



REGIONE EMILIA ROMAGNA  
PROVINCIA DI PARMA  
COMUNE DI BORGO VAL DI TARO



PROGETTO PER LA REALIZZAZIONE  
DEL PARCO EOLICO  
"MONTE CROCE DI FERRO"

Potenza complessiva 30 MW

PROGETTO DEFINITIVO  
DELL'IMPIANTO, DELLE OPERE CONNESSE E DELLE  
INFRASTRUTTURE INDISPENSABILI

PA-TAV. 16.2

*STRADE E PIAZZOLE- TABULATI DI  
CALCOLO VOLUMI STRADE E PIAZZOLE-  
FASE DI ESERCIZIO*

COMMITTENTE

**BORGOTARO  
WIND**

**Piazza del Grano 3  
39100 Bolzano, Italia**

GRUPPO DI LAVORO

Ing. GIUSEPPE STEFANINI: progettista opere civili, idrauliche e calcoli strutturali

Ing. PIETRO RICCIARDINI (GEOTECH srl): progettista opere elettriche e sottostazione

Ing. GIULIO BARTOLI, Dott. Geol. STEFANO MANTOVANI (MMA srl): SIA, studi paesaggistici, relazioni specialistiche, studio geologico geotecnico, studio di impatto acustico, simulazioni fotografiche

Dott.ssa. MARIA GRAZIA LISENO (NOSTOI srl): studio archeologico

Prof. DINO SCARAVELLI (Coop. ST.E.R.N.A.): relazione faunistica, piano di monitoraggio faunistico, avifaunistico e chiroteri, relazione floristico-vegetazionale

Arch. LUCIANO SERCHIA: consulente paesaggistico

Arch. STEFANO BOTTI (ABACUS sas) geom. CESARE SCHIATTI (STUDIO ARCO srl): rilievi aerofotogrammetrici e GNSS, documentazioni fotografiche da drone e da terra

Arch. MATTEO MASCIA: modellazione tridimensionale e renderizzazione fotorealistica

Dott. ENRICO CIRCELLI: consulenza micologica

Dott. Forestale FRANCESCO MARIOTTI: progettista interventi forestali compensativi

SCALA:

FIRME



*Stefanini*

| Rev. | Descrizione  | Redatto      | Verificato   | Approvato     | Data       |
|------|--|--------------|--------------|---------------|------------|
| 00   | Prima emissione  | Stefanini G. | Stefanini G. | Piovatizzi A. | Marzo 2022 |
| 01   | Integrazione nota ARPAE SAC Parma<br>Prot. n. 203102/2022 del 12/12/2022 | Stefanini G. | Stefanini G. | Piovatizzi A. | Marzo 2023 |

**REGIONE EMILIA ROMAGNA**

**Comune di Borgo Val di Taro (Parma)**

**BORGOTAROWIND**

**Borgotaro Wind Srl**

Piazza del Grano 3, Bolzano, P.IVA e Cod. Fisc. 03127880213

**PROGETTO DEL  
PARCO EOLICO “MONTE CROCE DI FERRO”,  
DELLE OPERE CONNESSE E  
DELLE INFRASTRUTTURE INDISPENSABILI**

**PA-R TAV.16.2 STRADE E PIAZZOLE- TABULATI DI CALCOLO VOLUMI  
STRADE E PIAZZOLE- FASE DI ESERCIZIO**

**Revisione 01 d.d. marzo 2023**



## PREMESSA

Il presente elaborato è stato revisionato al fine di recepire le integrazioni richieste con note prot. 203102/2022 trasmessa in data 12/12/2022 e prot. 205606/2022 trasmessa in data 15/12/2022 da parte di ARPAE Servizio Autorizzazioni e Concessioni di Parma, con riferimento alle osservazioni effettuate da:

- 1) SNAM: in merito alle interferenze tra il metanodotto Pontremoli/Albareto DN900 (36”), Metanodotto allacciamento Laminam DN150 (6”) e le opere previste per la realizzazione dell’impianto eolico “Parco Eolico Monte della Croce”.

Si riportano a seguire i capiversi delle note:

- 2) Aerogeneratore BT2- L’asse dell’aerogeneratore è posizionato oltre la fascia di sicurezza/servitù ma la proiezione... (omissis)... è necessario che il progetto venga aggiornato spostando la proiezione della pala oltre la fascia di sicurezza/servitù.

- 2) Terna:

Si riportano a seguire i capiversi delle note:

- 16) Profilo altimetrico strada di accesso: dagli elaborati prodotti si rileva una pendenza della strada di accesso che in alcune tratte raggiunge il 16%circa...(omissis)...la pendenza massima deve essere del 10%. Si chiede pertanto di rivedere il progetto relativo alla sistemazione e adeguamento della strada di accesso in modo da rispettare tale prescrizione.

Il presente elaborato è stato altresì redatto tenendo in considerazione le modifiche progettuali introdotte rispetto alla proposta progettuale iniziale sottoposta ad iter procedurale di PAUR e che sono meglio descritte nell’elaborato RI-R.0 nelle premesse.



