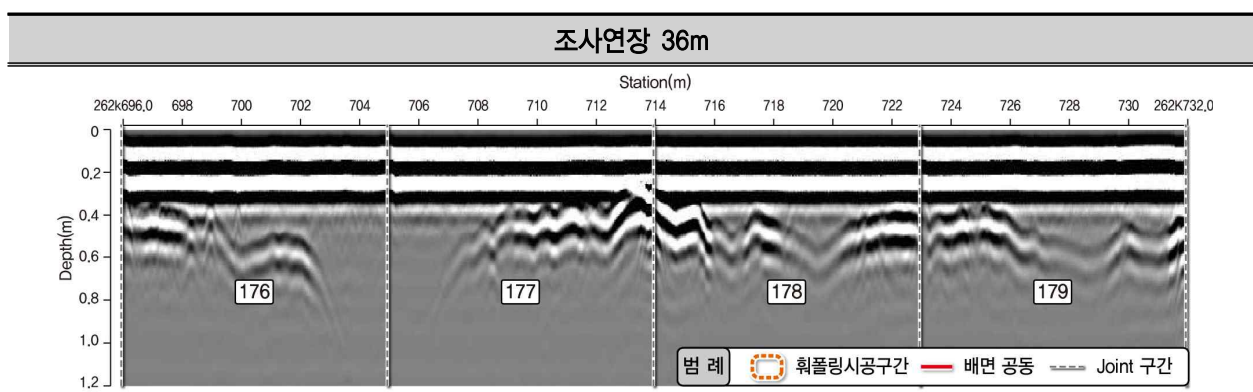
43) R-42(STA. 262K624.0~262K660.0)



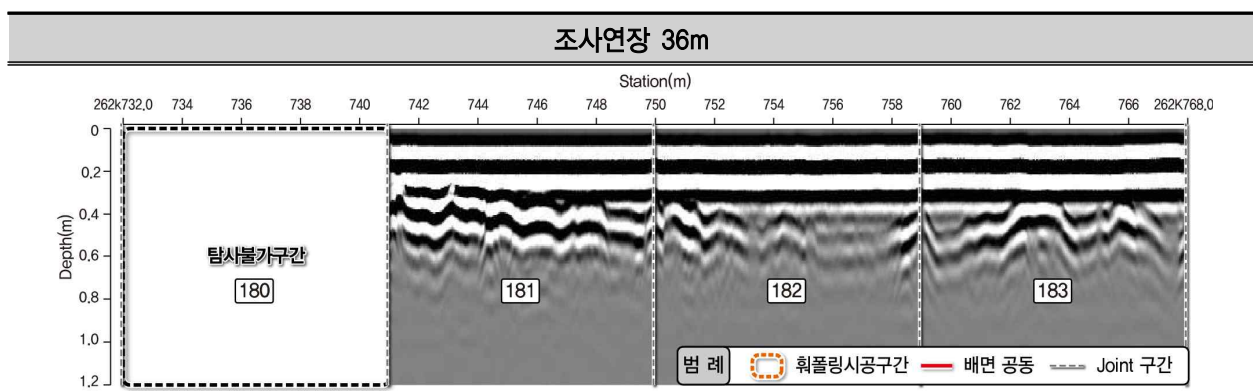
44) R-43(STA. 262K660.0~262K696.0)



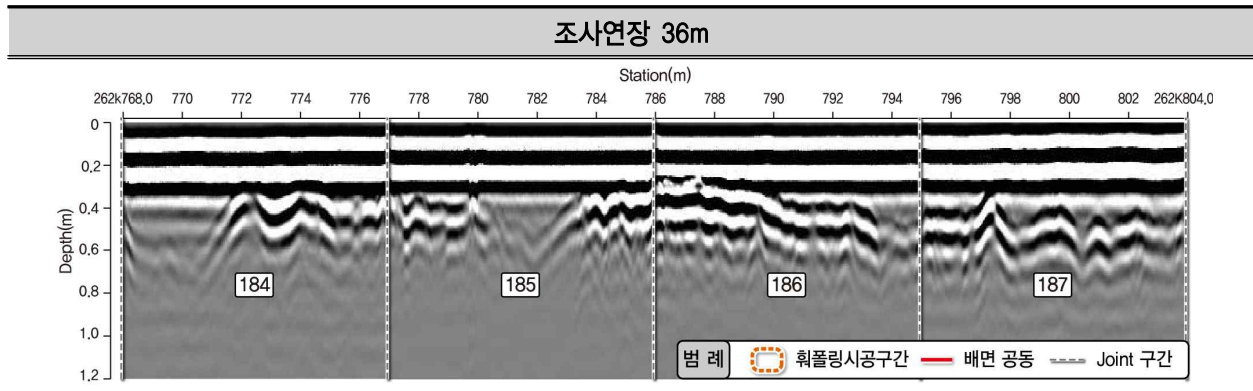
45) R-44(STA. 262K696.0~262K732.0)



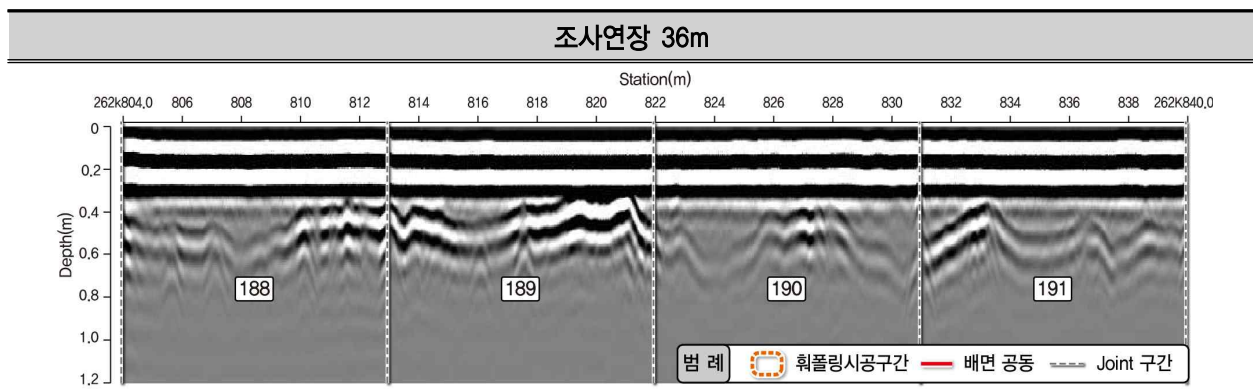
46) R-45(STA. 262K732.0~262K768.0)



