

| Element              | Type   | Station   | Elevation | Length | Entrance Grade | Exit Grade | K   | Middle Ordinate | SSD/HSD |
|----------------------|--------|-----------|-----------|--------|----------------|------------|-----|-----------------|---------|
| Symmetrical Parabola | PVC    | 339+45.00 | 864.24    | 190    | -0.47%         | 1.43%      | 100 | 0.45            |         |
|                      | POVC   | 339+50.00 | 864.22    |        |                |            |     |                 |         |
|                      | VLOW   | 339+92.16 | 864.13    |        |                |            |     |                 |         |
|                      | POVC   | 340+00.00 | 864.13    |        |                |            |     |                 |         |
|                      | PVI    | 340+40.00 | 863.79    |        |                |            |     |                 |         |
|                      | POVC   | 340+50.00 | 864.30    |        |                |            |     |                 |         |
|                      | POVC   | 341+00.00 | 864.71    |        |                |            |     |                 |         |
| Linear               | PVT    | 341+35.00 | 865.15    | 183    | 1.43%          |            |     |                 |         |
|                      | PVT    | 341+35.00 | 865.15    |        |                |            |     |                 |         |
|                      | POVT   | 341+50.00 | 865.37    |        |                |            |     |                 |         |
|                      | POVT   | 342+00.00 | 866.08    |        |                |            |     |                 |         |
|                      | POVT   | 342+50.00 | 866.80    |        |                |            |     |                 |         |
|                      | POVT   | 343+00.00 | 867.52    |        |                |            |     |                 |         |
|                      | PVC    | 343+18.00 | 867.78    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC    | 343+18.00 | 867.78    | 144    | 1.43%          | -1.88%     | 43  | -0.60           | 398     |
|                      | POVC   | 343+50.00 | 868.12    |        |                |            |     |                 |         |
|                      | VHIGH  | 343+80.29 | 868.22    |        |                |            |     |                 |         |
|                      | PVI    | 343+90.00 | 868.81    |        |                |            |     |                 |         |
|                      | POVC   | 344+00.00 | 868.18    |        |                |            |     |                 |         |
|                      | POVC   | 344+50.00 | 867.66    |        |                |            |     |                 |         |
|                      | PVCC   | 344+62.00 | 867.46    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVCC   | 344+62.00 | 867.46    | 504    | -1.88%         | -6.83%     | 102 | -3.12           | 469     |
|                      | POVC   | 345+00.00 | 866.67    |        |                |            |     |                 |         |
|                      | POVC   | 345+50.00 | 865.42    |        |                |            |     |                 |         |
|                      | POVC   | 346+00.00 | 863.93    |        |                |            |     |                 |         |
|                      | POVC   | 346+50.00 | 862.19    |        |                |            |     |                 |         |
|                      | POVC   | 347+00.00 | 860.20    |        |                |            |     |                 |         |
|                      | PVI    | 347+14.00 | 862.72    |        |                |            |     |                 |         |
|                      | POVC   | 347+50.00 | 857.97    |        |                |            |     |                 |         |
|                      | POVC   | 348+00.00 | 855.49    |        |                |            |     |                 |         |
|                      | POVC   | 348+50.00 | 852.77    |        |                |            |     |                 |         |
|                      | POVC   | 349+00.00 | 849.81    |        |                |            |     |                 |         |
|                      | POVC   | 349+50.00 | 846.59    |        |                |            |     |                 |         |
|                      | PVT    | 349+66.00 | 845.51    |        |                |            |     |                 |         |
|                      | Linear | PVT       | 349+66.00 |        |                |            |     |                 |         |
| POVT                 |        | 350+00.00 | 843.19    |        |                |            |     |                 |         |
| POVT                 |        | 350+50.00 | 839.78    |        |                |            |     |                 |         |
| PVC                  |        | 350+70.00 | 838.42    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC    | 350+70.00 | 838.42    | 380    | -6.83%         | -1.19%     | 67  | 2.68            |         |
|                      | POVC   | 351+00.00 | 836.43    |        |                |            |     |                 |         |
|                      | POVC   | 351+50.00 | 833.43    |        |                |            |     |                 |         |
|                      | POVC   | 352+00.00 | 830.80    |        |                |            |     |                 |         |
|                      | POVC   | 352+50.00 | 828.53    |        |                |            |     |                 |         |