**TABULATI DI CALCOLO VOLUMI PIAZZOLE**

**1+000 a 1+204**

**PIAZZOLA BT1**



| <b>Station</b> | <b>Cut Area (Sq.m.)</b> | <b>Cut Volume (Cu.m.)</b> | <b>Fill Area (Sq.m.)</b> | <b>Fill Volume (Cu.m.)</b> | <b>Cum. Cut Vol. (Cu.m.)</b> | <b>Cum. Fill Vol. (Cu.m.)</b> | <b>Cum. Net Vol. (Cu.m.)</b> |
|----------------|-------------------------|---------------------------|--------------------------|----------------------------|------------------------------|-------------------------------|------------------------------|
| 1+002.462      | 3.79                    | 0.00                      | 75.99                    | 0.00                       | 0.00                         | 0.00                          | 0.00                         |
| 1+005.000      | 21.22                   | 31.75                     | 67.56                    | 182.17                     | 31.75                        | 182.17                        | -150.42                      |
| 1+010.000      | 54.85                   | 190.19                    | 75.01                    | 356.42                     | 221.94                       | 538.60                        | -316.66                      |
| 1+015.000      | 58.82                   | 284.19                    | 69.53                    | 361.35                     | 506.13                       | 899.95                        | -393.81                      |
| 1+020.000      | 28.20                   | 217.56                    | 53.77                    | 308.25                     | 723.70                       | 1208.20                       | -484.50                      |
| 1+025.000      | 19.17                   | 118.44                    | 43.02                    | 241.98                     | 842.13                       | 1450.18                       | -608.05                      |
| 1+026.531      | 16.90                   | 27.61                     | 40.17                    | 63.67                      | 869.74                       | 1513.86                       | -644.12                      |
| 1+030.000      | 18.16                   | 60.82                     | 32.00                    | 125.19                     | 930.56                       | 1639.05                       | -708.49                      |
| 1+035.000      | 26.74                   | 112.25                    | 30.18                    | 155.43                     | 1042.81                      | 1794.48                       | -751.67                      |
| 1+040.000      | 0.00                    | 66.85                     | 172.36                   | 506.34                     | 1109.65                      | 2300.82                       | -1191.17                     |
| 1+045.000      | 0.00                    | 0.00                      | 136.08                   | 771.10                     | 1109.66                      | 3071.92                       | -1962.27                     |
| 1+050.000      | 0.64                    | 1.61                      | 105.99                   | 605.19                     | 1111.26                      | 3677.11                       | -2565.85                     |
| 1+055.000      | 3.19                    | 9.57                      | 82.77                    | 471.90                     | 1120.84                      | 4149.01                       | -3028.18                     |
| 1+060.000      | 1.88                    | 12.66                     | 70.23                    | 382.49                     | 1133.50                      | 4531.50                       | -3398.00                     |
| 1+065.000      | 0.00                    | 4.69                      | 66.91                    | 342.86                     | 1138.19                      | 4874.36                       | -3736.17                     |
| 1+070.000      | 0.00                    | 0.00                      | 71.09                    | 345.00                     | 1138.20                      | 5219.36                       | -4081.16                     |
| 1+075.000      | 0.11                    | 0.29                      | 63.50                    | 336.45                     | 1138.49                      | 5555.81                       | -4417.33                     |
| 1+080.000      | 2.08                    | 5.48                      | 52.54                    | 290.10                     | 1143.97                      | 5845.91                       | -4701.94                     |
| 1+085.000      | 19.83                   | 54.77                     | 47.18                    | 249.31                     | 1198.74                      | 6095.22                       | -4896.48                     |
| 1+086.126      | 22.10                   | 23.62                     | 45.25                    | 52.06                      | 1222.36                      | 6147.27                       | -4924.92                     |
| 1+090.000      | 27.55                   | 96.17                     | 31.76                    | 149.15                     | 1318.53                      | 6296.42                       | -4977.90                     |