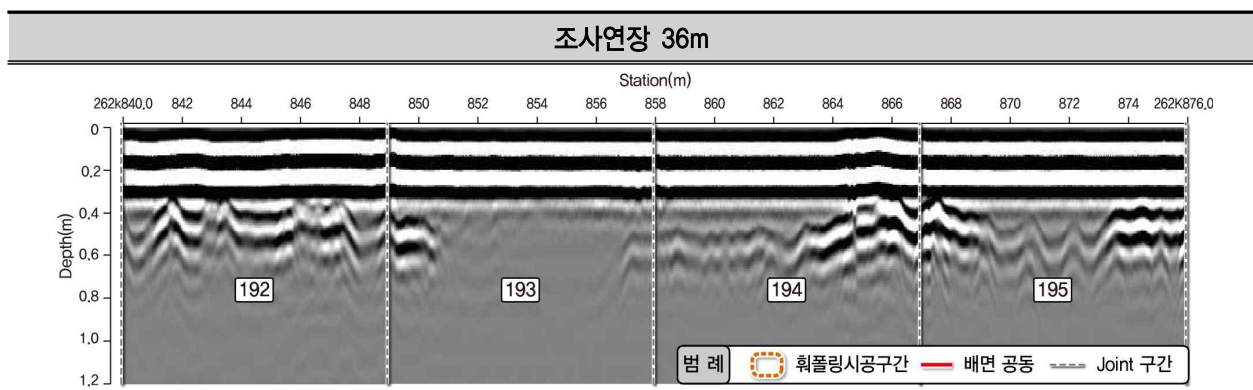
47) R-46(STA. 262K768.0~262K804.0)



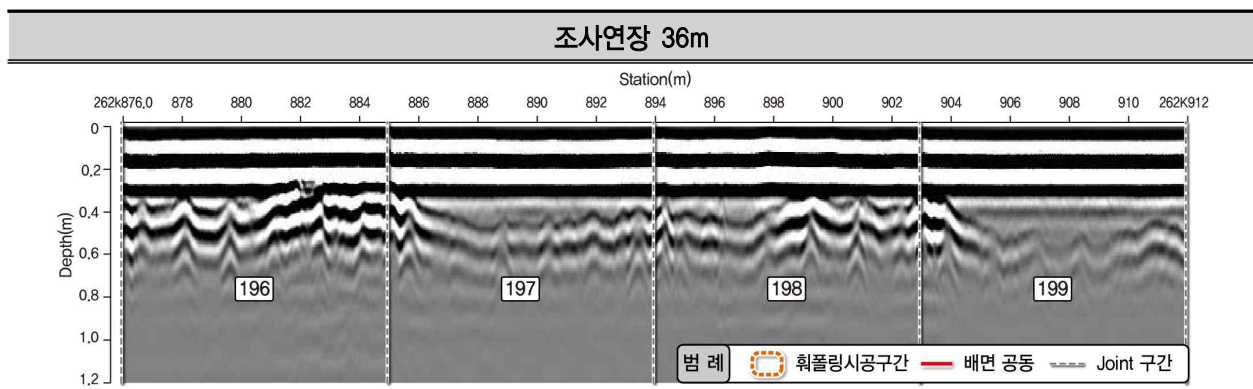
48) R-47(STA. 262K804.0~262K840.0)



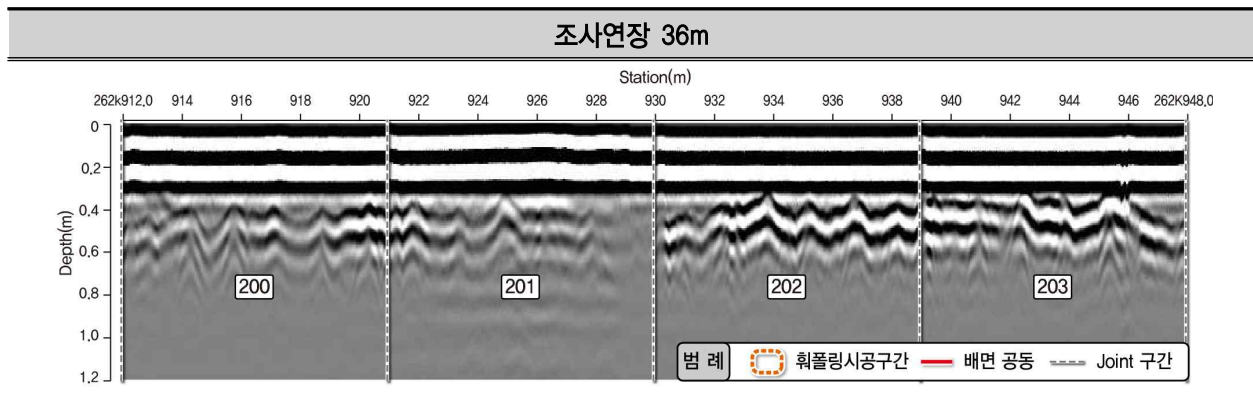
49) R-48(STA. 262K840.0~262K876.0)



