

Bougie Creek Bridge

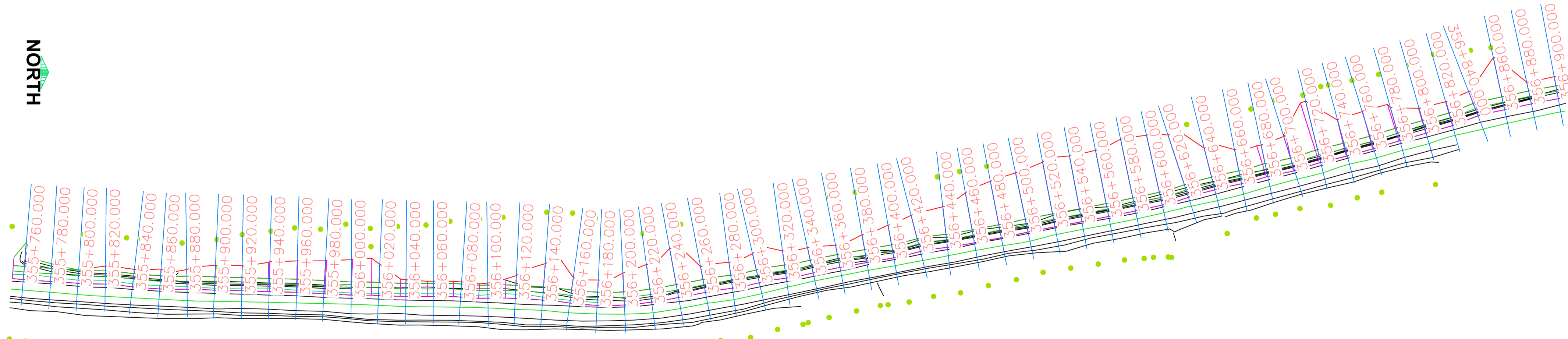
NORTH

NORTH

North side of bridge  
East side of highway

South side of bridge  
West side of highway

Scale 1:2,000



NORTH

NORTH

Scale 1:2,000

Bougie Creek Bridge

Public Works and Government Services Canada  
Travaux Publics et Services gouvernementaux Canada  
219-800 Burrard Street  
Vancouver, BC, V6Z 0B8  
604-775-7079



Location Map BCGS 94J.007

project **PUBLIC WORKS AND GOVERNMENT SERVICES CANADA ALASKA HIGHWAY**

drawing **TOPOGRAPHIC SURVEY PLAN AND SECTIONS OF BOUGIE CREEK, ALASKA HIGHWAY KM 355+750 TO KM 358+200**

The intended plot size of this plan is 864mm in width by 560mm in height (D size) when plotted at a scale of 1:500. Distances are in metres and decimals thereof.

Grid bearings are derived from differential dual frequency GNSS observations and are referred to the central meridian of UTM zone 10 (123° west longitude).

The UTM coordinates and elevations, are derived from dual frequency GNSS observations to Alaska Highway Secondary Control Monument 355-2 and 360-2.

This plan shows horizontal ground-level distances, unless otherwise specified. Coordinates have been scaled to ground. To compute grid distances, multiply ground-level distances by the average combined factor of 0.9995158. The average combined factor has been determined based on an ellipsoidal elevation of 576.451m of PWGSC Control Monument 355-2.

Elevations are Geodetic and derived from dual frequency carrier phase GNSS observations processed using PWGSC Control Monuments and referred to the Canadian Geodetic Vertical Datum 1928 (CGVD28).

355-2  
Northing (UTM): 6529754.406  
Easting (UTM): 516198.026  
Elevation (CGVD28 Ht. 2.0): 588.551

Date of Survey: Sept. 23 & 24, 2016  
SF#3344.03, FB#045, Pg 54 & FB#046, Pg 51-54

