

## Supplementary Materials

Additional supporting information of tested data is provided in this section.

Supplementary material I: Borehole data of 1302 North bottom extraction roadway (Figure 7)

Distance	3-1borehole Wave speed	3-2borehole Wave speed	2-1borehole Wave speed	2-2borehole Wave speed
1.1	1406	1358.6667	1500	
1.2	1317.3333	1313	1680.75	1309
1.3	1316.3333	1440	1687.99995	1405.5
1.4	1428.5	1339	1699.99995	1354.5
1.5	1448.3333	1377.3333	1694.625	1353.25
1.6	1356.3333	1329.3333	1648.5	1381.75
1.7	1380.25	1465.3333	1664.25	1361.6667
1.8	1367.6667	1352.3333	1807.125	1351
1.9	1296	1322	1792.5	1453.3333
2	1435.75	1446	1834.5	1489.75
2.1	1364.75	1358.6667	1962	1479.3333
2.2	1352.6667	1357.3333	1722	1402
2.3	1394	1654.25	1963.5	1665.3333
2.4	1697	1768.75	2104.875	1711
2.5	1787.75	1799.3333	2254.99995	1603
2.6	1728.3333	1738	2401.5	1649
2.7	1677.6667	1673	2402.50005	1665
2.8	1652.6667	1643.5	2385.75	1648.6667
2.9	1660.25	1644.25	1913.25	1629
3	1669.6667	1550.3333	1893.75	1632.3333
3.1	1662	1561	1888.5	1707
3.2	1507	1649	1940.25	1663.6667
3.3	1669	1666.3333	1897.5	1538.75
3.4	1652.5	1705.25	1881.75	1664
3.5	1602.6667	1680	1907.50005	1664
3.6	1648.6667	1671.5	1935.75	1675
3.7	1695	1672.5	1918.99995	1570.3333
3.8	1668	1678.5	1914	1665
3.9	1674.25	1669	1890	1659.6667
4	1682.75	1669	1912.5	1699
4.1	1685.25	1675.5	1920.75	1680
4.2	1706.25	1713.25	1918.5	1687.3333
4.3	1748	1744	1940.25	1663
4.4	1673.6667		1910.25	1693

Supplementary material II: Drilling data of central auxiliary transportation lane(Figure 8)

Dis tan ce	1-1borehole Wave speed	1-2borehole Wave speed	2-1borehole Wave speed	2-2borehole Wave speed	3-1borehole Wave speed	3-2borehole Wave speed
0.6	1407.3333	1341.3333	--	1221.6667	--	--
0.7	1398.75	1307	--	1233.5	--	1228
0.8	1373.75	1418.75	--	1217.5	1215	1191
0.9	1452.25	1388.5	--	1181.5	1106	1208
1	1423.75	1370.5	--	1185.25	1243.3333	1213.75
1.1	1413.75	1277.75	1589.6667	1209.5	1227	1202.75
1.2	1409	1368.25	1418.25	1182.5	1162.3333	1253.5
1.3	1303.6667	1372.5	1422.6667	983.25	1068.25	1231
1.4	1352.25	1296	1401.5	1221.5	1197.25	1158.75
1.5	1391.25	1320.5	1383	1010.25	1152	1129.5
1.6	1310	1491	1252	1200.5	1071.5	1182.75
1.7	1268.5	1554.3333	1362	1200	1197.75	1141.3333
1.8	1279.25	1463.5	1148.6667	1172.25	1164.5	1148
1.9	1298	1283	1400.75	1224.25	1152.75	1112.6667
2	1304.25	1581.75	1521.25	1181.75	1148.25	1143.25
2.1	1409	1397	1324.5	1150.25	1135.25	1182.5
2.2	1377	1444	1320	1232.5	1186.5	1177.75
2.3	1146.75	1429.5	1454	1255	1153.3333	1194.25
2.4	1421.75	1380.1	1352.25	1171.75	1184.75	1204.5
2.5	1173	1389.5	1381.6667	1239.5	1143	1209.5
2.6	1215.5	1226.25	1328	1238.5	1203	1209.6667
2.7	1254.75	1974.75	1932	1381.75	1300.6667	1223
2.8	1342.5	1680.25	1805.5	1650.25	1318.5	1322.25
2.9	1690.5	1722.75	1910	1632.5	1317	1366.75
3	1751.5	1580.5	1735.5	1355	1323	1578.75
3.1	1802.75	2034	1646.6667	1313.75	1313.25	1452.75
3.2	1780	1920.25	1505	1326.25	1409.75	1566.75
3.3	1725.5	1652.5	1626.25	1382.5	1347.75	1381.25
3.4	1687	1768.25	1706.25	1367.25	1316	1342.5
3.5	1413.5	1707.75	1681.5	1256.25	1328	1357.25
3.6	1638.25	1633.75	1610	1332	1376.5	1340
3.7	1630	1705.5	1652	1296.25	1330.75	1336
3.8	1651.4	1708.75	1695	1301.25	1341	1336.5
3.9	1612	1646.75	1608.75	1343.3333	1244	1355
4	1614	1753.5	1412.25	1347	1258	1339.75
4.1	1627.25	1404	1705.5	1313.3333	1277.5	1252.25
4.2	1634.5	1640.25	1712.5	1334	1315.25	1327.25
4.3	1619.5	1806.25	1676.5	1379	1285.25	1353

4.4	1683	1656	1768	1365.3333	1292.75	--
4.5	--	1695.75	1615	1344	1302.5	--
4.6	--	--	1391.75	1284.3333	1277.5	--
4.7	--	--	--	1257.3333	1264.75	--