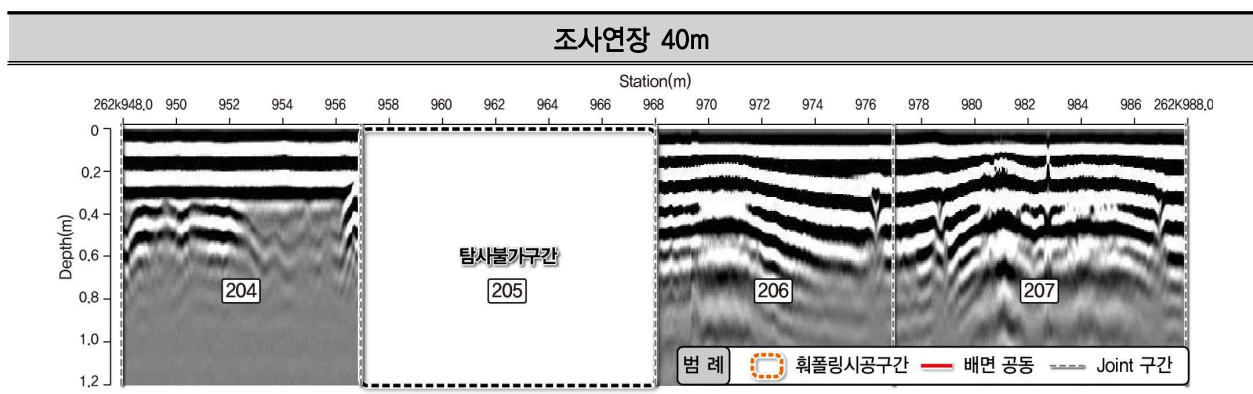
50) R-49(STA. 262K876.0~262K912.0)



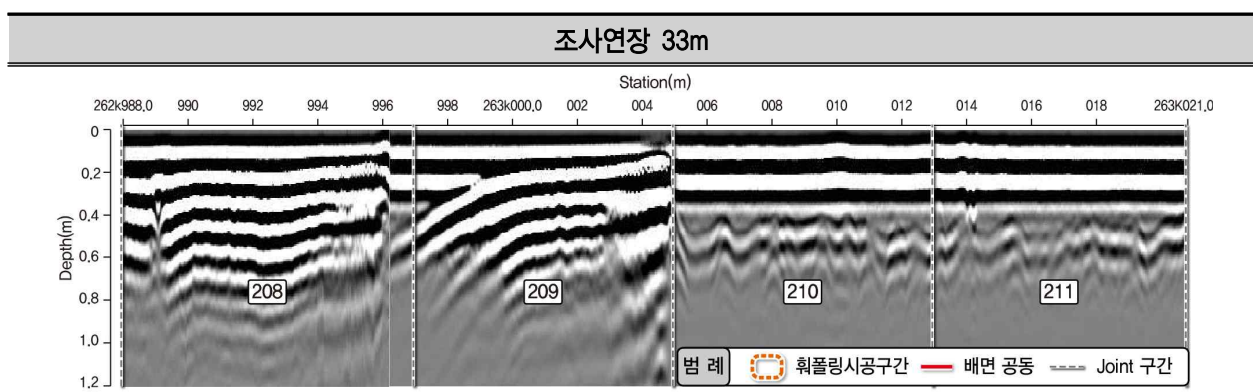
51) R-50(STA. 262K912.0~262K948.0)



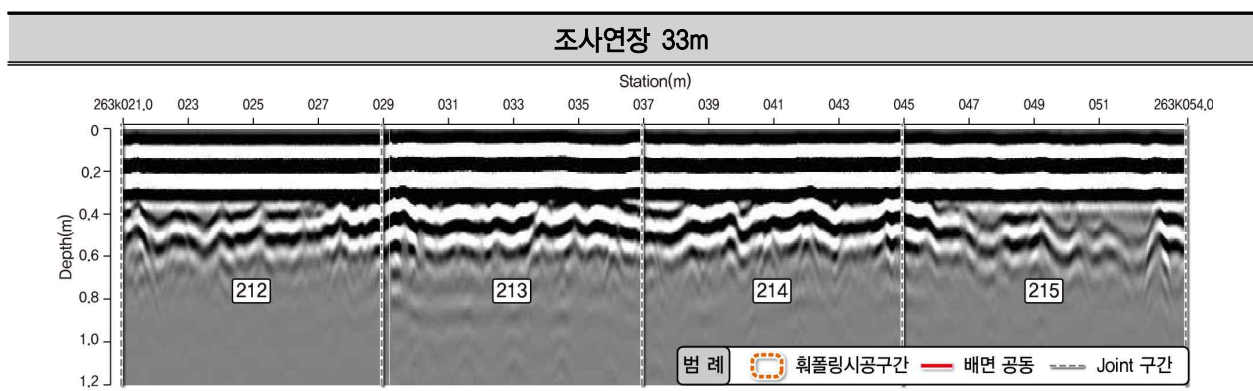
52) R-51(STA. 262K948.0~262K988.0)



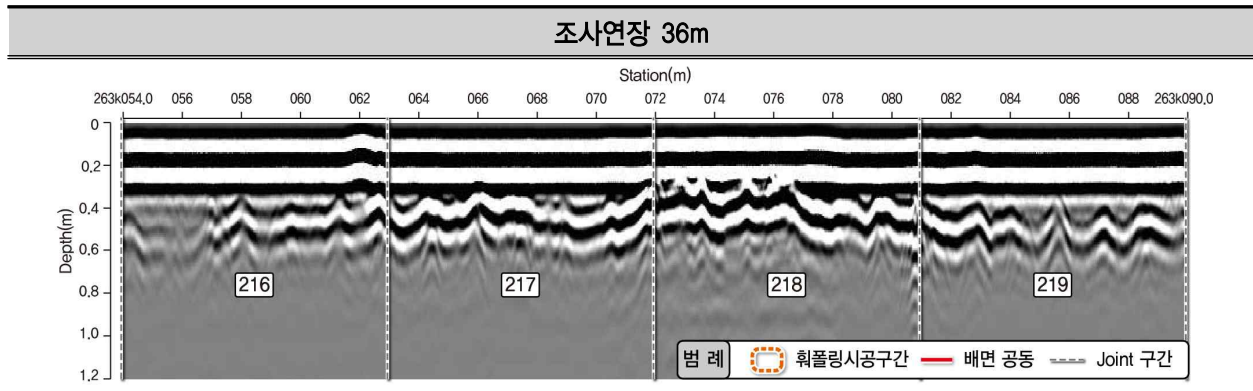
53) R-52(STA. 262K988.0~263K021.0)



