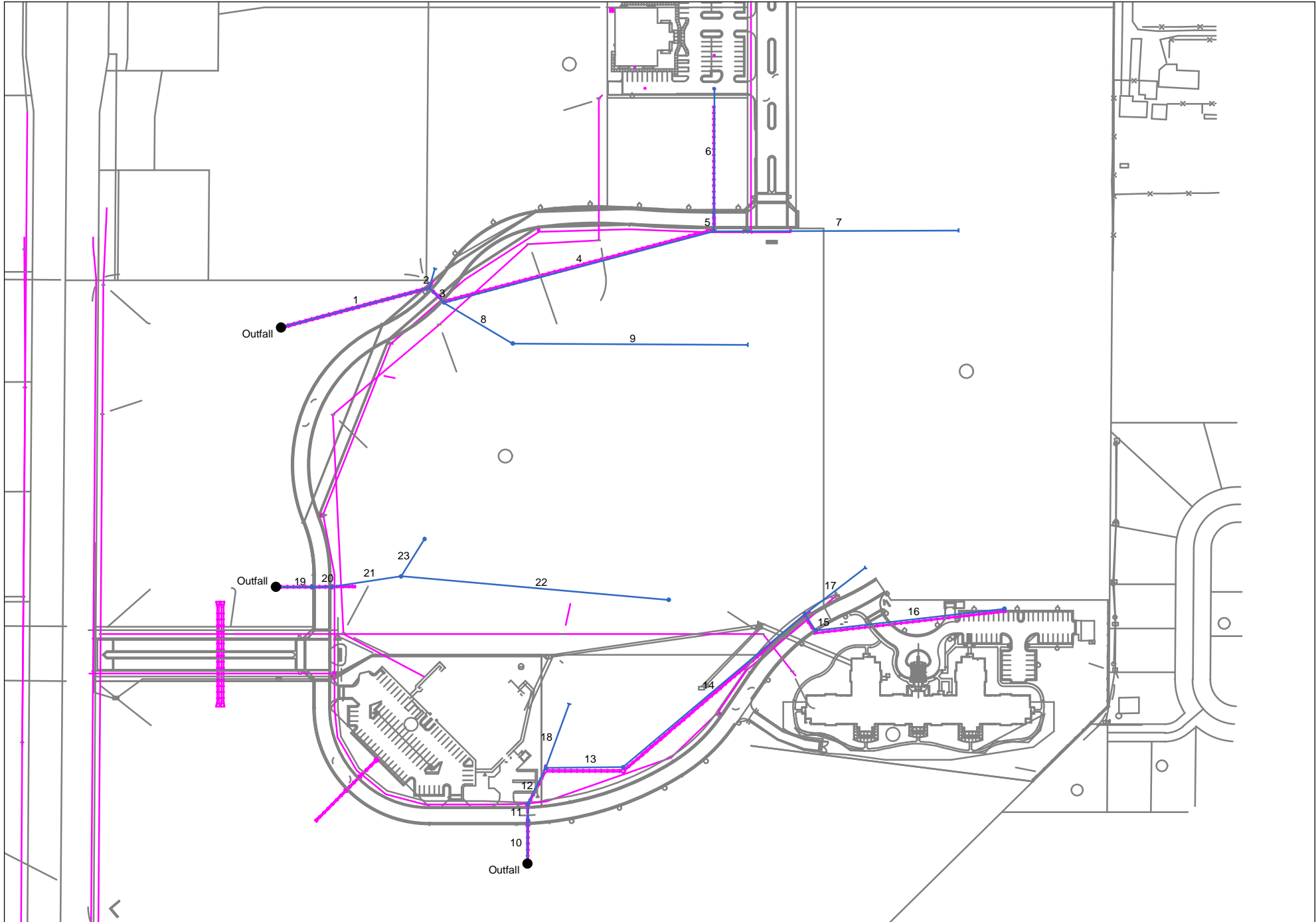


# Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



Project File: Ridge Port n 6th.stm

Number of lines: 23

Date: 12-04-2009

# Storm Sewer Summary Report

| Line No. | Line ID                 | Flow rate (cfs) | Line size (in) | Line shape | Line length (ft) | Invert EL Dn (ft) | Invert EL Up (ft) | Line slope (%) | HGL down (ft) | HGL up (ft) | Minor loss (ft) | HGL Junct (ft) | Dns line No. | Junction Type |
|----------|-------------------------|-----------------|----------------|------------|------------------|-------------------|-------------------|----------------|---------------|-------------|-----------------|----------------|--------------|---------------|
| 1        | Ex. Line 1 (North)      | 90.02           | 48             | Cir        | 279.000          | 1317.50           | 1320.64           | 1.125          | 1320.31       | 1323.45     | 1.90            | 1323.45        | End          | Curb-Horiz    |
| 2        |                         | 13.76           | 30             | Cir        | 36.124           | 1320.64           | 1320.74           | 0.277          | 1323.45*      | 1323.49*    | 0.12            | 1323.61        | 1            | OpenHeadwall  |
| 3        |                         | 75.00           | 48             | Cir        | 38.000           | 1320.64           | 1320.59           | -0.132         | 1324.64*      | 1324.74*    | 0.85            | 1325.59        | 1            | Curb-Horiz    |
| 4        |                         | 51.61           | 36             | Cir        | 507.148          | 1321.74           | 1322.35           | 0.120          | 1325.59*      | 1328.63*    | 1.25            | 1329.88        | 3            | Curb-Horiz    |
| 5        |                         | 12.60           | 30             | Cir        | 33.926           | 1322.35           | 1322.43           | 0.236          | 1329.88*      | 1329.91*    | 0.05            | 1329.96        | 4            | Curb-Horiz    |
| 6        |                         | 10.09           | 24             | Cir        | 225.000          | 1322.93           | 1323.38           | 0.200          | 1329.96*      | 1330.41*    | 0.16            | 1330.57        | 5            | DropGrate     |
| 7        | Proposed Pipe           | 37.65           | 36             | Cir        | 445.591          | 1322.43           | 1323.32           | 0.200          | 1329.88*      | 1331.30*    | 0.44            | 1331.74        | 4            | OpenHeadwall  |
| 8        | New N side of Church    | 22.16           | 30             | Cir        | 145.544          | 1322.09           | 1322.67           | 0.399          | 1325.59*      | 1326.02*    | 0.27            | 1326.28        | 3            | Curb-Horiz    |
| 9        | New N Side of Church    | 13.25           | 24             | Cir        | 426.712          | 1322.77           | 1324.48           | 0.401          | 1326.28*      | 1327.75*    | 0.28            | 1328.02        | 8            | OpenHeadwall  |
| 10       | Ex. Line 2 (South)      | 31.70           | 30             | Cir        | 78.000           | 1318.80           | 1319.50           | 0.897          | 1320.68       | 1321.38     | 0.50            | 1321.38        | End          | Curb-Horiz    |