drawn S. M. KAVANAGH dessine

date 2016-11-02

approved I. R. ROBERTSON approuve

date 2016-11-04

project number R.017173.815 no. du projet

drawing no. SK5571.01 no. du dessin

EDRM no. 309086

survey file no. SF3444.03

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**Legend:**

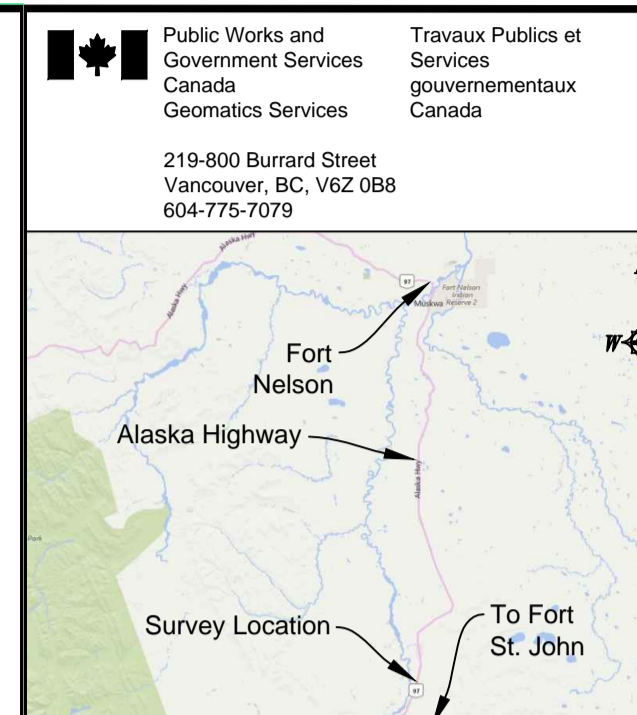
● DENOTES EDGE OF TREES

North Section

| Total Volume Table |           |          |             |            |                     |                    |
|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 357+280.00         | 0.32      | 4.11     | 0.00        | 0.00       | 0.00                | 0.00               |
| 357+300.00         | 0.00      | 24.58    | 3.64        | 363.90     | 3.64                | 363.90             |
| 357+320.00         | 0.59      | 52.63    | 5.84        | 740.92     | 9.48                | 1104.81            |
| 357+340.00         | 6.86      | 52.28    | 68.90       | 1007.29    | 78.38               | 2112.10            |
| 357+360.00         | 23.00     | 38.20    | 263.79      | 860.93     | 342.17              | 2973.04            |
| 357+380.00         | 60.33     | 35.75    | 707.19      | 698.90     | 1049.36             | 3671.94            |
| 357+400.00         | 71.77     | 41.53    | 1218.06     | 751.52     | 2267.42             | 4423.46            |
| 357+420.00         | 40.83     | 56.51    | 1063.10     | 959.64     | 3330.52             | 5383.10            |
| 357+440.00         | 0.42      | 96.59    | 380.01      | 1473.29    | 3710.52             | 6856.40            |
| 357+460.00         | 0.07      | 133.74   | 4.91        | 2222.54    | 3715.43             | 9078.94            |
| 357+480.00         | 0.72      | 127.65   | 7.90        | 2524.59    | 3723.33             | 11603.53           |
| 357+500.00         | 0.67      | 119.33   | 13.87       | 2439.34    | 3737.20             | 14042.87           |
| 357+520.00         | 18.80     | 83.29    | 173.73      | 1923.03    | 3910.92             | 15965.90           |
| 357+540.00         | 0.41      | 106.52   | 193.21      | 1903.24    | 4104.13             | 17869.14           |
| 357+560.00         | 0.00      | 94.30    | 4.10        | 1939.19    | 4108.24             | 19808.34           |
| 357+580.00         | 5.00      | 80.08    | 50.02       | 1743.86    | 4158.26             | 21552.19           |
| 357+600.00         | 0.00      | 85.54    | 49.71       | 1651.57    | 4207.97             | 23203.76           |
| 357+620.00         | 0.00      | 121.39   | 0.01        | 2093.35    | 4207.98             | 25297.12           |
| 357+640.00         | 0.00      | 86.53    | 0.02        | 2138.19    | 4208.00             | 27435.31           |
| 357+660.00         | 10.60     | 40.45    | 100.46      | 1232.59    | 4308.46             | 28667.90           |

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|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 357+680.00         | 25.48     | 16.13    | 343.53      | 553.08     | 4651.99             | 29220.99           |
| 357+700.00         | 30.41     | 2.53     | 609.77      | 194.04     | 5261.76             | 29415.03           |
| 357+720.00         | 21.71     | 0.00     | 501.37      | 24.92      | 5763.13             | 29439.95           |
| 357+740.00         | 2.58      | 0.82     | 236.01      | 8.02       | 5999.13             | 29447.97           |
| 357+760.00         | 1.35      | 3.33     | 41.03       | 43.26      | 6040.16             | 29491.24           |
| 357+780.00         | 1.48      | 6.98     | 28.52       | 103.72     | 6068.68             | 29594.95           |
| 357+800.00         | 0.11      | 19.14    | 16.11       | 265.32     | 6084.79             | 29860.27           |
| 357+820.00         | 1.54      | 26.42    | 15.96       | 448.02     | 6100.75             | 30308.29           |
| 357+840.00         | 6.02      | 38.82    | 78.30       | 663.80     | 6179.05             | 30972.09           |
| 357+860.00         | 5.89      | 53.90    | 115.91      | 916.01     | 6294.96             | 31888.11           |
| 357+880.00         | 0.21      | 84.45    | 68.21       | 1474.91    | 6363.16             | 33363.01           |
| 357+900.00         | 0.73      | 87.08    | 9.48        | 1733.54    | 6372.65             | 35096.56           |
| 357+920.00         | 0.60      | 78.14    | 13.37       | 1676.10    | 6386.02             | 36772.66           |
| 357+940.00         | 3.56      | 49.33    | 42.90       | 1307.10    | 6428.92             | 38079.76           |
| 357+960.00         | 1.12      | 52.80    | 45.42       | 1002.47    | 6474.34             | 39082.23           |
| 357+980.00         | 0.00      | 66.37    | 11.42       | 1203.78    | 6485.75             | 40286.00           |
| 358+000.00         | 0.00      | 74.28    | 0.00        | 1445.91    | 6485.75             | 41731.91           |
| 358+020.00         | 0.00      | 77.87    | 0.00        | 1570.34    | 6485.75             | 43302.25           |
| 358+040.00         | 0.15      | 76.73    | 1.49        | 1605.05    | 6487.24             | 44907.30           |
| 358+060.00         | 0.00      | 64.72    | 1.48        | 1454.59    | 6488.72             | 46361.89           |