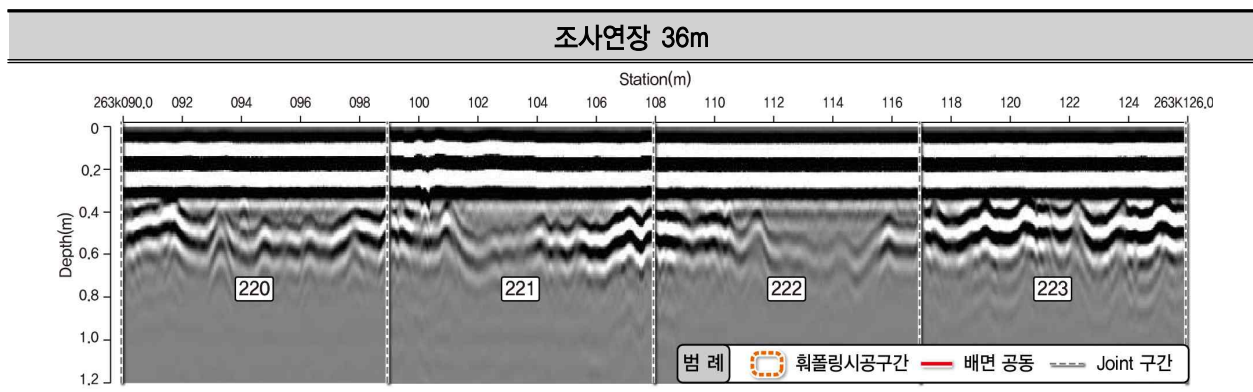
54) R-53(STA. 263K021.0~263K054.0)



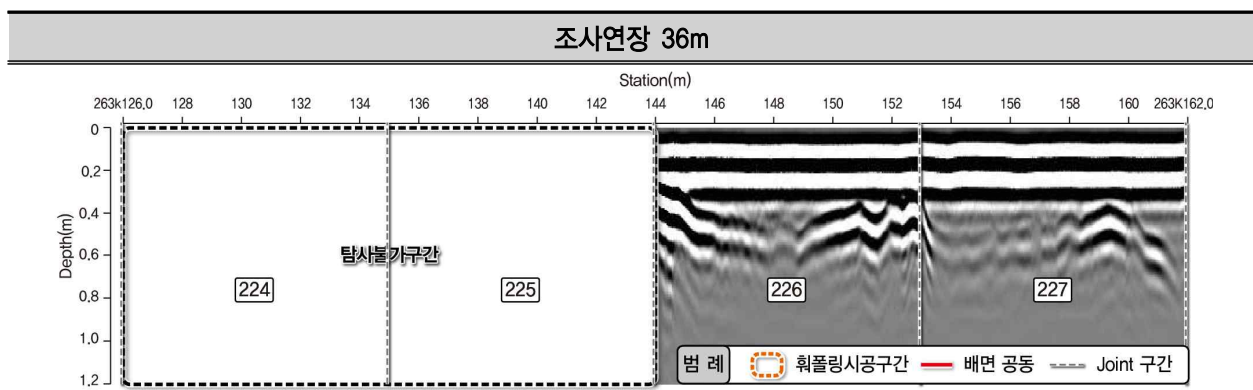
55) R-54(STA. 263K054.0~263K090.0)



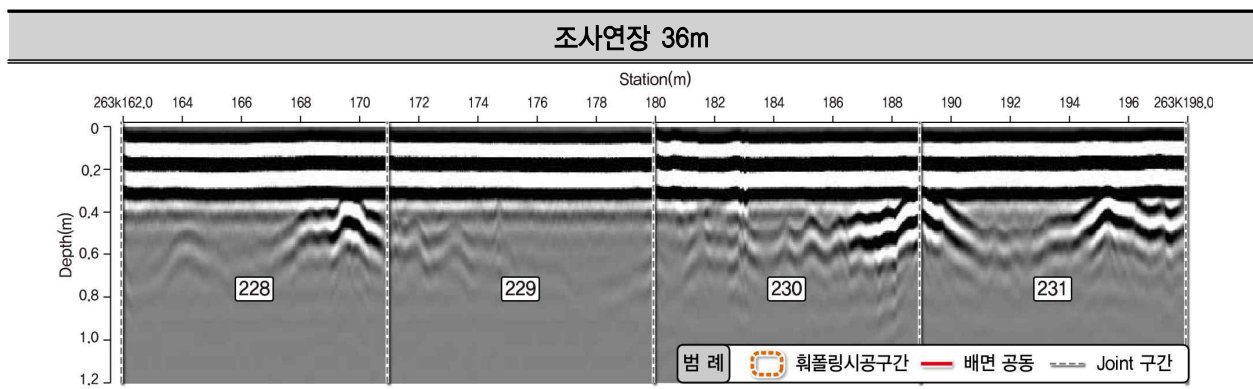
56) R-55(STA. 263K090.0~263K126.0)



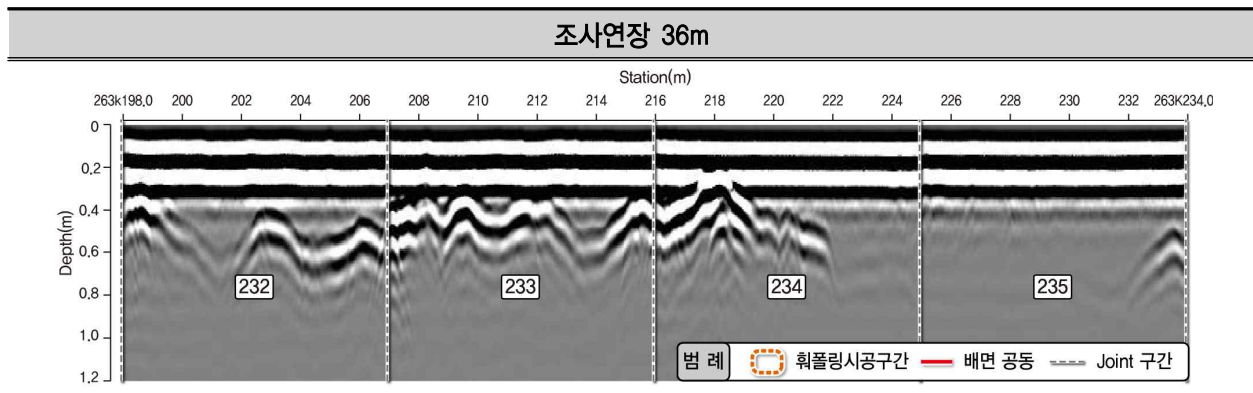
57) R-56(STA. 263K126.0~263K162.0)