| 11       |                         | 30.69           | 30             | Cir        | 30.906           | 1319.60           | 1319.91           | 1.003          | 1321.38       | 1321.76     | 0.72            | 1321.76        | 10           | Curb-Horiz    |
| 12       |                         | 27.97           | 30             | Cir        | 72.452           | 1320.01           | 1320.73           | 0.994          | 1321.76       | 1322.50     | 0.80            | 1322.50        | 11           | Manhole       |
| 13       |                         | 24.47           | 30             | Cir        | 140.749          | 1320.83           | 1321.08           | 0.178          | 1323.33*      | 1323.83*    | 0.27            | 1324.10        | 12           | Manhole       |
| 14       |                         | 23.56           | 30             | Cir        | 432.368          | 1321.18           | 1322.08           | 0.208          | 1324.10*      | 1325.53*    | 0.54            | 1326.06        | 13           | Curb-Horiz    |
| 15       |                         | 10.41           | 18             | Cir        | 35.944           | 1323.08           | 1323.45           | 1.029          | 1326.06*      | 1326.42*    | 0.74            | 1327.16        | 14           | Curb-Horiz    |
| 16       |                         | 5.38            | 15             | Cir        | 345.428          | 1323.45           | 1326.20           | 0.796          | 1327.16*      | 1329.55*    | 0.30            | 1329.85        | 15           | DropGrate     |
| 17       | Prop Pipe Extension     | 11.73           | 24             | Cir        | 138.108          | 1322.18           | 1322.46           | 0.203          | 1326.06*      | 1326.43*    | 0.22            | 1326.65        | 14           | OpenHeadwall  |
| 18       | Future Pipe on Lot 7    | 3.56            | 24             | Cir        | 123.670          | 1320.83           | 1322.07           | 1.003          | 1322.50       | 1322.74     | n/a             | 1322.74 j      | 12           | OpenHeadwall  |
| 19       | Ex. Line 3 (West)       | 32.82           | 24             | Cir        | 67.000           | 1320.03           | 1322.50           | 3.687          | 1321.93       | 1324.40     | 0.88            | 1324.40        | End          | Curb-Horiz    |
| 20       |                         | 30.99           | 24             | Cir        | 34.646           | 1322.50           | 1323.12           | 1.790          | 1324.40       | 1325.00     | n/a             | 1325.00 j      | 19           | Curb-Horiz    |
| 21       | New South Church Line   | 25.51           | 24             | Cir        | 127.851          | 1323.12           | 1324.40           | 1.001          | 1325.12*      | 1326.75*    | 1.22            | 1327.97        | 20           | Curb-Horiz    |
| 22       | New South Church line   | 17.84           | 24             | Cir        | 488.558          | 1325.15           | 1327.59           | 0.499          | 1327.97*      | 1331.01*    | 0.50            | 1331.51        | 21           | Curb-Horiz    |
| 23       | Prop. South Church line | 6.72            | 15             | Cir        | 80.204           | 1325.15           | 1326.35           | 1.496          | 1327.97*      | 1328.84*    | 0.47            | 1329.30        | 21           | Curb-Horiz    |

Project File: Ridge Port n 6th.stm

Number of lines: 23

Run Date: 12-04-2009

NOTES: Return period = 5 Yrs. ; \*Surcharged (HGL above crown). ; j - Line contains hyd. jump.