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|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 358+080.00         | 0.08      | 43.66    | 0.82        | 1134.23    | 6489.55             | 47496.11           |
| 358+100.00         | 0.00      | 24.56    | 0.82        | 677.20     | 6490.37             | 48173.31           |
| 358+120.00         | 0.00      | 29.99    | 0.00        | 545.38     | 6490.37             | 48718.70           |
| 358+140.00         | 0.00      | 23.57    | 0.00        | 527.90     | 6490.37             | 49246.60           |
| 358+160.00         | 2.37      | 10.68    | 24.56       | 350.16     | 6514.93             | 49596.76           |
| 358+180.00         | 0.00      | 19.76    | 24.11       | 307.37     | 6539.04             | 49904.13           |
| 358+200.00         | 0.00      | 26.20    | 0.00        | 458.42     | 6539.04             | 50362.54           |



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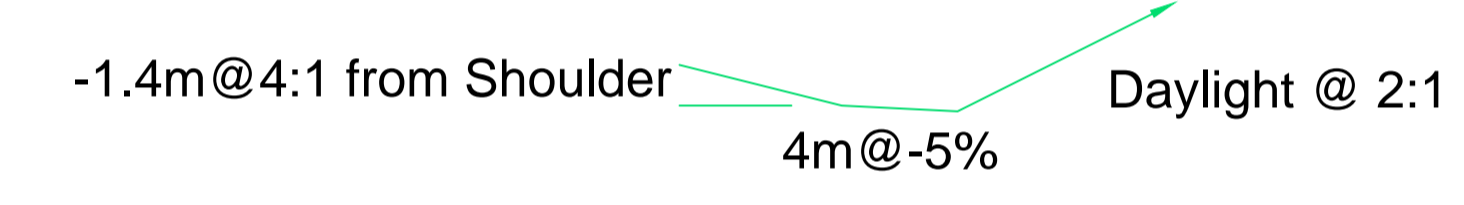
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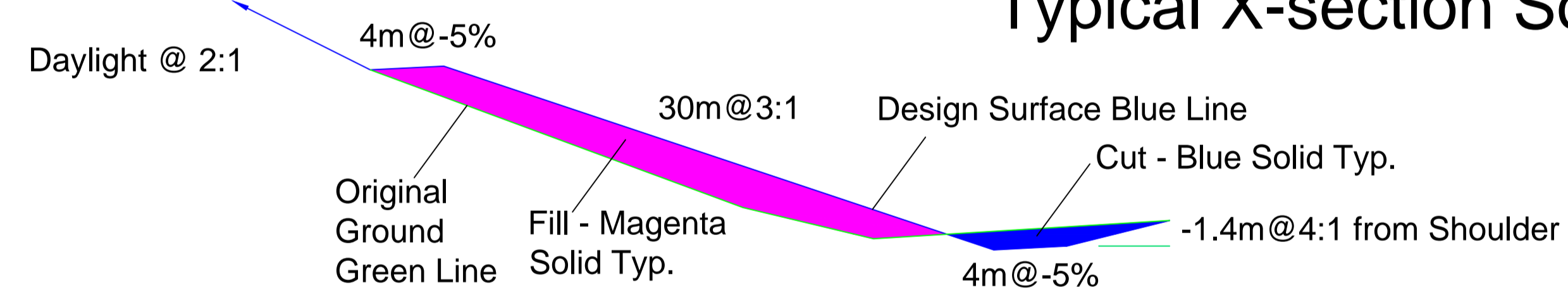
Legend:

⊕ DENOTES EDGE OF CHIP SEAL

Typical X-section North



Typical X-section South



South Section

| Total Volume Table |           |          |             |            |                     |                    |
|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 355+760.00         | 16.24     | 0.58     | 0.00        | 0.00       | 0.00                | 0.00               |
| 355+780.00         | 5.92      | 0.00     | 218.67      | 5.78       | 218.67              | 5.78               |
| 355+800.00         | 3.77      | 0.03     | 96.94       | 0.30       | 315.61              | 6.08               |
| 355+820.00         | 1.12      | 2.60     | 48.00       | 25.57      | 363.61              | 31.64              |
| 355+840.00         | 0.38      | 3.12     | 15.46       | 59.93      | 379.07              | 91.58              |
| 355+860.00         | 0.13      | 5.92     | 5.02        | 88.51      | 384.09              | 180.08             |
| 355+880.00         | 0.25      | 12.74    | 3.75        | 179.10     | 387.84              | 359.19             |
| 355+900.00         | 1.28      | 19.65    | 15.51       | 333.83     | 403.35              | 693.01             |
| 355+920.00         | 0.24      | 19.81    | 15.15       | 388.98     | 418.50              | 1082.00            |
| 355+940.00         | 0.01      | 25.46    | 2.46        | 455.00     | 420.97              | 1537.00            |
| 355+960.00         | 0.00      | 36.57    | 0.06        | 620.34     | 421.03              | 2157.34            |
| 355+980.00         | 0.00      | 45.32    | 0.00        | 832.86     | 421.03              | 2990.20            |
| 356+000.00         | 0.00      | 57.03    | 0.00        | 989.77     | 421.03              | 3979.97            |
| 356+020.00         | 0.00      | 24.29    | 0.00        | 833.15     | 421.03              | 4813.11            |
| 356+040.00         | 0.28      | 3.97     | 2.77        | 276.98     | 423.79              | 5090.09            |
| 356+060.00         | 2.00      | 1.78     | 22.79       | 57.36      | 446.59              | 5147.45            |
| 356+080.00         | 1.48      | 1.62     | 35.41       | 34.96      | 482.00              | 5182.41            |
| 356+100.00         | 1.28      | 1.70     | 26.96       | 32.25      | 508.96              | 5214.66            |
| 356+120.00         | 1.01      | 9.40     | 23.31       | 114.41     | 532.27              | 5329.06            |
| 356+140.00         | 0.02      | 38.59    | 10.42       | 487.89     | 542.69              | 5816.96            |