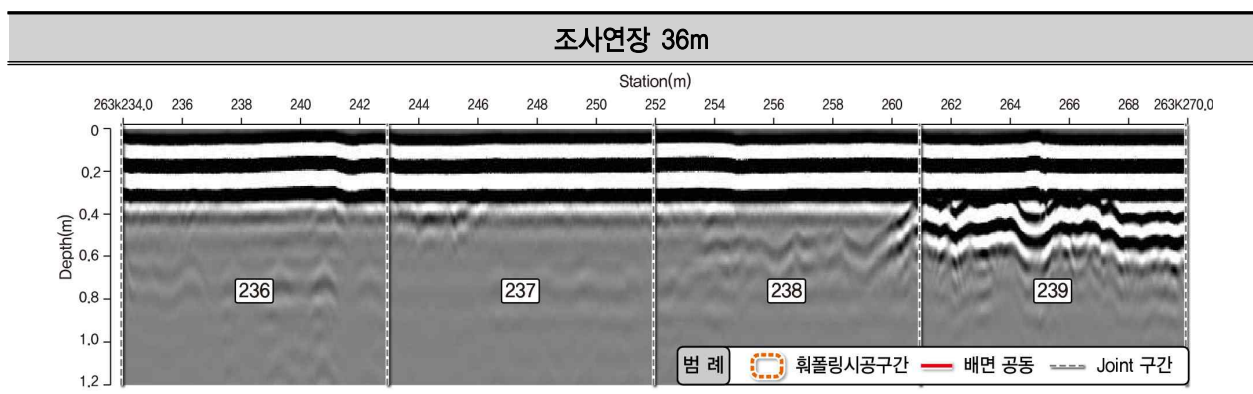
58) R-57(STA. 263K162.0~263K198.0)



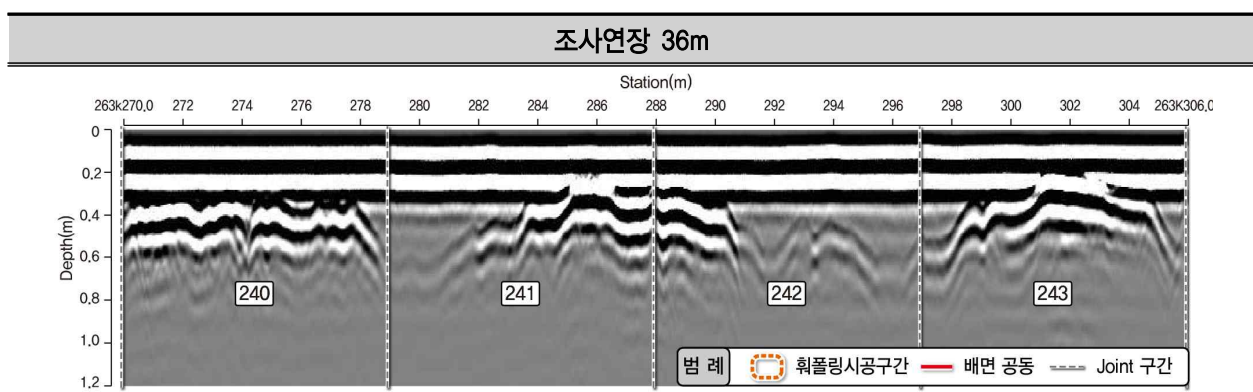
59) R-58(STA. 263K198.0~263K234.0)



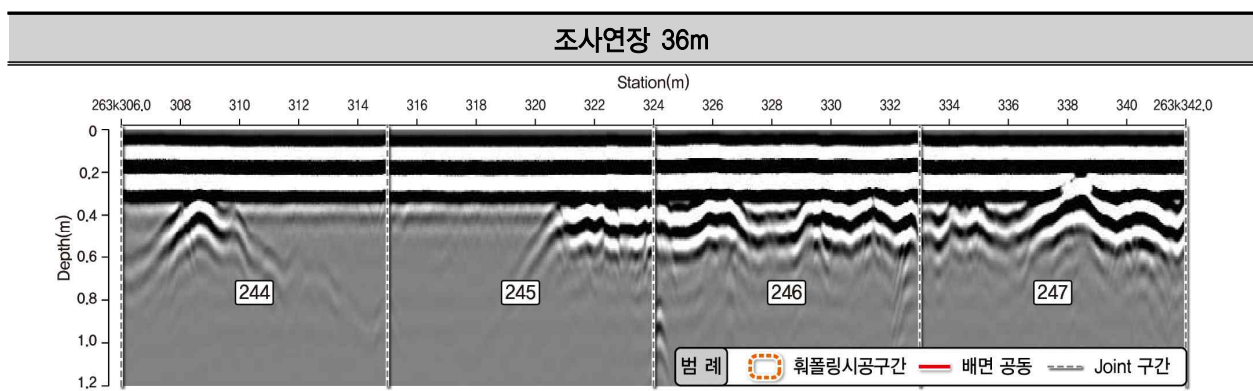
60) R-59(STA. 263K234.0~263K270.0)