# HGL Table

| Line No. | Line ID                 | Line Size<br>(in) | Total Area<br>(ac) | DnStm Ln No | Drng Area<br>(ac) | Runoff Coeff<br>(C) | Tc<br>(min) | Total Runoff<br>(cfs) | Capac Full<br>(cfs) | Invert Up<br>(ft) | HGL Up<br>(ft) | Gnd/Rim EI Up<br>(ft) | Cover Up<br>(ft) |
|----------|-------------------------|-------------------|--------------------|-------------|-------------------|---------------------|-------------|-----------------------|---------------------|-------------------|----------------|-----------------------|------------------|
| 1        | Ex. Line 1 (North)      | 48                | 26.19              | Outfall     | 0.66              | 0.85                | 17.7        | 90.02                 | 152.39              | 1320.64           | 1323.45        | 1330.92               | 6.28             |
| 2        |                         | 30                | 3.48               | 1           | 3.48              | 0.85                | 15.0        | 13.76                 | 21.58               | 1320.74           | 1323.49        | 1325.00               | 1.76             |
| 3        |                         | 48                | 22.05              | 1           | 0.90              | 0.85                | 17.6        | 75.00                 | 0.00                | 1320.59           | 1324.74        | 1330.99               | 6.40             |
| 4        |                         | 36                | 15.28              | 3           | 0.75              | 0.85                | 16.4        | 51.61                 | 23.13               | 1322.35           | 1328.63        | 1331.42               | 6.07             |
| 5        |                         | 30                | 3.29               | 4           | 0.74              | 0.85                | 16.2        | 12.60                 | 19.92               | 1322.43           | 1329.91        | 1331.64               | 6.71             |
| 6        |                         | 24                | 2.55               | 5           | 2.55              | 0.85                | 15.0        | 10.09                 | 10.11               | 1323.38           | 1330.41        | 1333.00               | 7.62             |
| 7        | Proposed Pipe           | 36                | 11.24              | 4           | 11.24             | 0.72                | 15.0        | 37.65                 | 29.80               | 1323.32           | 1331.30        | 1332.00               | 5.68             |
| 8        | New N side of Church    | 30                | 5.87               | 3           | 2.52              | 0.85                | 16.7        | 22.16                 | 25.89               | 1322.67           | 1326.02        | 1333.00               | 7.83             |
| 9        | New N Side of Church    | 24                | 3.35               | 8           | 3.35              | 0.85                | 15.0        | 13.25                 | 14.32               | 1324.48           | 1327.75        | 1333.00               | 6.52             |
| 10       | Ex. Line 2 (South)      | 30                | 9.38               | Outfall     | 0.30              | 0.85                | 18.7        | 31.70                 | 38.85               | 1319.50           | 1321.38        | 1330.40               | 8.40             |
| 11       |                         | 30                | 9.08               | 10          | 0.80              | 0.85                | 18.6        | 30.69                 | 41.08               | 1319.91           | 1321.76        | 1330.40               | 7.99             |
| 12       |                         | 30                | 8.28               | 11          | 0.15              | 0.85                | 18.4        | 27.97                 | 40.88               | 1320.73           | 1322.50        | 1330.90               | 7.67             |
| 13       |                         | 30                | 7.23               | 12          | 0.50              | 0.85                | 17.9        | 24.47                 | 17.28               | 1321.08           | 1323.83        | 1332.80               | 9.22             |
| 14       |                         | 30                | 6.73               | 13          | 0.50              | 0.85                | 16.4        | 23.56                 | 18.71               | 1322.08           | 1325.53        | 1330.31               | 5.73             |
| 15       |                         | 18                | 2.73               | 14          | 1.37              | 0.85                | 16.3        | 10.41                 | 10.65               | 1323.45           | 1326.42        | 1330.31               | 5.36             |
| 16       |                         | 15                | 1.36               | 15          | 1.36              | 0.85                | 15.0        | 5.38                  | 5.76                | 1326.20           | 1329.55        | 1330.30               | 2.85             |
| 17       | Prop Pipe Extension     | 24                | 3.50               | 14          | 3.50              | 0.72                | 15.0        | 11.73                 | 10.18               | 1322.46           | 1326.43        | 1332.00               | 7.54             |
| 18       | Future Pipe on Lot 7    | 24                | 0.90               | 12          | 0.90              | 0.85                | 15.0        | 3.56                  | 22.65               | 1322.07           | 1322.74 j      | 1333.50               | 9.43             |
| 19       | Ex. Line 3 (West)       | 24                | 8.71               | Outfall     | 0.50              | 0.85                | 16.8        | 32.82                 | 43.43               | 1322.50           | 1324.40        | 1330.65               | 6.15             |
| 20       |                         | 24                | 8.21               | 19          | 1.50              | 0.85                | 16.7        | 30.99                 | 30.26               | 1323.12           | 1325.00 j      | 1330.75               | 5.63             |
| 21       | New South Church Line   | 24                | 6.71               | 20          | 0.50              | 0.85                | 16.4        | 25.51                 | 22.63               | 1324.40           | 1326.75        | 1332.00               | 5.60             |
| 22       | New South Church line   | 24                | 4.51               | 21          | 4.51              | 0.85                | 15.0        | 17.84                 | 15.98               | 1327.59           | 1331.01        | 1334.50               | 4.91             |
| 23       | Prop. South Church line | 15                | 1.70               | 21          | 1.70              | 0.85                | 15.0        | 6.72                  | 7.90                | 1326.35           | 1328.84        | 1335.50               | 7.90             |