|           |       |        |       |        |         |         |          |
|-----------|-------|--------|-------|--------|---------|---------|----------|
| 1+095.000 | 33.45 | 152.51 | 19.42 | 127.93 | 1471.04 | 6424.36 | -4953.31 |
| 1+100.000 | 17.60 | 127.63 | 13.94 | 83.40  | 1598.67 | 6507.75 | -4909.08 |
| 1+105.000 | 3.38  | 52.44  | 9.79  | 59.33  | 1651.11 | 6567.08 | -4915.97 |
| 1+110.000 | 2.04  | 13.56  | 7.86  | 44.13  | 1664.67 | 6611.21 | -4946.55 |
| 1+115.000 | 0.00  | 5.11   | 8.59  | 41.14  | 1669.78 | 6652.35 | -4982.57 |
| 1+120.000 | 0.05  | 0.11   | 8.12  | 41.78  | 1669.89 | 6694.13 | -5024.24 |
| 1+125.000 | 0.84  | 2.21   | 4.70  | 32.06  | 1672.11 | 6726.19 | -5054.08 |
| 1+126.122 | 1.15  | 1.12   | 3.75  | 4.74   | 1673.22 | 6730.93 | -5057.71 |
| 1+130.000 | 1.94  | 6.00   | 1.20  | 9.59   | 1679.22 | 6740.52 | -5061.30 |
| 1+135.000 | 4.17  | 15.29  | 0.14  | 3.34   | 1694.51 | 6743.86 | -5049.35 |
| 1+140.000 | 4.61  | 21.97  | 0.13  | 0.67   | 1716.48 | 6744.53 | -5028.05 |
| 1+145.000 | 5.31  | 24.81  | 0.27  | 1.00   | 1741.29 | 6745.53 | -5004.23 |
| 1+150.000 | 10.57 | 39.70  | 0.21  | 1.19   | 1780.99 | 6746.72 | -4965.73 |
| 1+155.000 | 9.19  | 49.40  | 0.08  | 0.73   | 1830.39 | 6747.45 | -4917.07 |
| 1+160.000 | 1.08  | 25.68  | 2.33  | 6.04   | 1856.06 | 6753.49 | -4897.43 |
| 1+165.000 | 0.00  | 2.70   | 15.25 | 43.96  | 1858.76 | 6797.45 | -4938.69 |
| 1+170.000 | 0.00  | 0.00   | 25.76 | 102.54 | 1858.76 | 6899.99 | -5041.23 |
| 1+175.000 | 0.00  | 0.01   | 22.40 | 120.42 | 1858.77 | 7020.42 | -5161.65 |
| 1+180.000 | 0.00  | 0.02   | 27.73 | 125.35 | 1858.79 | 7145.76 | -5286.98 |
| 1+185.000 | 0.00  | 0.00   | 55.38 | 207.79 | 1858.79 | 7353.55 | -5494.76 |
| 1+190.000 | 0.02  | 0.04   | 70.72 | 315.26 | 1858.83 | 7668.82 | -5809.99 |
| 1+195.000 | 0.00  | 0.04   | 66.84 | 343.90 | 1858.87 | 8012.72 | -6153.85 |
| 1+200.000 | 0.00  | 0.00   | 49.01 | 289.62 | 1858.87 | 8302.34 | -6443.48 |



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|           |      |      |       |        |         |         |          |  |
|-----------|------|------|-------|--------|---------|---------|----------|--|
| 1+203.539 | 0.00 | 0.00 | 41.04 | 159.33 | 1858.87 | 8461.67 | -6602.80 |  |
|-----------|------|------|-------|--------|---------|---------|----------|--|



**TABULATI DI CALCOLO VOLUMI PIAZZOLE**

**2+000 a 2+193.00**

**PIAZZOLA BT2**





| <b><u>Station</u></b> | <b><u>Cut Area</u></b><br><b><u>(Sq.m.)</u></b> | <b><u>Cut Volume</u></b><br><b><u>(Cu.m.)</u></b> | <b><u>Fill Area</u></b><br><b><u>(Sq.m.)</u></b> | <b><u>Fill Volume</u></b><br><b><u>(Cu.m.)</u></b> | <b><u>Cum. Cut Vol.</u></b><br><b><u>(Cu.m.)</u></b> | <b><u>Cum. Fill Vol.</u></b><br><b><u>(Cu.m.)</u></b> | <b><u>Cum. Net Vol.</u></b><br><b><u>(Cu.m.)</u></b> | - |
|-----------------------|---|---|--|--|--|---|--|---|
| 2+000.000             | 0   | 0   | 59.83  | 0  | 0  | 0   | 0  |   |
| 2+005.000             | 0   | 0   | 44.26  | 260.21   | 0  | 260.21  | -260.21  |   |
| 2+010.000             | 0   | 0   | 31.15  | 188.52   | 0  | 448.74  | -448.74  |   |
| 2+015.000             | 0   | 0   | 19.2   | 125.87   | 0  | 574.61  | -574.61  |   |
| 2+020.000             | 0   | 0   | 11.74  | 77.34  | 0  | 651.95  | -651.95  |   |
| 2+024.758             | 0   | 0   | 12.46  | 57.58  | 0  | 709.53  | -709.53  |   |
| 2+025.000             | 0   | 0   | 12.65  | 3.04   | 0  | 712.56  | -712.56  |   |
| 2+030.000             | 0   | 0   | 20.86  | 83.78  | 0  | 796.34  | -796.34  |   |
| 2+035.000             | 0   | 0   | 26.94  | 119.5  | 0  | 915.85  | -915.85  |   |
| 2+040.000             | 0   | 0   | 30.89  | 144.58   | 0  | 1060.42   | -1060.4  |   |
| 2+045.000             | 0   | 0   | 38.89  | 174.46   | 0  | 1234.88   | -1234.9  |   |
| 2+050.000             | 0   | 0   | 45.94  | 212.08   | 0  | 1446.96   | -1447  |   |
| 2+055.000             | 0   | 0   | 51.18  | 242.82   | 0  | 1689.78   | -1689.8  |   |
| 2+060.000             | 0   | 0   | 54.97  | 265.38   | 0  | 1955.16   | -1955.2  |   |
| 2+060.000             | 0   | 0   | 0  | 0  | 0  | 1955.16   | -1955.2  |   |
| 2+065.000             | 0   | 0   | 55.87  | 139.67   | 0  | 2094.83   | -2094.8  |   |
| 2+070.000             | 0   | 0   | 52.74  | 271.52   | 0  | 2366.35   | -2366.4  |   |
| 2+075.000             | 0   | 0   | 49.51  | 255.62   | 0  | 2621.97   | -2622  |   |
| 2+080.000             | 0   | 0   | 44.69  | 235.5  | 0  | 2857.47   | -2857.5  |   |
| 2+085.000             | 0   | 0   | 35.49  | 200.44   | 0  | 3057.91   | -3057.9  |   |
| 2+090.000             | 0   | 0   | 27.21  | 156.75   | 0  | 3214.67   | -3214.7  |   |
| 2+095.000             | 0   | 0   | 20.92  | 120.33   | 0  | 3335  | -3335  |   |