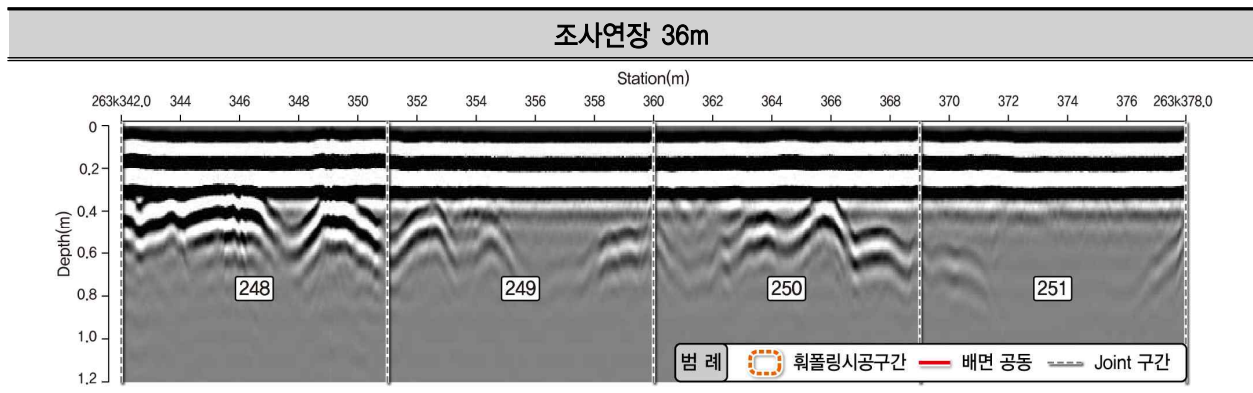
61) R-60(STA. 263K270.0~263K306.0)



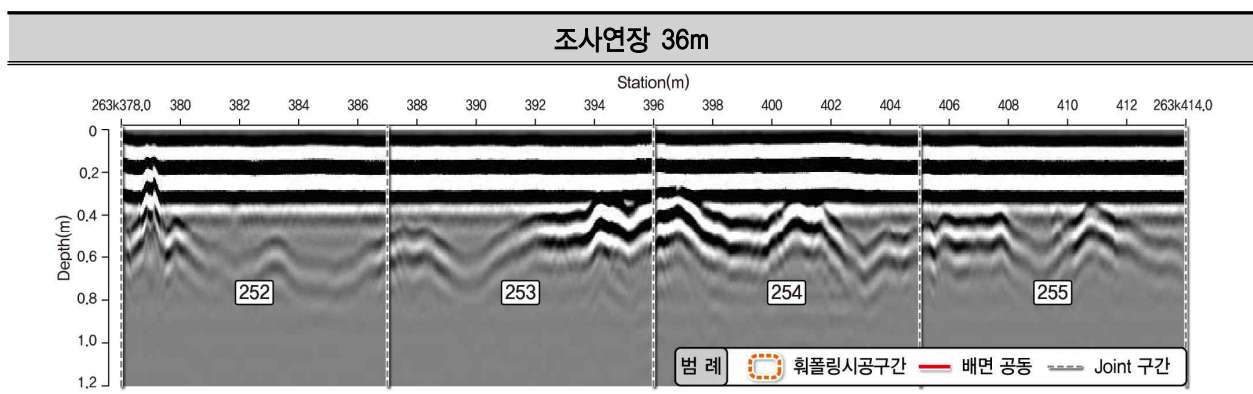
62) R-61(STA. 263K306.0~263K342.0)



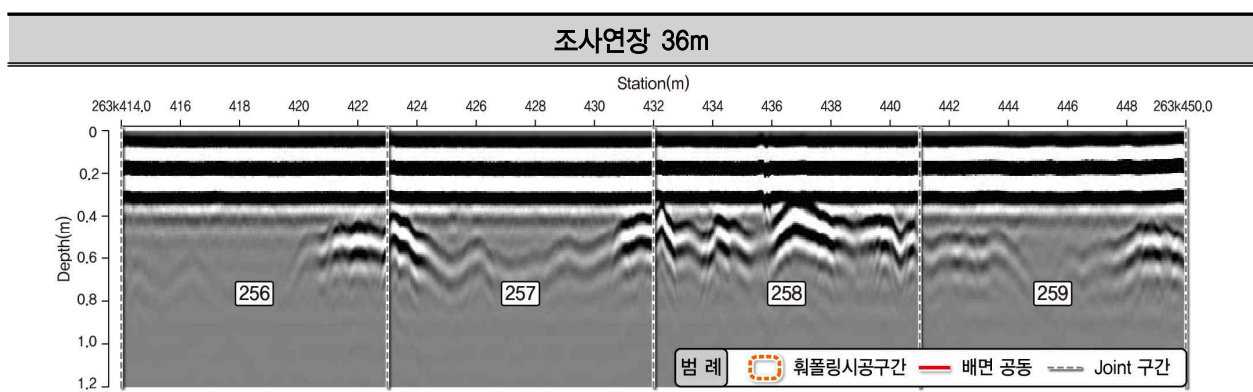
63) R-62(STA. 263K342.0~263K378.0)



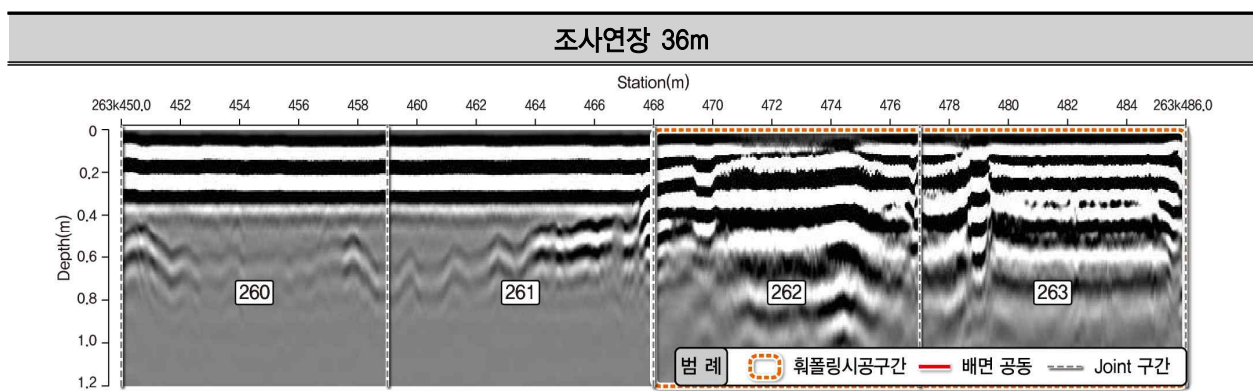
64) R-63(STA. 263K378.0~263K414.0)