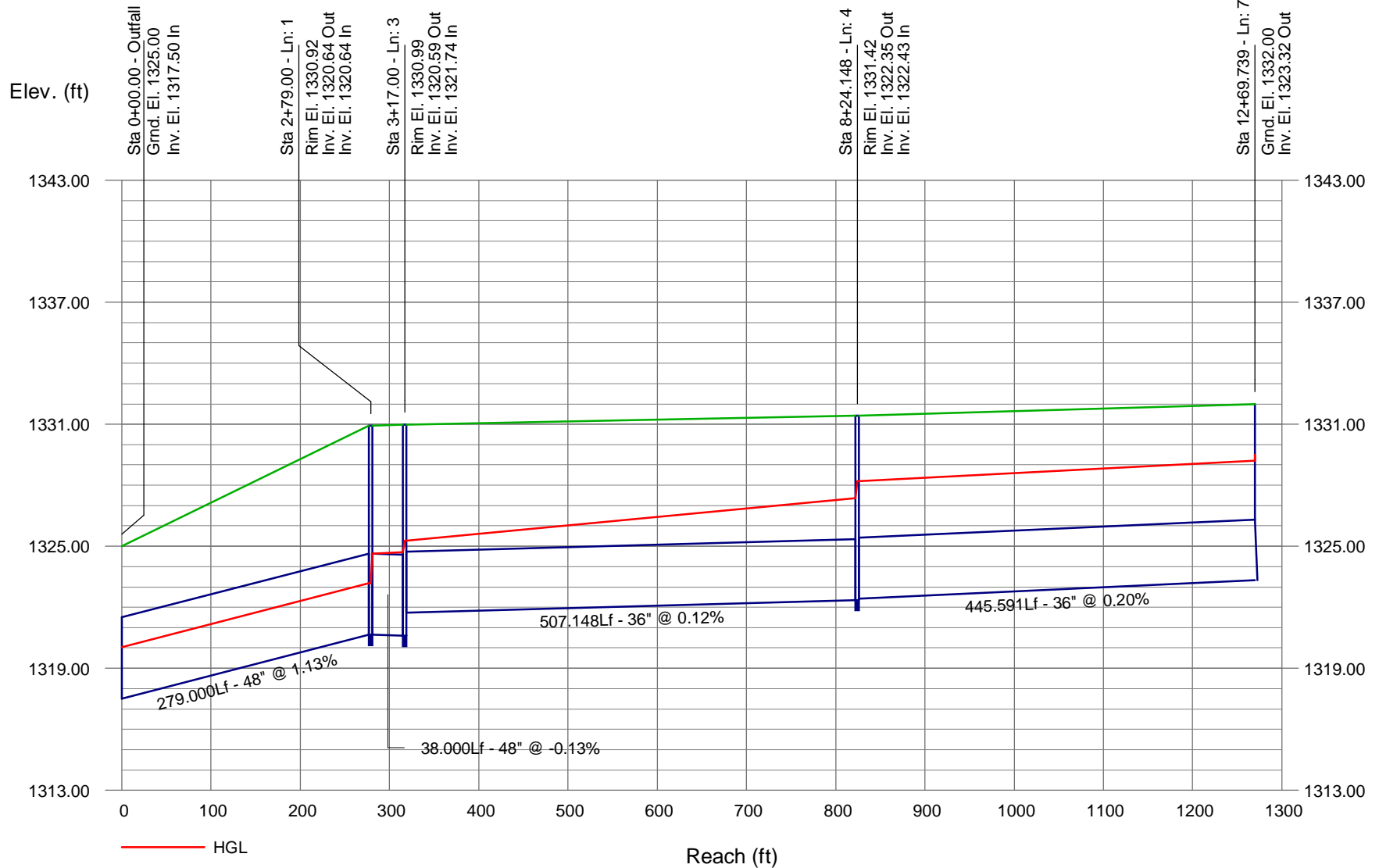
Project File: Ridge Port n 6th.stm