|           |      |       |       |        |        |         |         |
|-----------|------|-------|-------|--------|--------|---------|---------|
| 2+097.184 | 0    | 0     | 16.16 | 40.48  | 0      | 3375.48 | -3375.5 |
| 2+100.000 | 0    | 0     | 8.43  | 34.62  | 0      | 3410.1  | -3410.1 |
| 2+105.000 | 7.17 | 17.93 | 0     | 21.09  | 17.93  | 3431.19 | -3413.3 |
| 2+110.000 | 7.06 | 35.57 | 0     | 0      | 53.49  | 3431.19 | -3377.7 |
| 2+115.000 | 6.62 | 34.19 | 0     | 0      | 87.68  | 3431.19 | -3343.5 |
| 2+119.400 | 6.34 | 28.52 | 0     | 0      | 116.19 | 3431.19 | -3315   |
| 2+120.000 | 6.31 | 3.8   | 0     | 0      | 119.99 | 3431.19 | -3311.2 |
| 2+125.000 | 5.79 | 30.27 | 0     | 0      | 150.26 | 3431.19 | -3280.9 |
| 2+130.000 | 5.01 | 27.01 | 0     | 0      | 177.27 | 3431.19 | -3253.9 |
| 2+135.000 | 4.17 | 22.95 | 0.98  | 2.44   | 200.22 | 3433.63 | -3233.4 |
| 2+140.000 | 4.76 | 22.32 | 3.04  | 10.05  | 222.54 | 3443.68 | -3221.1 |
| 2+145.000 | 4.31 | 22.67 | 5.8   | 22.1   | 245.22 | 3465.78 | -3220.6 |
| 2+150.000 | 3.55 | 19.66 | 9.25  | 37.61  | 264.88 | 3503.39 | -3238.5 |
| 2+152.975 | 3.26 | 10.13 | 11.93 | 31.51  | 275.01 | 3534.89 | -3259.9 |
| 2+155.000 | 3.06 | 6.4   | 14.17 | 26.42  | 281.42 | 3561.32 | -3279.9 |
| 2+160.000 | 2.59 | 14.12 | 21.39 | 88.89  | 295.54 | 3650.21 | -3354.7 |
| 2+165.000 | 1.89 | 11.18 | 30.91 | 130.76 | 306.72 | 3780.97 | -3474.3 |
| 2+170.000 | 1.34 | 8.07  | 36.52 | 168.59 | 314.79 | 3949.55 | -3634.8 |
| 2+175.000 | 0.71 | 5.13  | 45.99 | 206.26 | 319.92 | 4155.81 | -3835.9 |
| 2+178.000 | 0.01 | 1.08  | 61.66 | 161.47 | 321    | 4317.28 | -3996.3 |
| 2+180.000 | 0    | 0.01  | 37.55 | 99.21  | 321.01 | 4416.48 | -4095.5 |
| 2+185.000 | 0    | 0     | 0.96  | 96.28  | 321.01 | 4512.76 | -4191.8 |
| 2+190.000 | 0    | 0     | 0.36  | 3.3    | 321.01 | 4516.07 | -4195.1 |