|                      | PVI    | 352+60.00 | 825.45    |        |                |            |     |                 |         |
|                      | POVC   | 353+00.00 | 826.64    |        |                |            |     |                 |         |
|                      | POVC   | 353+50.00 | 825.12    |        |                |            |     |                 |         |
|                      | POVC   | 354+00.00 | 823.97    |        |                |            |     |                 |         |
|                      | PVT    | 354+50.00 | 823.19    |        |                |            |     |                 |         |
|                      | PVT    | 354+50.00 | 823.19    |        |                |            |     |                 |         |
|                      | POVT   | 355+00.00 | 822.60    |        |                |            |     |                 |         |
|                      | Linear | POVT      | 355+50.00 |        |                |            |     |                 |         |
| POVT                 |        | 356+00.00 | 821.41    |        |                |            |     |                 |         |
| POVT                 |        | 356+50.00 | 820.82    |        |                |            |     |                 |         |
| POVT                 |        | 357+00.00 | 820.22    |        |                |            |     |                 |         |
| POVT                 |        | 357+50.00 | 819.63    |        |                |            |     |                 |         |
| PVC                  |        | 357+75.00 | 819.34    |        |                |            |     |                 |         |
| PVC                  |        | 357+75.00 | 819.34    |        |                |            |     |                 |         |
| Symmetrical Parabola | POVC   | 358+00.00 | 819.03    | 230    | -1.19%         | -1.69%     | 458 | -0.14           | 2265    |
|                      | POVC   | 358+50.00 | 818.38    |        |                |            |     |                 |         |
|                      | PVI    | 358+90.00 | 817.97    |        |                |            |     |                 |         |
|                      | POVC   | 359+00.00 | 817.68    |        |                |            |     |                 |         |
|                      | POVC   | 359+50.00 | 816.92    |        |                |            |     |                 |         |
|                      | POVC   | 360+00.00 | 816.11    |        |                |            |     |                 |         |
|                      | PVT    | 360+05.00 | 816.03    |        |                |            |     |                 |         |
| Linear               | PVT    | 360+05.00 | 816.03    | 75     | -1.69%         |            |     |                 |         |
|                      | POVT   | 360+50.00 | 815.27    |        |                |            |     |                 |         |
|                      | PVC    | 360+80.00 | 814.76    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC    | 360+80.00 | 814.76    | 280    | -1.69%         | -0.75%     | 299 | 0.33            |         |
|                      | POVC   | 361+00.00 | 814.43    |        |                |            |     |                 |         |
|                      | POVC   | 361+50.00 | 813.66    |        |                |            |     |                 |         |
|                      | POVC   | 362+00.00 | 812.98    |        |                |            |     |                 |         |
|                      | PVI    | 362+20.00 | 812.40    |        |                |            |     |                 |         |
|                      | POVC   | 362+50.00 | 812.38    |        |                |            |     |                 |         |
|                      | POVC   | 363+00.00 | 811.86    |        |                |            |     |                 |         |
|                      | POVC   | 363+50.00 | 811.42    |        |                |            |     |                 |         |
|                      | PVT    | 363+60.00 | 811.35    |        |                |            |     |                 |         |
| Linear               | PVT    | 363+60.00 | 811.35    | 230    | -0.75%         |            |     |                 |         |
|                      | POVT   | 364+00.00 | 811.04    |        |                |            |     |                 |         |
|                      | POVT   | 364+50.00 | 810.67    |        |                |            |     |                 |         |
|                      | POVT   | 365+00.00 | 810.29    |        |                |            |     |                 |         |
|                      | POVT   | 365+50.00 | 809.92    |        |                |            |     |                 |         |
|                      | PVC    | 365+90.00 | 809.62    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC    | 365+90.00 | 809.62    | 100    | -0.75%         | -1.22%     | 214 | -0.06           | 2363    |
|                      | POVC   | 366+00.00 | 809.54    |        |                |            |     |                 |         |
|                      | PVI    | 366+40.00 | 809.24    |        |                |            |     |                 |         |
|                      | POVC   | 366+50.00 | 809.08    |        |                |            |     |                 |         |
|                      | PVT    | 366+90.00 | 808.63    |        |                |            |     |                 |         |