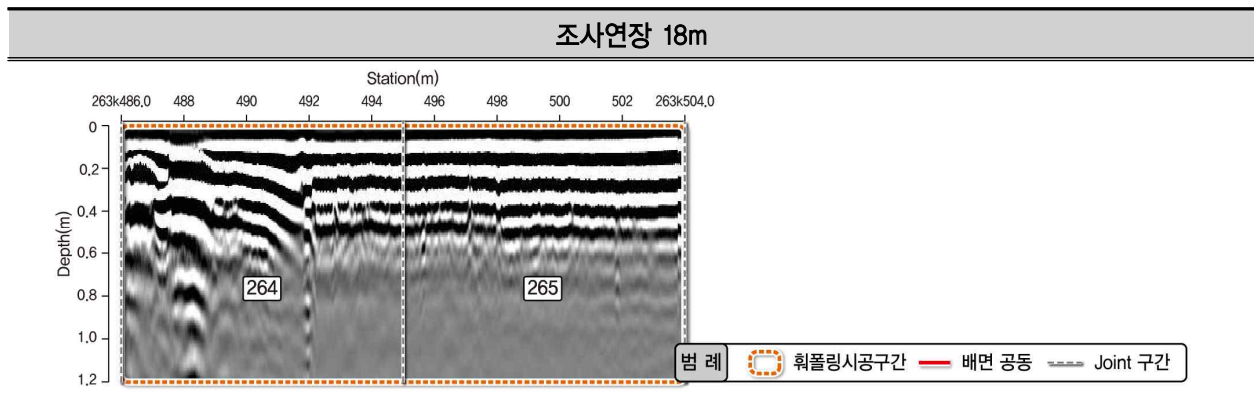
65) R-64(STA. 263K414.0~263K450.0)



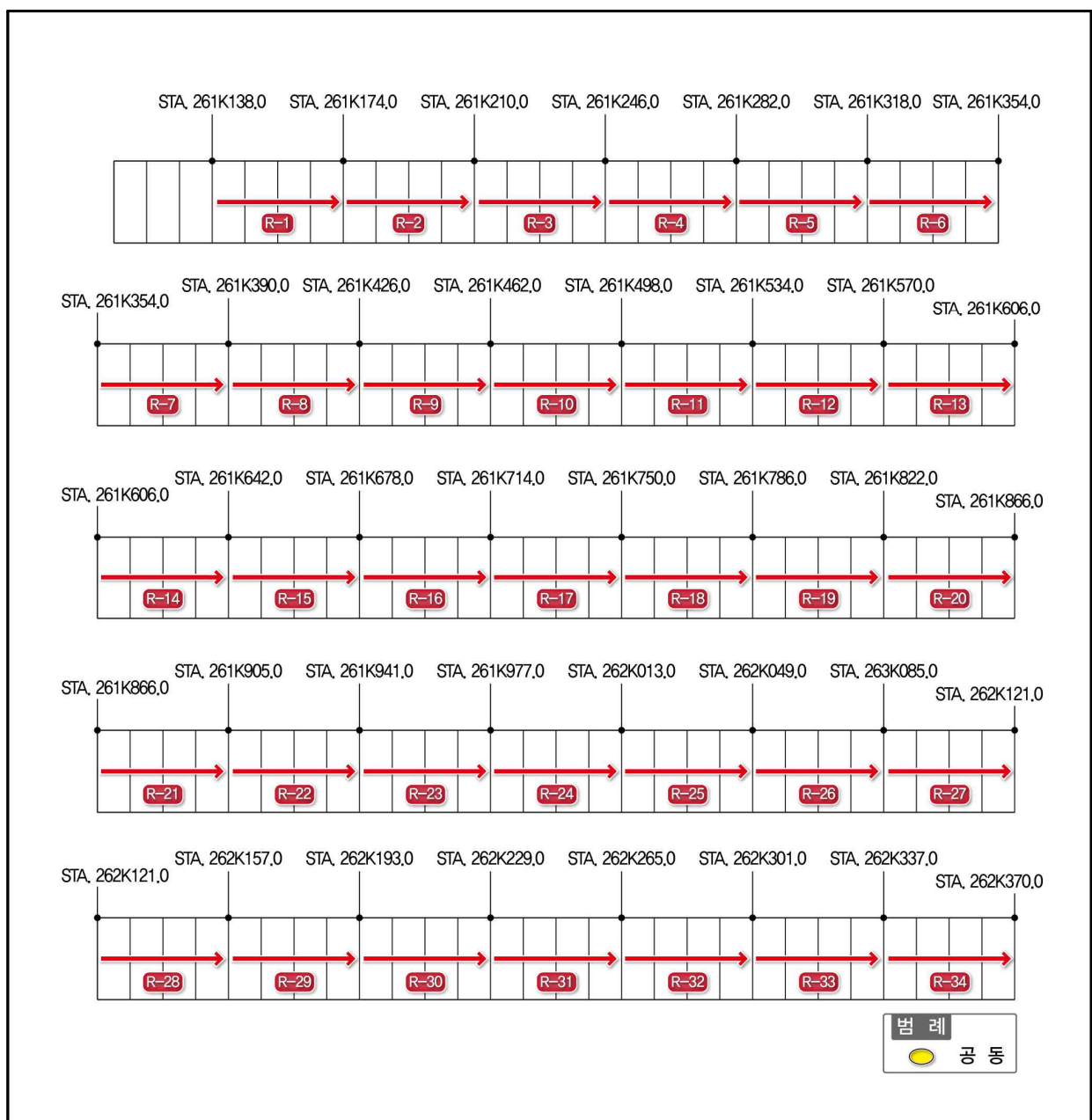
66) R-65(STA. 263K450.0~263K486.0)