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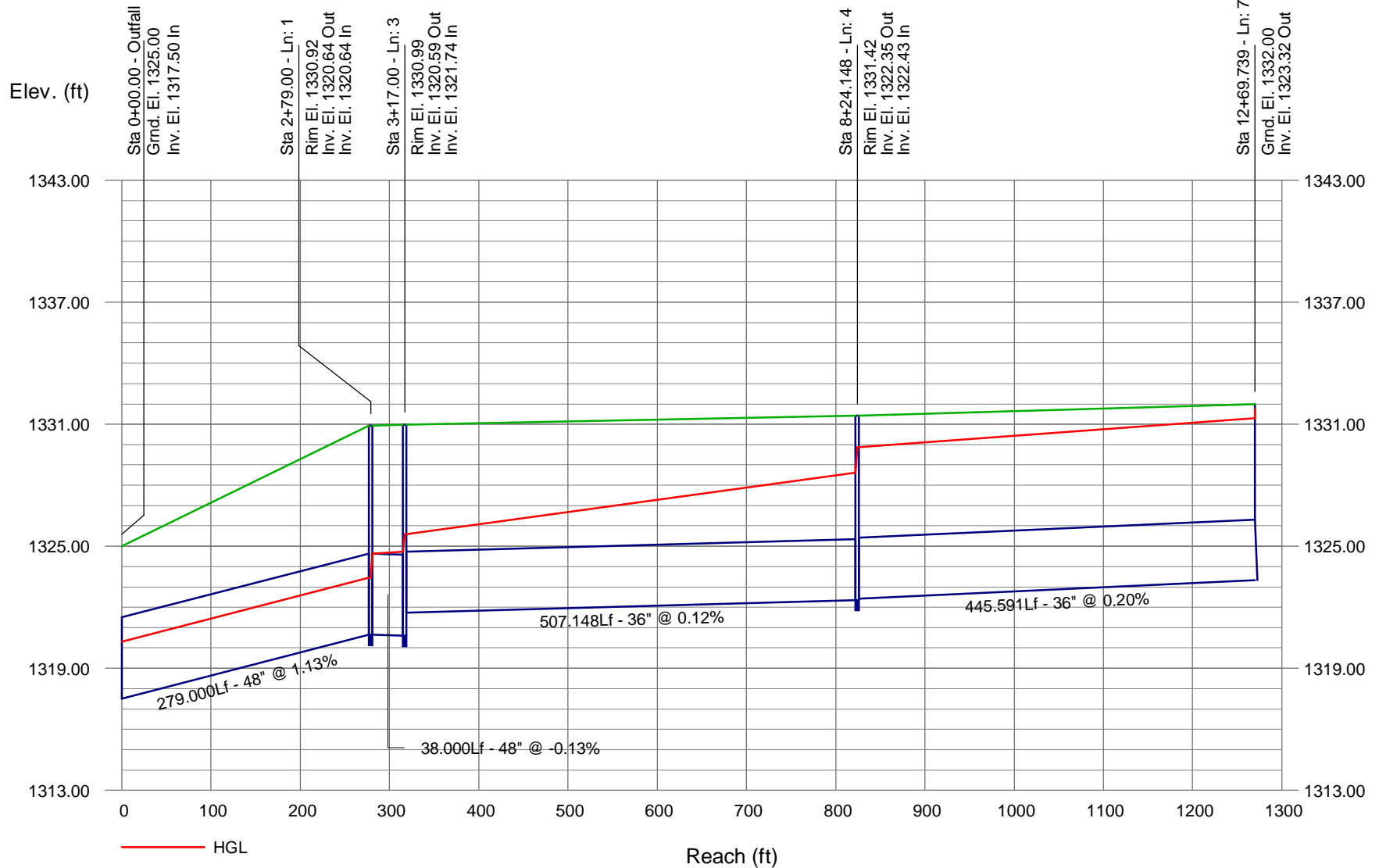
NOTES: \*\* Critical depth