| Element              | Type                 | Station   | Elevation | Length | Entrance Grade | Exit Grade | K   | Middle Ordinate | SSD/HSD |
|----------------------|----------------------|-----------|-----------|--------|----------------|------------|-----|-----------------|---------|
| Linear               | PVT                  | 366+90.00 | 808.63    | 670    | -1.22%         |            |     |                 |         |
|                      | POVT                 | 367+00.00 | 808.51    |        |                |            |     |                 |         |
|                      | POVT                 | 367+50.00 | 807.90    |        |                |            |     |                 |         |
|                      | POVT                 | 368+00.00 | 807.29    |        |                |            |     |                 |         |
|                      | POVT                 | 368+50.00 | 806.68    |        |                |            |     |                 |         |
|                      | POVT                 | 369+00.00 | 806.07    |        |                |            |     |                 |         |
|                      | POVT                 | 369+50.00 | 805.46    |        |                |            |     |                 |         |
|                      | POVT                 | 370+00.00 | 804.85    |        |                |            |     |                 |         |
|                      | POVT                 | 370+50.00 | 804.24    |        |                |            |     |                 |         |
|                      | POVT                 | 371+00.00 | 803.63    |        |                |            |     |                 |         |
|                      | POVT                 | 371+50.00 | 803.03    |        |                |            |     |                 |         |
|                      | POVT                 | 372+00.00 | 802.42    |        |                |            |     |                 |         |
|                      | POVT                 | 372+50.00 | 801.81    |        |                |            |     |                 |         |
|                      | POVT                 | 373+00.00 | 801.20    |        |                |            |     |                 |         |
|                      | POVT                 | 373+50.00 | 800.59    |        |                |            |     |                 |         |
|                      | PVC                  | 373+60.00 | 800.47    |        |                |            |     |                 |         |
|                      | Symmetrical Parabola | PVC       | 373+60.00 |        |                |            |     |                 |         |
| POVC                 |                      | 374+00.00 | 800.07    |        |                |            |     |                 |         |
| PVI                  |                      | 374+20.00 | 799.73    |        |                |            |     |                 |         |
| POVC                 |                      | 374+50.00 | 799.84    |        |                |            |     |                 |         |
| VLOW                 |                      | 374+65.73 | 799.82    |        |                |            |     |                 |         |
| PVT                  |                      | 374+80.00 | 799.83    |        |                |            |     |                 |         |
| Linear               | PVT                  | 374+80.00 | 799.83    | 80     | 0.16%          |            |     |                 |         |
|                      | POVT                 | 375+00.00 | 799.87    |        |                |            |     |                 |         |
|                      | POVT                 | 375+50.00 | 799.95    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC                  | 375+60.00 | 799.97    | 100    | 0.16%          | -1.02%     | 84  | -0.15           | 958     |
|                      | PVC                  | 375+60.00 | 799.97    |        |                |            |     |                 |         |
|                      | VHIGH                | 375+73.84 | 799.98    |        |                |            |     |                 |         |
|                      | POVC                 | 376+00.00 | 799.94    |        |                |            |     |                 |         |
|                      | PVI                  | 376+10.00 | 800.05    |        |                |            |     |                 |         |
|                      | POVC                 | 376+50.00 | 799.63    |        |                |            |     |                 |         |
| Linear               | PVT                  | 376+60.00 | 799.54    | 115    | -1.02%         |            |     |                 |         |
|                      | POVT                 | 377+00.00 | 799.13    |        |                |            |     |                 |         |
|                      | POVT                 | 377+50.00 | 798.61    |        |                |            |     |                 |         |
|                      | PVC                  | 377+75.00 | 798.36    |        |                |            |     |                 |         |