**TABULATI DI CALCOLO VOLUMI PIAZZOLE**

**3+000 a 3+220.00**

**PIAZZOLA BT3**



| <b>Station</b> | <b>Cut Area (Sq.m.)</b> | <b>Cut Volume (Cu.m.)</b> | <b>Fill Area (Sq.m.)</b> | <b>Fill Volume (Cu.m.)</b> | <b>Cum. Cut Vol. (Cu.m.)</b> | <b>Cum. Fill Vol. (Cu.m.)</b> | <b>Cum. Net Vol. (Cu.m.)</b> |
|----------------|-------------------------|---------------------------|--------------------------|----------------------------|------------------------------|-------------------------------|------------------------------|
| 3+005.000      | 0.00                    | 0.00                      | 0.00                     | 0.00                       | 0.00                         | 0.00                          | 0.00                         |
| 3+010.000      | 33.67                   | 84.16                     | 0.00                     | 0.00                       | 84.16                        | 0.00                          | 84.16                        |
| 3+014.317      | 141.99                  | 379.13                    | 0.00                     | 0.00                       | 463.29                       | 0.01                          | 463.28                       |
| 3+015.000      | 147.27                  | 98.83                     | 0.00                     | 0.00                       | 562.12                       | 0.01                          | 562.11                       |
| 3+020.000      | 167.05                  | 785.79                    | 0.00                     | 0.00                       | 1347.91                      | 0.01                          | 1347.90                      |
| 3+025.000      | 170.40                  | 843.63                    | 0.00                     | 0.00                       | 2191.54                      | 0.01                          | 2191.53                      |
| 3+030.000      | 153.70                  | 810.26                    | 0.00                     | 0.00                       | 3001.80                      | 0.01                          | 3001.79                      |
| 3+030.317      | 151.51                  | 48.33                     | 0.00                     | 0.00                       | 3050.13                      | 0.01                          | 3050.12                      |
| 3+035.000      | 117.22                  | 629.27                    | 0.00                     | 0.00                       | 3679.40                      | 0.01                          | 3679.39                      |
| 3+040.000      | 95.87                   | 532.73                    | 1.24                     | 3.10                       | 4212.13                      | 3.11                          | 4209.02                      |
| 3+045.000      | 92.61                   | 471.21                    | 1.99                     | 8.08                       | 4683.34                      | 11.19                         | 4672.15                      |
| 3+050.000      | 81.81                   | 436.06                    | 2.79                     | 11.94                      | 5119.40                      | 23.13                         | 5096.27                      |
| 3+055.000      | 55.81                   | 344.05                    | 8.68                     | 28.67                      | 5463.44                      | 51.80                         | 5411.64                      |
| 3+060.000      | 34.28                   | 225.22                    | 16.23                    | 62.28                      | 5688.66                      | 114.08                        | 5574.59                      |
| 3+065.000      | 21.36                   | 139.09                    | 23.84                    | 100.17                     | 5827.75                      | 214.24                        | 5613.51                      |
| 3+070.000      | 7.57                    | 72.32                     | 29.61                    | 133.62                     | 5900.07                      | 347.86                        | 5552.21                      |
| 3+075.000      | 0.00                    | 18.92                     | 36.37                    | 164.95                     | 5918.99                      | 512.81                        | 5406.18                      |
| 3+080.000      | 0.00                    | 0.00                      | 36.78                    | 182.88                     | 5918.99                      | 695.69                        | 5223.30                      |
| 3+085.000      | 0.00                    | 0.00                      | 38.99                    | 189.44                     | 5918.99                      | 885.13                        | 5033.87                      |
| 3+090.000      | 0.00                    | 0.00                      | 38.97                    | 194.90                     | 5918.99                      | 1080.03                       | 4838.96                      |
| 3+090.772      | 0.00                    | 0.00                      | 38.65                    | 29.96                      | 5918.99                      | 1109.99                       | 4809.00                      |



|           |      |      |       |        |         |         |         |
|-----------|------|------|-------|--------|---------|---------|---------|
| 3+095.000 | 0.00 | 0.00 | 37.49 | 160.97 | 5918.99 | 1270.96 | 4648.03 |
| 3+100.000 | 0.00 | 0.00 | 29.60 | 167.72 | 5918.99 | 1438.68 | 4480.31 |
| 3+105.000 | 0.00 | 0.00 | 20.79 | 125.98 | 5918.99 | 1564.66 | 4354.33 |
| 3+110.000 | 0.00 | 0.00 | 14.55 | 88.35  | 5918.99 | 1653.01 | 4265.98 |
| 3+115.000 | 0.00 | 0.00 | 10.70 | 63.11  | 5918.99 | 1716.13 | 4202.86 |
| 3+120.000 | 0.00 | 0.00 | 8.77  | 48.66  | 5918.99 | 1764.79 | 4154.21 |
| 3+125.000 | 0.00 | 0.00 | 8.58  | 43.38  | 5918.99 | 1808.16 | 4110.83 |
| 3+130.000 | 0.00 | 0.00 | 9.23  | 44.53  | 5918.99 | 1852.69 | 4066.30 |
| 3+135.000 | 0.00 | 0.00 | 11.49 | 51.80  | 5918.99 | 1904.49 | 4014.50 |
| 3+140.000 | 0.00 | 0.00 | 13.16 | 61.63  | 5918.99 | 1966.12 | 3952.87 |
| 3+145.000 | 0.00 | 0.00 | 10.66 | 59.56  | 5918.99 | 2025.68 | 3893.31 |
| 3+150.000 | 0.00 | 0.00 | 7.80  | 46.16  | 5918.99 | 2071.84 | 3847.15 |
| 3+155.000 | 0.00 | 0.00 | 9.57  | 43.44  | 5918.99 | 2115.28 | 3803.72 |
| 3+160.000 | 0.00 | 0.00 | 12.57 | 55.35  | 5918.99 | 2170.62 | 3748.37 |
| 3+165.000 | 0.00 | 0.00 | 15.90 | 71.18  | 5918.99 | 2241.80 | 3677.19 |
| 3+170.000 | 0.00 | 0.00 | 19.43 | 88.32  | 5918.99 | 2330.13 | 3588.87 |
| 3+175.000 | 0.00 | 0.00 | 23.97 | 108.48 | 5918.99 | 2438.60 | 3480.39 |
| 3+180.000 | 0.00 | 0.00 | 31.49 | 138.64 | 5918.99 | 2577.24 | 3341.75 |
| 3+185.000 | 0.00 | 0.00 | 40.42 | 179.77 | 5918.99 | 2757.01 | 3161.98 |
| 3+190.000 | 0.00 | 0.00 | 50.32 | 226.84 | 5918.99 | 2983.86 | 2935.14 |
| 3+195.000 | 0.00 | 0.00 | 45.24 | 238.89 | 5918.99 | 3222.74 | 2696.25 |
| 3+200.000 | 0.00 | 0.01 | 17.23 | 156.18 | 5919.00 | 3378.92 | 2540.08 |
| 3+205.000 | 2.56 | 6.40 | 0.20  | 43.59  | 5925.41 | 3422.51 | 2502.90 |