| Total Volume Table |           |          |             |            |                     |                    |
|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 356+160.00         | 0.00      | 34.57    | 0.23        | 760.21     | 542.92              | 6577.17            |
| 356+180.00         | 0.00      | 36.38    | 0.00        | 677.38     | 542.92              | 7254.55            |
| 356+200.00         | 0.00      | 46.40    | 0.00        | 787.35     | 542.92              | 8041.91            |
| 356+220.00         | 0.00      | 60.23    | 0.00        | 1013.90    | 542.92              | 9055.81            |
| 356+240.00         | 0.26      | 73.62    | 2.62        | 1291.26    | 545.53              | 10347.07           |
| 356+260.00         | 0.19      | 25.81    | 4.52        | 988.31     | 550.06              | 11335.38           |
| 356+280.00         | 0.00      | 27.22    | 1.91        | 545.66     | 551.97              | 11881.04           |
| 356+300.00         | 0.00      | 36.00    | 0.00        | 599.40     | 551.97              | 12480.43           |
| 356+320.00         | 0.02      | 29.17    | 0.21        | 685.15     | 552.17              | 13165.58           |
| 356+340.00         | 0.00      | 25.71    | 0.20        | 524.70     | 552.37              | 13690.28           |
| 356+360.00         | 0.00      | 23.57    | 0.01        | 499.34     | 552.38              | 14189.62           |
| 356+380.00         | 1.24      | 26.32    | 12.42       | 504.75     | 564.80              | 14694.37           |
| 356+400.00         | 0.00      | 36.77    | 12.38       | 630.18     | 577.18              | 15324.54           |
| 356+420.00         | 0.00      | 60.38    | 0.00        | 924.38     | 577.18              | 16248.92           |
| 356+440.00         | 0.00      | 68.85    | 0.00        | 1418.57    | 577.18              | 17667.49           |
| 356+460.00         | 0.00      | 85.81    | 0.00        | 1466.42    | 577.18              | 19133.91           |
| 356+480.00         | 0.00      | 121.00   | 0.00        | 2043.41    | 577.18              | 21177.31           |
| 356+500.00         | 0.00      | 143.88   | 0.00        | 2600.01    | 577.18              | 23777.32           |
| 356+520.00         | 0.00      | 127.50   | 0.00        | 2777.86    | 577.18              | 26555.18           |
| 356+540.00         | 0.00      | 84.07    | 0.00        | 2124.26    | 577.18              | 28679.45           |

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|--------------------|-----------|----------|-------------|------------|---------------------|--------------------|
| Station            | Fill Area | Cut Area | Fill Volume | Cut Volume | Cumulative Fill Vol | Cumulative Cut Vol |
| 356+560.00         | 0.12      | 70.71    | 1.18        | 1526.62    | 578.36              | 30206.06           |
| 356+580.00         | 0.00      | 85.22    | 1.18        | 1542.22    | 579.54              | 31748.28           |
| 356+600.00         | 0.00      | 117.52   | 0.00        | 1983.01    | 579.54              | 33731.29           |
| 356+620.00         | 0.00      | 120.46   | 0.03        | 2105.03    | 579.56              | 35836.32           |
| 356+640.00         | 0.03      | 81.70    | 0.31        | 2151.88    | 579.87              | 37988.20           |
| 356+660.00         | 0.01      | 61.89    | 0.43        | 1486.31    | 580.30              | 39474.51           |
| 356+680.00         | 0.27      | 63.45    | 2.80        | 1245.98    | 583.11              | 40720.49           |
| 356+700.00         | 0.11      | 70.32    | 3.75        | 1254.25    | 586.86              | 41974.75           |
| 356+720.00         | 0.24      | 132.10   | 3.61        | 2152.41    | 590.47              | 44127.16           |
| 356+740.00         | 0.00      | 61.81    | 2.43        | 1897.80    | 592.91              | 46024.95           |
| 356+760.00         | 0.03      | 61.37    | 0.26        | 1202.73    | 593.17              | 47227.68           |
| 356+780.00         | 0.05      | 51.79    | 0.74        | 1148.36    | 593.91              | 48376.04           |
| 356+800.00         | 0.00      | 38.57    | 0.52        | 902.55     | 594.43              | 49278.59           |
| 356+820.00         | 0.01      | 39.26    | 0.16        | 778.28     | 594.59              | 50056.88           |
| 356+840.00         | 0.12      | 49.31    | 1.33        | 845.78     | 595.92              | 50902.66           |
| 356+860.00         | 0.04      | 62.53    | 1.67        | 1247.79    | 597.58              | 52150.45           |
| 356+880.00         | 0.06      | 21.97    | 1.02        | 845.07     | 598.60              | 52995.52           |
| 356+900.00         | 0.00      | 21.89    | 0.62        | 444.44     | 599.23              | 53439.96           |