# Storm Sewer Profile



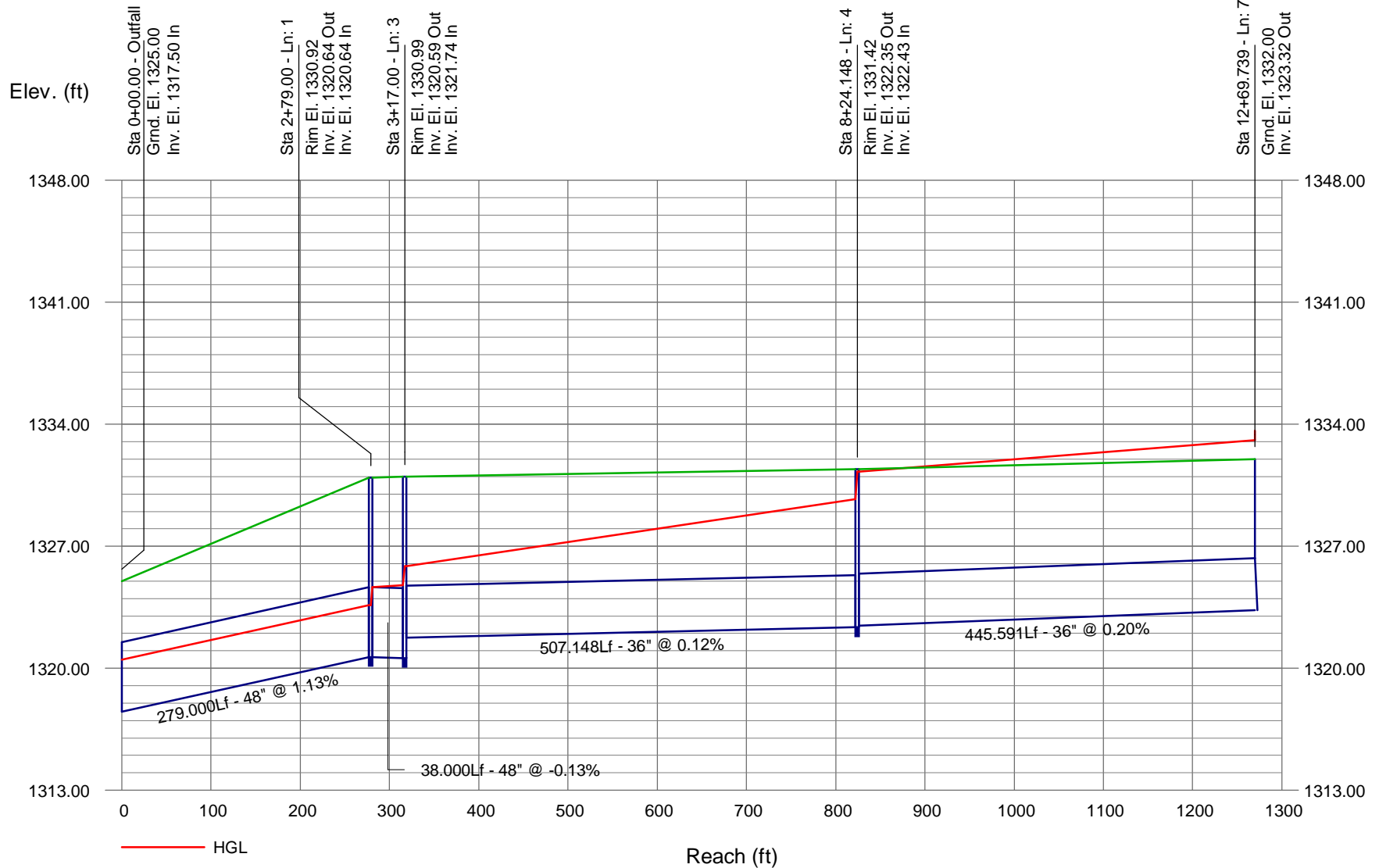
**2 YEAR EVENT**

# Storm Sewer Profile



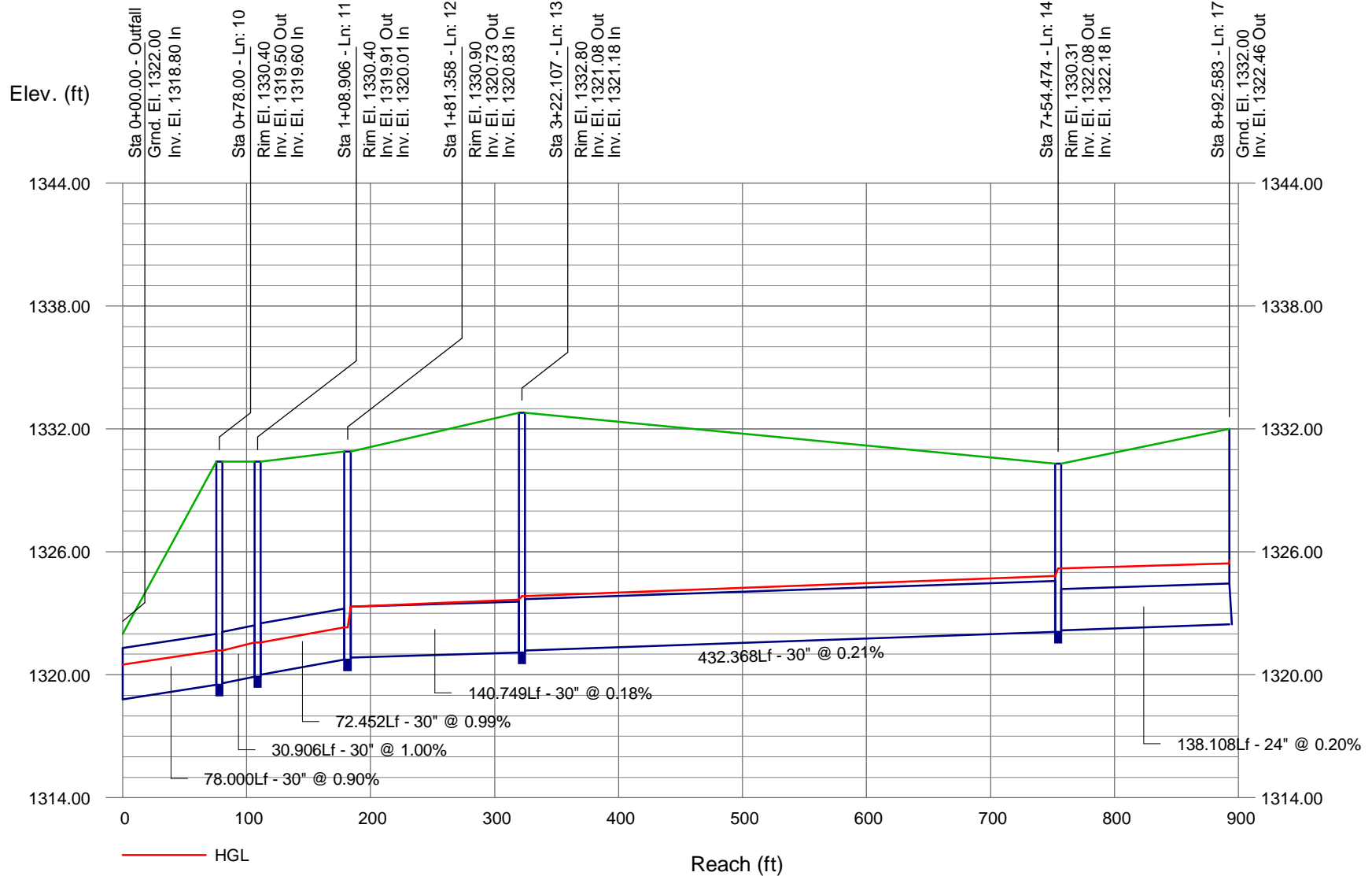