|           |      |      |      |      |         |         |         |
|-----------|------|------|------|------|---------|---------|---------|
| 3+207.317 | 5.94 | 9.84 | 0.01 | 0.25 | 5935.25 | 3422.76 | 2512.49 |
| 3+210.000 | 1.10 | 9.44 | 0.00 | 0.02 | 5944.69 | 3422.77 | 2521.91 |
| 3+215.000 | 0.00 | 2.76 | 0.00 | 0.00 | 5947.45 | 3422.77 | 2524.67 |



**TABULATI DI CALCOLO VOLUMI PIAZZOLE**

**4+000 a 4+234.00**

**PIAZZOLA BT4**



| <u>Station</u> | <u>Cut Area (Sq.m.)</u> | <u>Cut Volume (Cu.m.)</u> | <u>Fill Area (Sq.m.)</u> | <u>Fill Volume (Cu.m.)</u> | <u>Cum. Cut Vol. (Cu.m.)</u> | <u>Cum. Fill Vol. (Cu.m.)</u> | <u>Cum. Net Vol. (Cu.m.)</u> |
|----------------|-------------------------|---------------------------|--------------------------|----------------------------|------------------------------|-------------------------------|------------------------------|
| 4+005.000      | 0.00                    | 0.00                      | 0.00                     | 0.00                       | 0.00                         | 0.00                          | 0.00                         |
| 4+010.000      | 7.03                    | 17.57                     | 0.00                     | 0.00                       | 17.57                        | 0.00                          | 17.56                        |
| 4+014.397      | 75.75                   | 182.00                    | 9.86                     | 21.69                      | 199.57                       | 21.69                         | 177.88                       |
| 4+015.000      | 78.33                   | 46.44                     | 12.69                    | 6.80                       | 246.01                       | 28.49                         | 217.52                       |
| 4+020.000      | 97.26                   | 438.97                    | 22.39                    | 87.70                      | 684.98                       | 116.19                        | 568.79                       |
| 4+025.000      | 106.53                  | 509.48                    | 41.02                    | 158.54                     | 1194.45                      | 274.72                        | 919.73                       |
| 4+030.000      | 108.72                  | 538.13                    | 69.14                    | 275.39                     | 1732.59                      | 550.12                        | 1182.47                      |
| 4+030.397      | 108.48                  | 43.14                     | 68.99                    | 27.43                      | 1775.73                      | 577.55                        | 1198.18                      |
| 4+035.000      | 105.18                  | 491.72                    | 104.66                   | 399.64                     | 2267.45                      | 977.19                        | 1290.26                      |
| 4+040.000      | 84.08                   | 473.16                    | 189.95                   | 736.54                     | 2740.60                      | 1713.73                       | 1026.87                      |
| 4+045.000      | 62.73                   | 367.04                    | 232.59                   | 1056.37                    | 3107.64                      | 2770.10                       | 337.54                       |
| 4+050.000      | 69.84                   | 331.43                    | 234.65                   | 1168.11                    | 3439.07                      | 3938.20                       | -499.13                      |
| 4+055.000      | 80.00                   | 374.60                    | 231.57                   | 1165.55                    | 3813.67                      | 5103.76                       | -1290.08                     |
| 4+060.000      | 82.94                   | 407.35                    | 219.31                   | 1127.21                    | 4221.02                      | 6230.97                       | -2009.94                     |
| 4+065.000      | 83.74                   | 416.70                    | 205.56                   | 1062.19                    | 4637.72                      | 7293.15                       | -2655.43                     |
| 4+070.000      | 83.16                   | 417.24                    | 197.20                   | 1006.90                    | 5054.96                      | 8300.05                       | -3245.09                     |
| 4+075.000      | 85.48                   | 421.61                    | 196.93                   | 985.34                     | 5476.57                      | 9285.39                       | -3808.81                     |
| 4+080.000      | 80.41                   | 414.74                    | 195.53                   | 981.15                     | 5891.32                      | 10266.54                      | -4375.22                     |
| 4+085.000      | 77.18                   | 394.00                    | 196.47                   | 979.99                     | 6285.32                      | 11246.53                      | -4961.21                     |
| 4+090.000      | 81.76                   | 397.35                    | 211.59                   | 1020.15                    | 6682.67                      | 12266.68                      | -5584.01                     |
| 4+092.397      | 85.91                   | 200.96                    | 211.97                   | 507.69                     | 6883.63                      | 12774.36                      | -5890.73                     |