**SOUTH SECTION**

Public Works and Government Services Canada  
 Travaux Publics et Services gouvernementaux Canada  
 Geomatics Services  
 219-800 Burrard Street  
 Vancouver, BC, V6Z 0B8  
 604-775-7079

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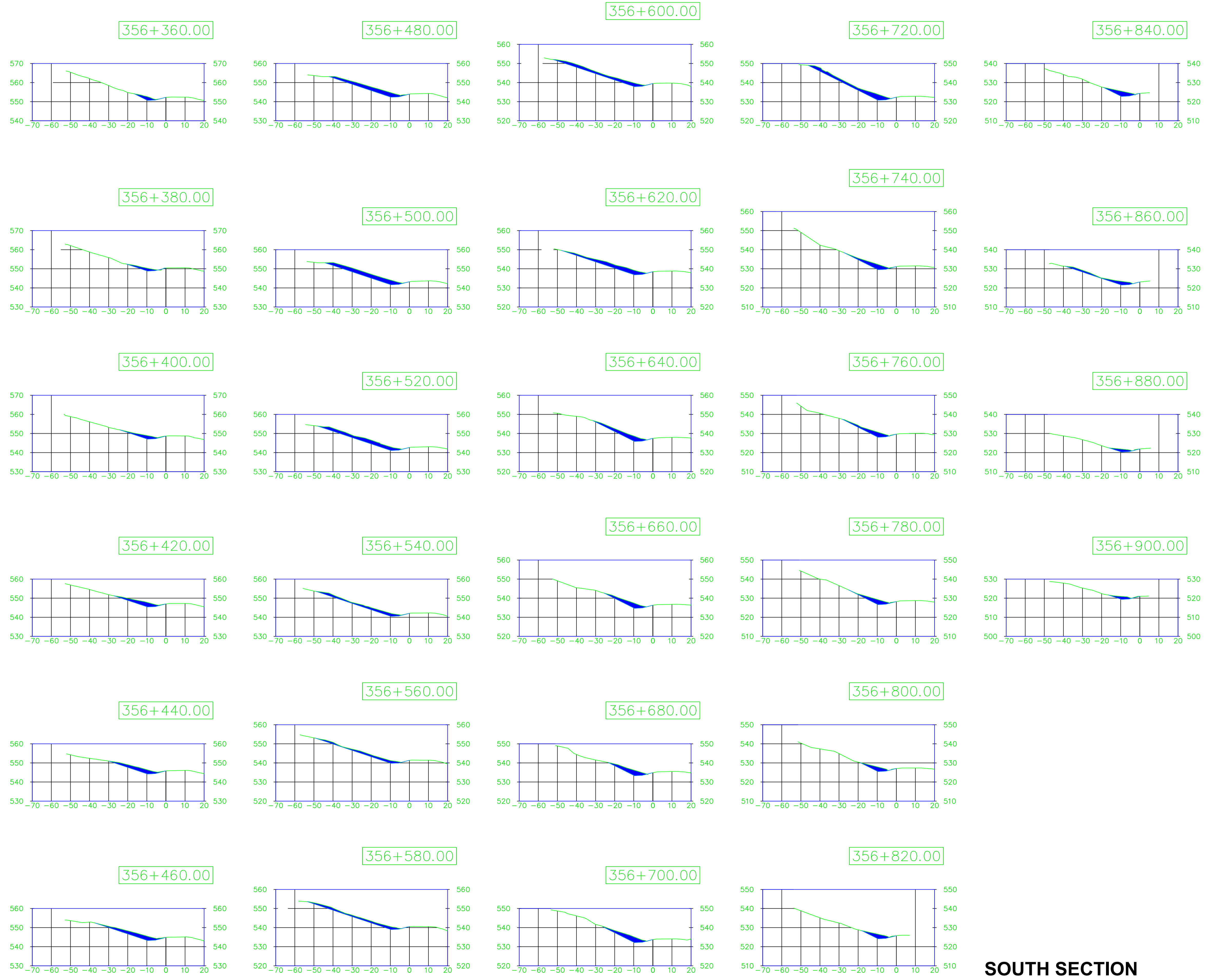
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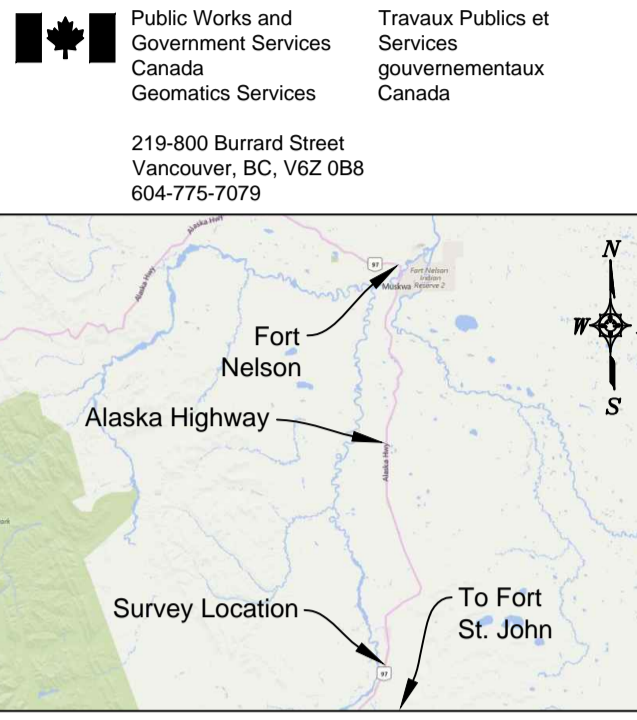
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**Legend:**  
 DENOTES EDGE OF CHIP SEAL