**5 YEAR EVENT**

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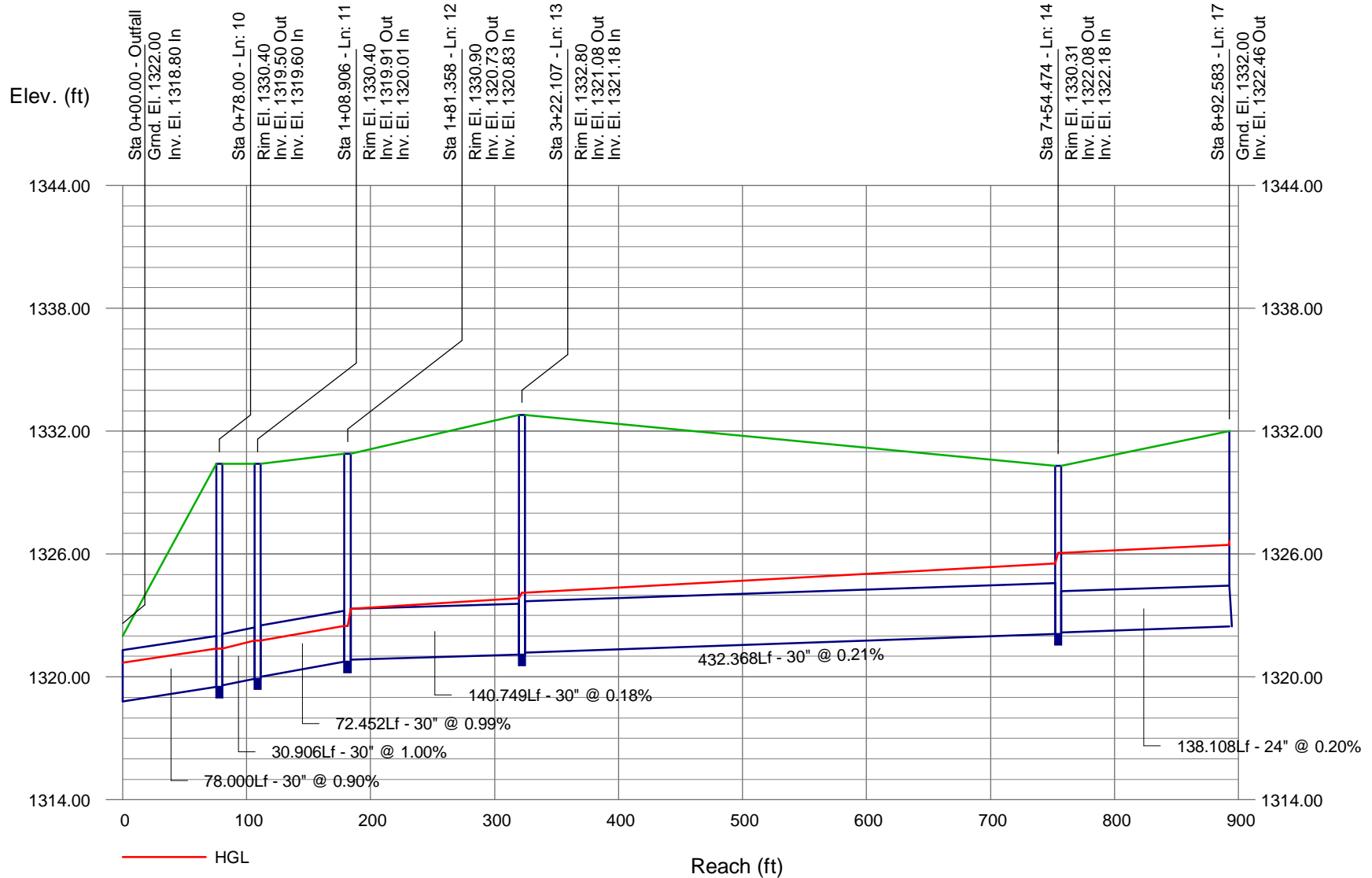
**10 YEAR EVENT**