|           |       |        |        |         |         |          |          |
|-----------|-------|--------|--------|---------|---------|----------|----------|
| 4+095.000 | 82.76 | 219.50 | 212.74 | 552.70  | 7103.13 | 13327.07 | -6223.93 |
| 4+100.000 | 70.31 | 382.69 | 212.37 | 1062.77 | 7485.82 | 14389.83 | -6904.01 |
| 4+105.000 | 47.44 | 294.38 | 153.30 | 914.18  | 7780.20 | 15304.02 | -7523.82 |
| 4+110.000 | 1.50  | 122.34 | 58.60  | 529.76  | 7902.55 | 15833.78 | -7931.23 |
| 4+115.000 | 0.00  | 3.76   | 0.00   | 146.51  | 7906.31 | 15980.29 | -8073.98 |
| 4+120.000 | 0.00  | 0.02   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+125.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+130.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+135.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+140.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+145.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+150.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+155.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+160.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+165.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+170.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+175.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+180.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+185.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+190.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+195.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+200.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |
| 4+205.000 | 0.00  | 0.00   | 0.00   | 0.00    | 7906.32 | 15980.29 | -8073.96 |



|           |      |      |      |      |         |          |          |
|-----------|------|------|------|------|---------|----------|----------|
| 4+207.397 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |
| 4+210.000 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |
| 4+215.000 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |
| 4+220.000 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |
| 4+225.000 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |
| 4+230.000 | 0.00 | 0.00 | 0.00 | 0.00 | 7906.32 | 15980.29 | -8073.96 |



**TABULATI DI CALCOLO VOLUMI PIAZZOLE**

**5+000 a 5+208.00**

**PIAZZOLA BT5**



| <b>Station</b> | <b>Cut Area (Sq.m.)</b> | <b>Cut Volume (Cu.m.)</b> | <b>Fill Area (Sq.m.)</b> | <b>Fill Volume (Cu.m.)</b> | <b>Cum. Cut Vol. (Cu.m.)</b> | <b>Cum. Fill Vol. (Cu.m.)</b> | <b>Cum. Net Vol. (Cu.m.)</b> |
|----------------|-------------------------|---------------------------|--------------------------|----------------------------|------------------------------|-------------------------------|------------------------------|
| 5+000.000      | 0.00                    | 0.00                      | 8.62                     | 0.00                       | 0.00                         | 0.00                          | 0.00                         |
| 5+005.000      | 0.00                    | 0.01                      | 5.12                     | 34.36                      | 0.01                         | 34.36                         | -34.35                       |
| 5+010.000      | 0.00                    | 0.00                      | 6.12                     | 28.11                      | 0.02                         | 62.48                         | -62.46                       |
| 5+015.000      | 0.00                    | 0.00                      | 7.89                     | 35.01                      | 0.03                         | 97.49                         | -97.47                       |
| 5+020.000      | 0.00                    | 0.00                      | 11.24                    | 47.81                      | 0.03                         | 145.31                        | -145.28                      |
| 5+025.000      | 0.00                    | 0.00                      | 14.10                    | 63.36                      | 0.03                         | 208.66                        | -208.64                      |
| 5+030.000      | 0.00                    | 0.00                      | 18.98                    | 82.70                      | 0.03                         | 291.37                        | -291.34                      |
| 5+035.000      | 0.00                    | 0.00                      | 26.14                    | 112.79                     | 0.03                         | 404.16                        | -404.13                      |
| 5+040.000      | 0.00                    | 0.00                      | 35.05                    | 152.97                     | 0.03                         | 557.13                        | -557.10                      |
| 5+045.000      | 0.00                    | 0.00                      | 42.88                    | 194.84                     | 0.03                         | 751.97                        | -751.94                      |
| 5+050.000      | 0.00                    | 0.00                      | 50.53                    | 233.52                     | 0.03                         | 985.49                        | -985.47                      |
| 5+055.000      | 0.00                    | 0.00                      | 58.96                    | 273.71                     | 0.03                         | 1259.20                       | -1259.17                     |
| 5+060.000      | 0.00                    | 0.00                      | 66.87                    | 314.57                     | 0.03                         | 1573.76                       | -1573.74                     |
| 5+065.000      | 0.00                    | 0.00                      | 75.72                    | 356.47                     | 0.03                         | 1930.24                       | -1930.21                     |
| 5+070.000      | 0.00                    | 0.00                      | 80.25                    | 389.92                     | 0.03                         | 2320.16                       | -2320.13                     |
| 5+075.000      | 0.00                    | 0.00                      | 84.67                    | 412.30                     | 0.03                         | 2732.46                       | -2732.44                     |
| 5+079.440      | 0.00                    | 0.00                      | 84.96                    | 376.59                     | 0.03                         | 3109.05                       | -3109.03                     |
| 5+080.000      | 0.00                    | 0.00                      | 84.82                    | 47.53                      | 0.03                         | 3156.58                       | -3156.56                     |
| 5+085.000      | 0.00                    | 0.00                      | 82.21                    | 417.57                     | 0.03                         | 3574.16                       | -3574.13                     |
| 5+090.000      | 0.00                    | 0.00                      | 79.98                    | 405.47                     | 0.03                         | 3979.62                       | -3979.60                     |
| 5+095.000      | 0.00                    | 0.00                      | 76.78                    | 391.88                     | 0.03                         | 4371.51                       | -4371.48                     |