**SOUTH SECTION**



Location Map BCGS 94J.007  
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**Legend:**  
 DENOTES EDGE OF CHIP SEAL

Public Works and Government Services Canada  
Travaux Publics et Services gouvernementaux Canada

219-800 Burrard Street  
Vancouver, BC, V6Z 0B8  
604-775-7079

Location Map BCGS 94J.007

project **PUBLIC WORKS AND GOVERNMENT SERVICES CANADA ALASKA HIGHWAY**

drawing **TOPOGRAPHIC SURVEY PLAN AND SECTIONS OF BOUGIE CREEK, ALASKA HIGHWAY KM 355+750 TO KM 358+200**

The intended plot size of this plan is 864mm in width by 560mm in height (D size) when plotted at a scale of 1:500. Distances are in metres and decimals thereof.

Grid bearings are derived from differential dual frequency GNSS observations and are referred to the central meridian of UTM zone 10 (123° west longitude).

The UTM coordinates and elevations, are derived from dual frequency GNSS observations to Alaska Highway Secondary Control Monument 355-2 and 360-2.

This plan shows horizontal ground-level distances, unless otherwise specified. Coordinates have been scaled to ground. To compute grid distances, multiply ground-level distances by the average combined factor of 0.9995158. The average combined factor has been determined based on an ellipsoidal elevation of 576.451m of PWGSC Control Monument 355-2.

Elevations are Geodetic and derived from dual frequency carrier phase GNSS observations processed using PWGSC Control Monuments and referred to the Canadian Geodetic Vertical Datum 1928 (CGVD28).

355-2  
Northing (UTM): 6529754.406  
Easting (UTM): 516198.026  
Elevation (CGVD28 Ht. 2.0): 588.551

Date of Survey: Sept. 23 & 24, 2016  
SF#3344.03, FB#045, Pg 54 & FB#046, Pg 51-54