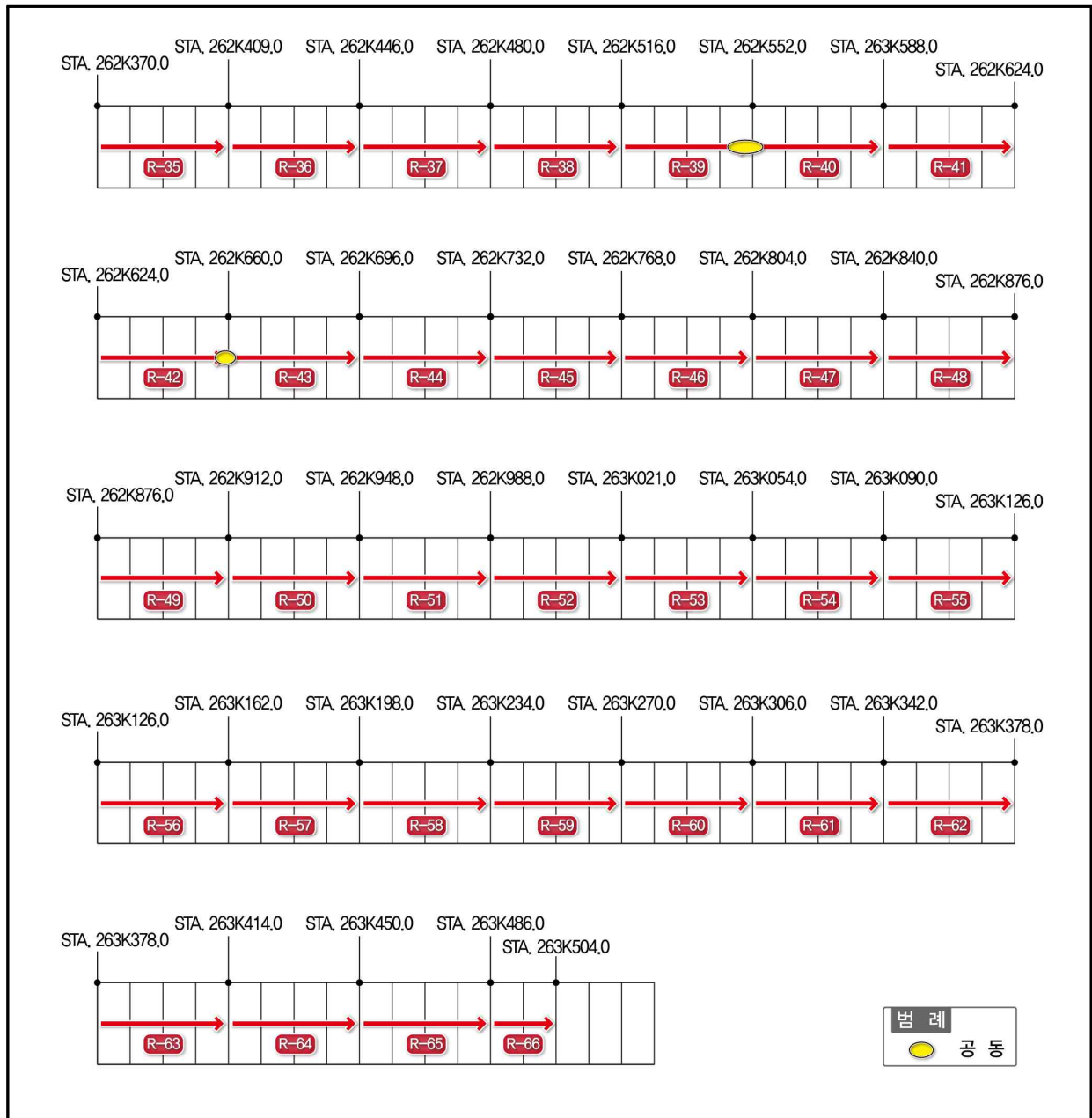


67) R-66(STA. 263K486.0~263K504.0)



68) 요약





공동 탐지 축선	공동 위치(STA.)
R-39~40	262k 546.0 ~ 262k 555.0
R-42~43	262k 658.0 ~ 262k 663.0

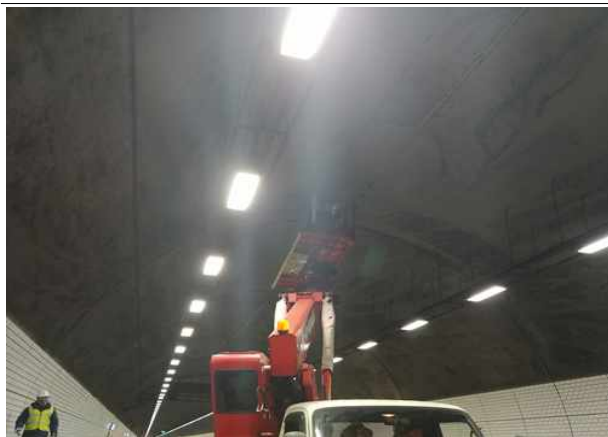
성과분석	• STA.261k138.0 ~ 263k504.0구간의 종방향으로 천단부 우측 1개소를 설정하여 탐사한 결과임 • 탐사결과 라이닝두께는 대체로 0.2~0.7m 내외로 나타남 • 탐사결과 배면공동으로 예상되는 반응이 종단면에서 2개소 판단됨 • 휘폴링 시공구간에서는 PVC파이프나 와이어등의 영향으로 레이더 신호가 투과하지 못하여 반사파 이벤트를 얻지 못하였으며, 터널 천단부 일부 구간에서의 구조물과 접지단자 홈 등의 영향으로 신호가 양호하지 못한 구간이 존재
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(현 장 사 진)

현장사진 (1) 상단 좌측



현장사진 (2) 상단 중심



현장사진 (3) 상단 우측