|           |       |        |       |        |         |         |          |
|-----------|-------|--------|-------|--------|---------|---------|----------|
| 5+100.000 | 0.00  | 0.00   | 72.52 | 373.24 | 0.03    | 4744.75 | -4744.72 |
| 5+105.000 | 0.00  | 0.00   | 67.34 | 349.64 | 0.03    | 5094.38 | -5094.35 |
| 5+110.000 | 13.65 | 34.14  | 61.86 | 322.99 | 34.17   | 5417.38 | -5383.21 |
| 5+115.000 | 68.91 | 206.42 | 53.98 | 289.59 | 240.59  | 5706.96 | -5466.37 |
| 5+119.669 | 73.41 | 332.23 | 47.14 | 236.03 | 572.82  | 5942.99 | -5370.18 |
| 5+120.000 | 73.56 | 24.34  | 46.69 | 15.54  | 597.16  | 5958.53 | -5361.37 |
| 5+125.000 | 73.43 | 367.48 | 39.11 | 214.51 | 964.64  | 6173.05 | -5208.41 |
| 5+130.000 | 70.18 | 359.02 | 32.96 | 180.19 | 1323.65 | 6353.23 | -5029.58 |
| 5+135.000 | 65.65 | 339.58 | 29.79 | 156.89 | 1663.23 | 6510.12 | -4846.89 |
| 5+140.000 | 60.08 | 314.33 | 27.30 | 142.74 | 1977.56 | 6652.86 | -4675.30 |
| 5+145.000 | 52.82 | 282.24 | 25.00 | 130.75 | 2259.81 | 6783.61 | -4523.81 |
| 5+150.000 | 43.85 | 241.68 | 23.30 | 120.74 | 2501.49 | 6904.36 | -4402.87 |
| 5+155.000 | 34.85 | 196.75 | 21.17 | 111.17 | 2698.24 | 7015.53 | -4317.29 |
| 5+160.000 | 28.18 | 157.57 | 17.82 | 97.46  | 2855.81 | 7112.99 | -4257.18 |
| 5+165.000 | 25.56 | 134.35 | 16.14 | 84.90  | 2990.16 | 7197.89 | -4207.73 |
| 5+170.000 | 25.99 | 128.89 | 15.91 | 80.13  | 3119.05 | 7278.02 | -4158.97 |
| 5+175.000 | 20.71 | 116.76 | 16.84 | 81.88  | 3235.81 | 7359.89 | -4124.09 |
| 5+177.000 | 17.60 | 38.31  | 17.58 | 34.42  | 3274.12 | 7394.32 | -4120.20 |
| 5+180.000 | 12.60 | 45.29  | 19.25 | 55.25  | 3319.41 | 7449.56 | -4130.15 |
| 5+185.000 | 3.81  | 41.02  | 24.22 | 108.67 | 3360.44 | 7558.23 | -4197.80 |
| 5+190.000 | 0.00  | 9.53   | 38.67 | 157.24 | 3369.97 | 7715.47 | -4345.50 |
| 5+193.000 | 0.00  | 0.00   | 51.53 | 135.30 | 3369.97 | 7850.77 | -4480.80 |
| 5+195.000 | 0.00  | 0.00   | 14.27 | 65.80  | 3369.97 | 7916.57 | -4546.60 |



|           |      |      |      |       |         |         |          |
|-----------|------|------|------|-------|---------|---------|----------|
| 5+200.000 | 0.00 | 0.00 | 0.08 | 35.88 | 3369.97 | 7952.45 | -4582.48 |
| 5+205.000 | 0.00 | 0.00 | 0.00 | 0.20  | 3369.97 | 7952.65 | -4582.68 |