drawn S. M. KAVANAGH dessine

date 2016-11-02

approved I. R. ROBERTSON approve

date 2016-11-04

project number **R.017173.815** no. du projet

drawing no. **SK5571.01** no. du dessin

EDRM no. **309086**

survey file no. **SF3444.03**

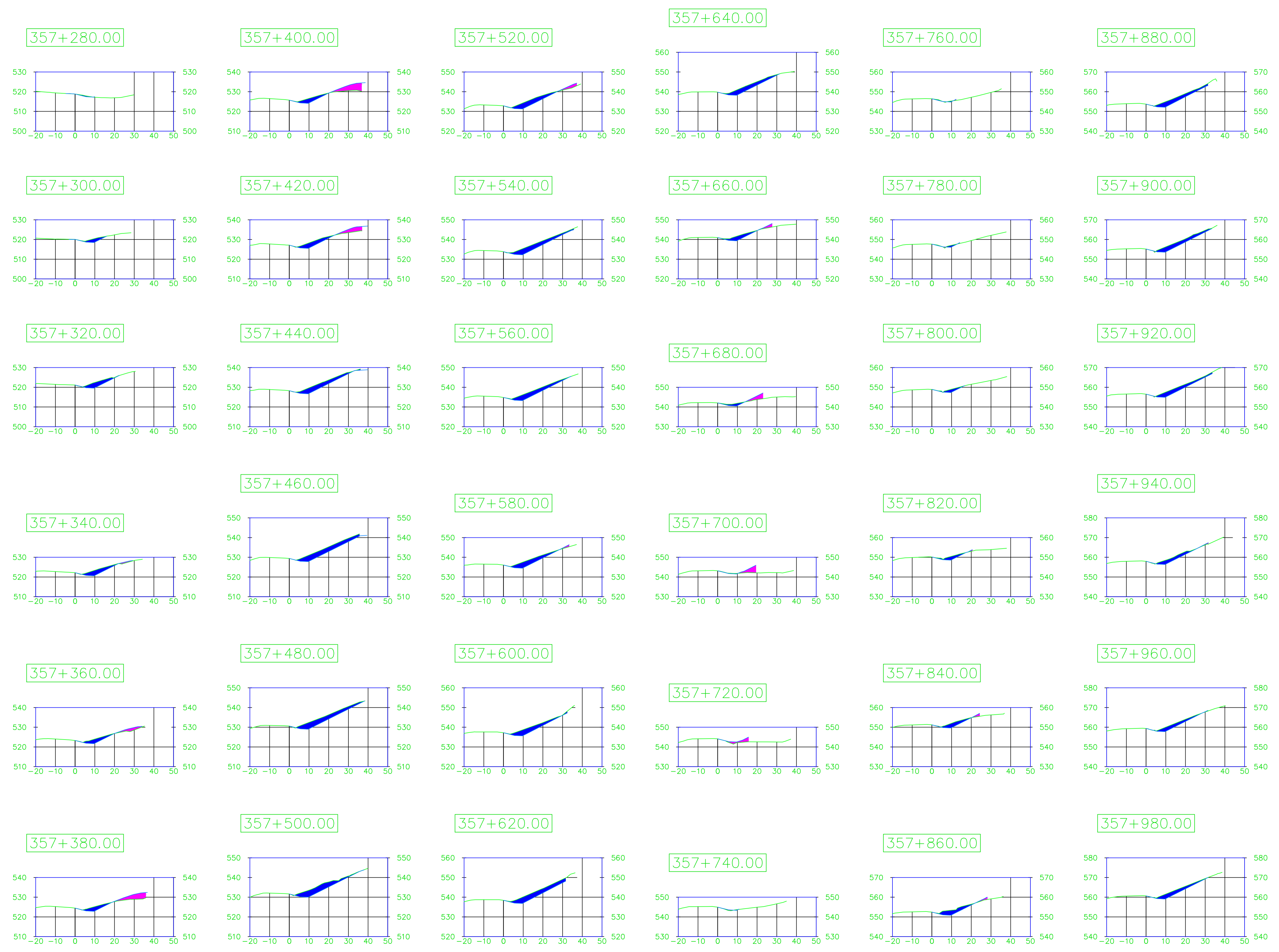
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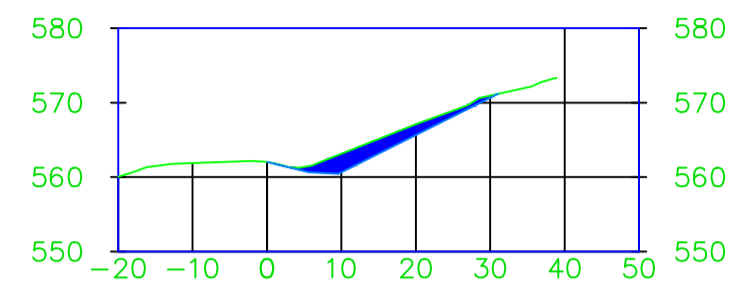
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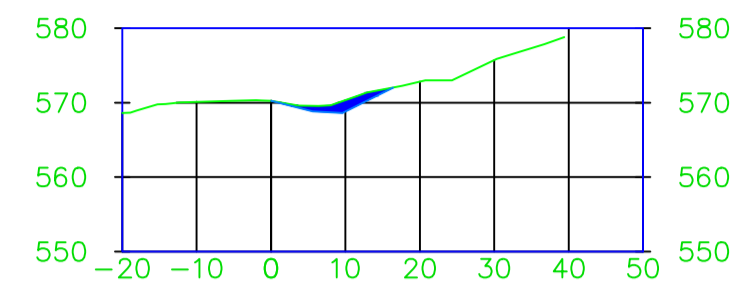