|                      | PVC                  | 377+75.00 | 798.36    |        |                |            |     |                 |         |
| Symmetrical Parabola | POVC                 | 378+00.00 | 798.12    | 150    | -1.02%         | -0.23%     | 188 | 0.15            |         |
|                      | PVI                  | 378+50.00 | 797.59    |        |                |            |     |                 |         |
|                      | POVC                 | 379+00.00 | 797.49    |        |                |            |     |                 |         |
|                      | PVT                  | 379+25.00 | 797.42    |        |                |            |     |                 |         |
| Linear               | PVT                  | 379+25.00 | 797.42    | 400    | -0.23%         |            |     |                 |         |
|                      | POVT                 | 379+50.00 | 797.36    |        |                |            |     |                 |         |
|                      | POVT                 | 380+00.00 | 797.25    |        |                |            |     |                 |         |
|                      | POVT                 | 380+50.00 | 797.14    |        |                |            |     |                 |         |
|                      | POVT                 | 381+00.00 | 797.03    |        |                |            |     |                 |         |
|                      | POVT                 | 381+50.00 | 796.91    |        |                |            |     |                 |         |
|                      | POVT                 | 382+00.00 | 796.80    |        |                |            |     |                 |         |
|                      | POVT                 | 382+50.00 | 796.69    |        |                |            |     |                 |         |
|                      | POVT                 | 383+00.00 | 796.58    |        |                |            |     |                 |         |
|                      | PVC                  | 383+25.00 | 796.52    |        |                |            |     |                 |         |
|                      | PVC                  | 383+25.00 | 796.52    |        |                |            |     |                 |         |
| Symmetrical Parabola | POVC                 | 383+50.00 | 796.44    | 330    | -0.23%         | -2.40%     | 152 | -0.90           | 661     |
|                      | POVC                 | 384+00.00 | 796.17    |        |                |            |     |                 |         |
|                      | POVC                 | 384+50.00 | 795.72    |        |                |            |     |                 |         |
|                      | PVI                  | 384+90.00 | 796.15    |        |                |            |     |                 |         |
|                      | POVC                 | 385+00.00 | 795.12    |        |                |            |     |                 |         |
|                      | POVC                 | 385+50.00 | 794.34    |        |                |            |     |                 |         |
|                      | POVC                 | 386+00.00 | 793.41    |        |                |            |     |                 |         |
|                      | POVC                 | 386+50.00 | 792.30    |        |                |            |     |                 |         |
|                      | PVT                  | 386+55.00 | 792.18    |        |                |            |     |                 |         |
|                      | PVT                  | 386+55.00 | 792.18    |        |                |            |     |                 |         |
| Linear               | POVT                 | 387+00.00 | 791.10    | 112.5  | -2.40%         |            |     |                 |         |
|                      | POVT                 | 387+50.00 | 789.90    |        |                |            |     |                 |         |
|                      | PVC                  | 387+67.50 | 789.48    |        |                |            |     |                 |         |
| Symmetrical Parabola | PVC                  | 387+67.50 | 789.48    | 65     | -2.40%         | -1.75%     | 100 | 0.05            |         |
|                      | PVI                  | 388+00.00 | 788.70    |        |                |            |     |                 |         |
|                      | PVT                  | 388+32.50 | 788.13    |        |                |            |     |                 |         |
| Linear               | PVT                  | 388+32.50 | 788.13    | 17.5   | -1.75%         |            |     |                 |         |
|                      | PVC                  | 388+50.00 | 787.83    |        |                |            |     |                 |         |

### VERTICAL ALIGNMENT SHEET 4

PROJECT NAME: VERSHIRE-THETFORD

PROJECT NUMBER: STP 2911(I)

FILE NAME: pl0c224.dgn

PLOT DATE: 1/29/2013

PROJECT LEADER: PTS

DRAWN BY: JLS

DESIGNED BY: NLL

CHECKED BY: PTS

IPARM FILE NAME: IOC224\_I03

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