**NORTH SECTION**

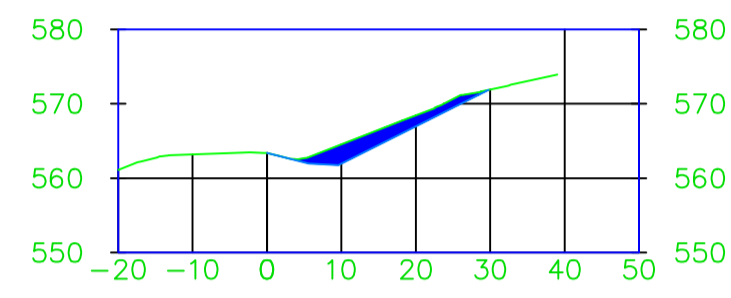
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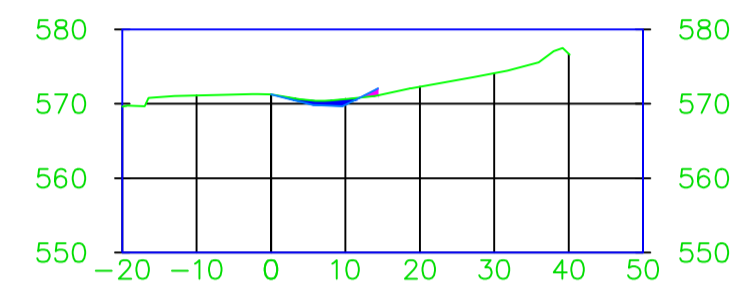
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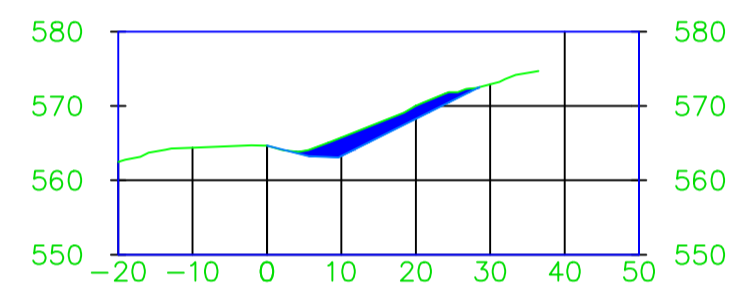
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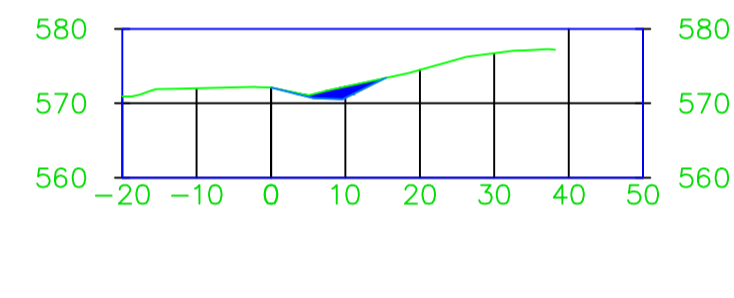
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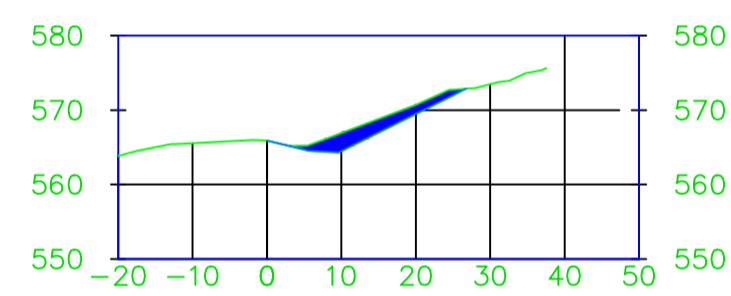
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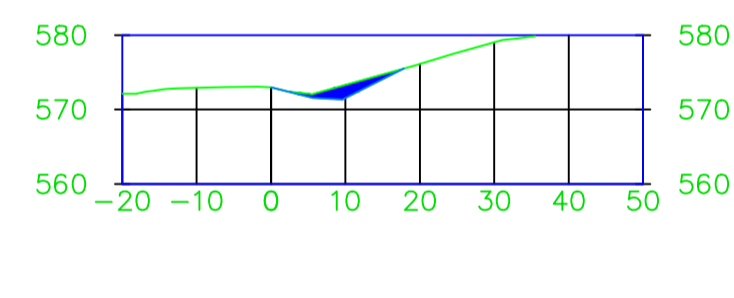
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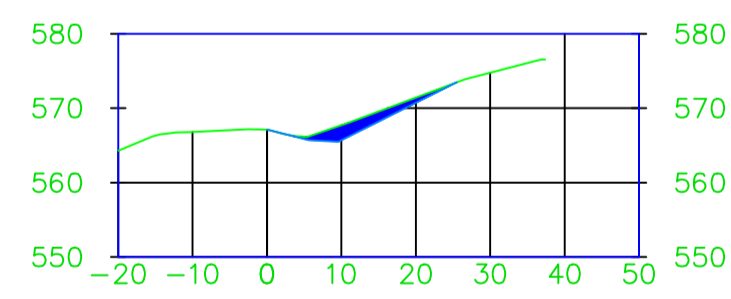
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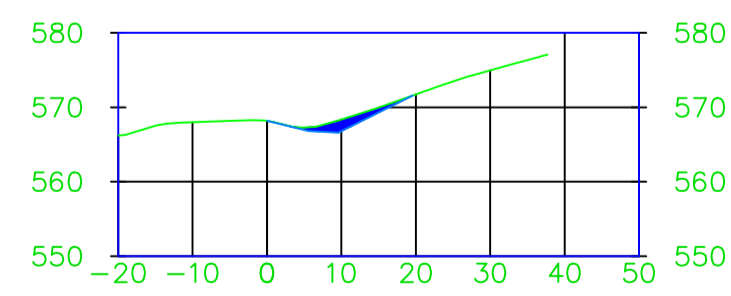
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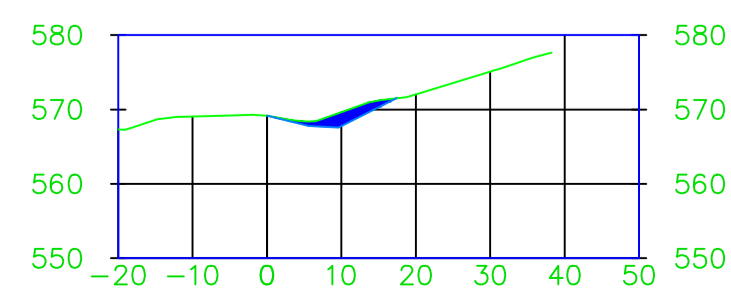
358+080.00



358+100.00



358+120.00



NORTH SECTION

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Location Map BCGS 94J.007

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