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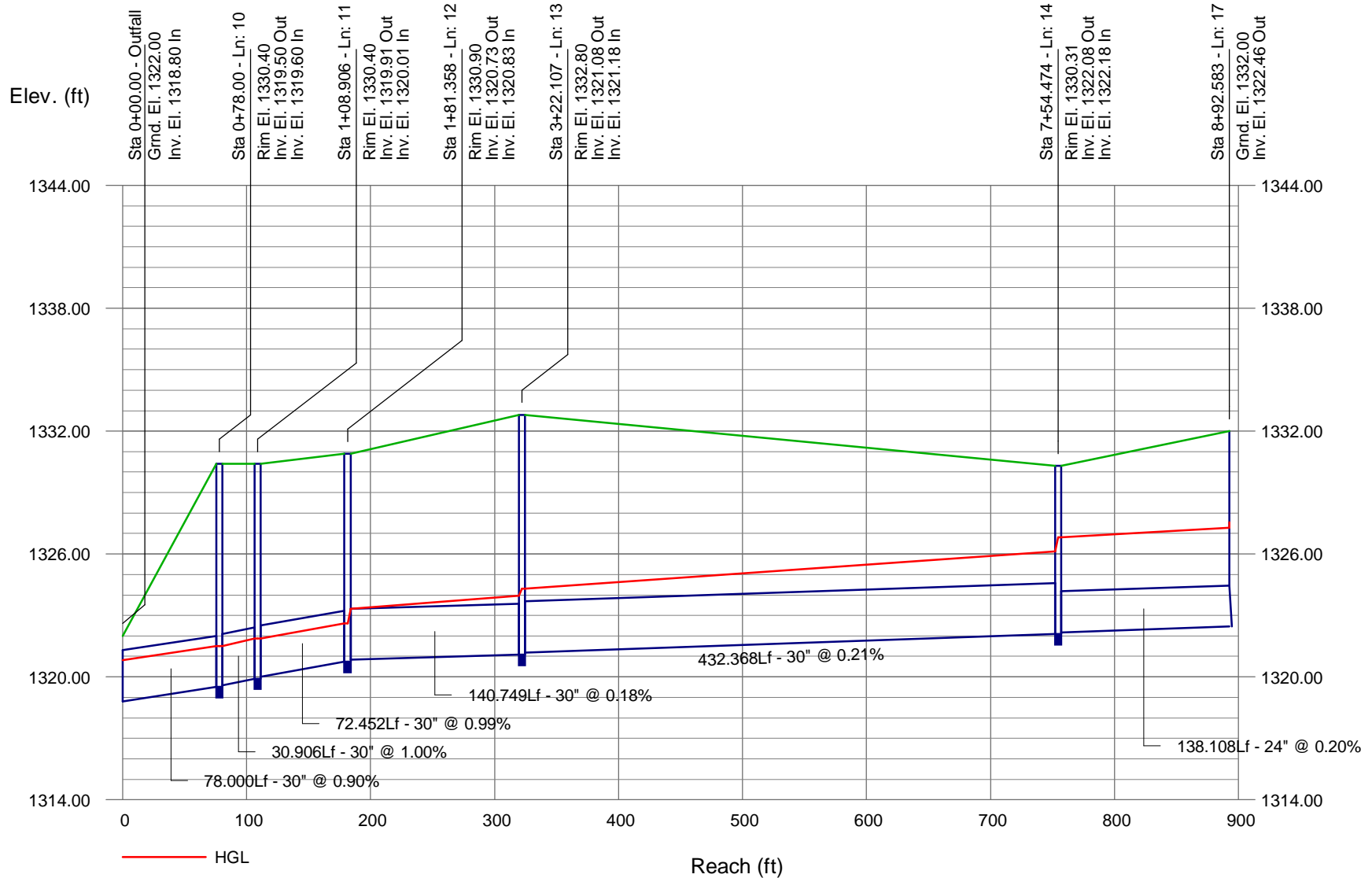
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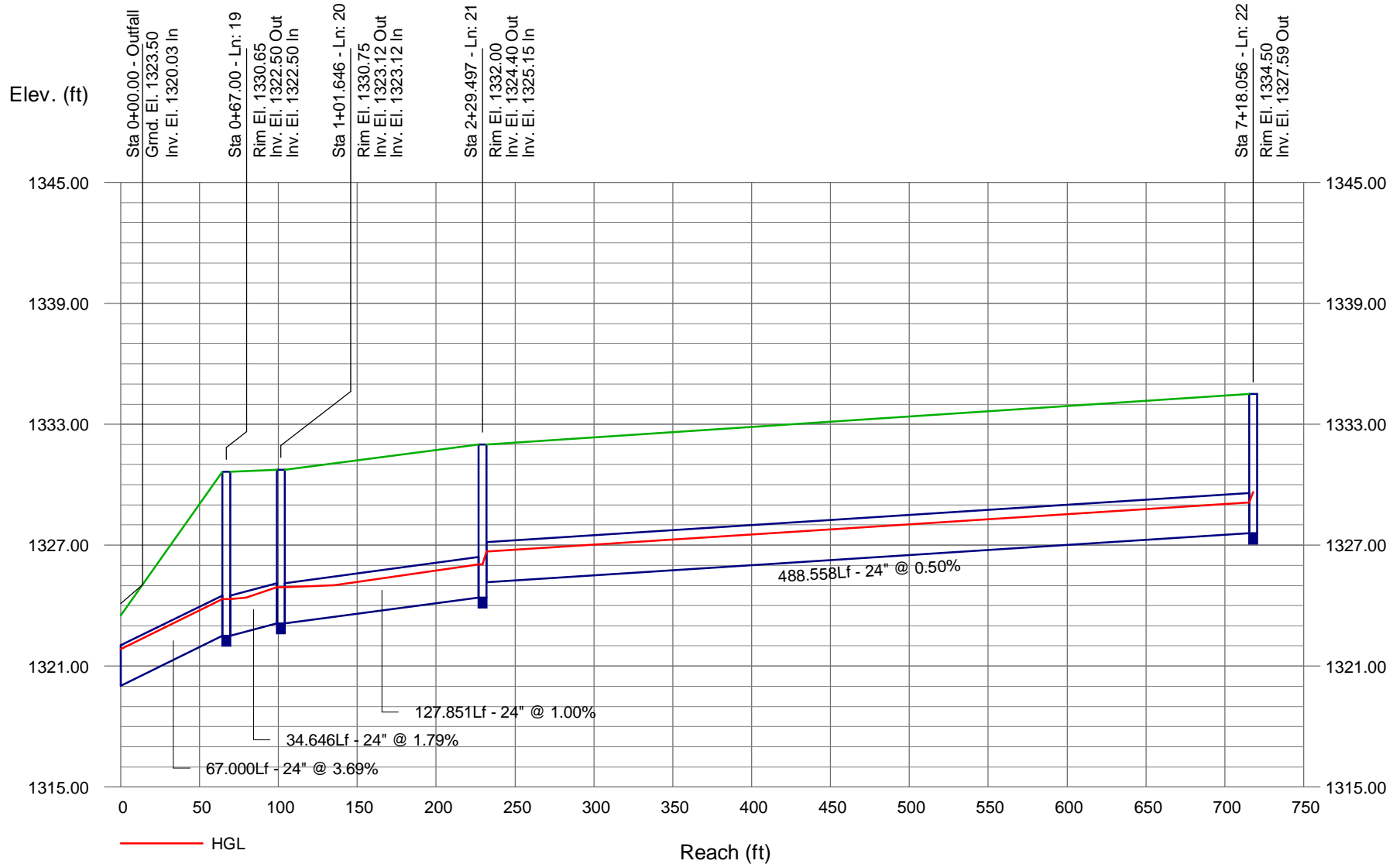
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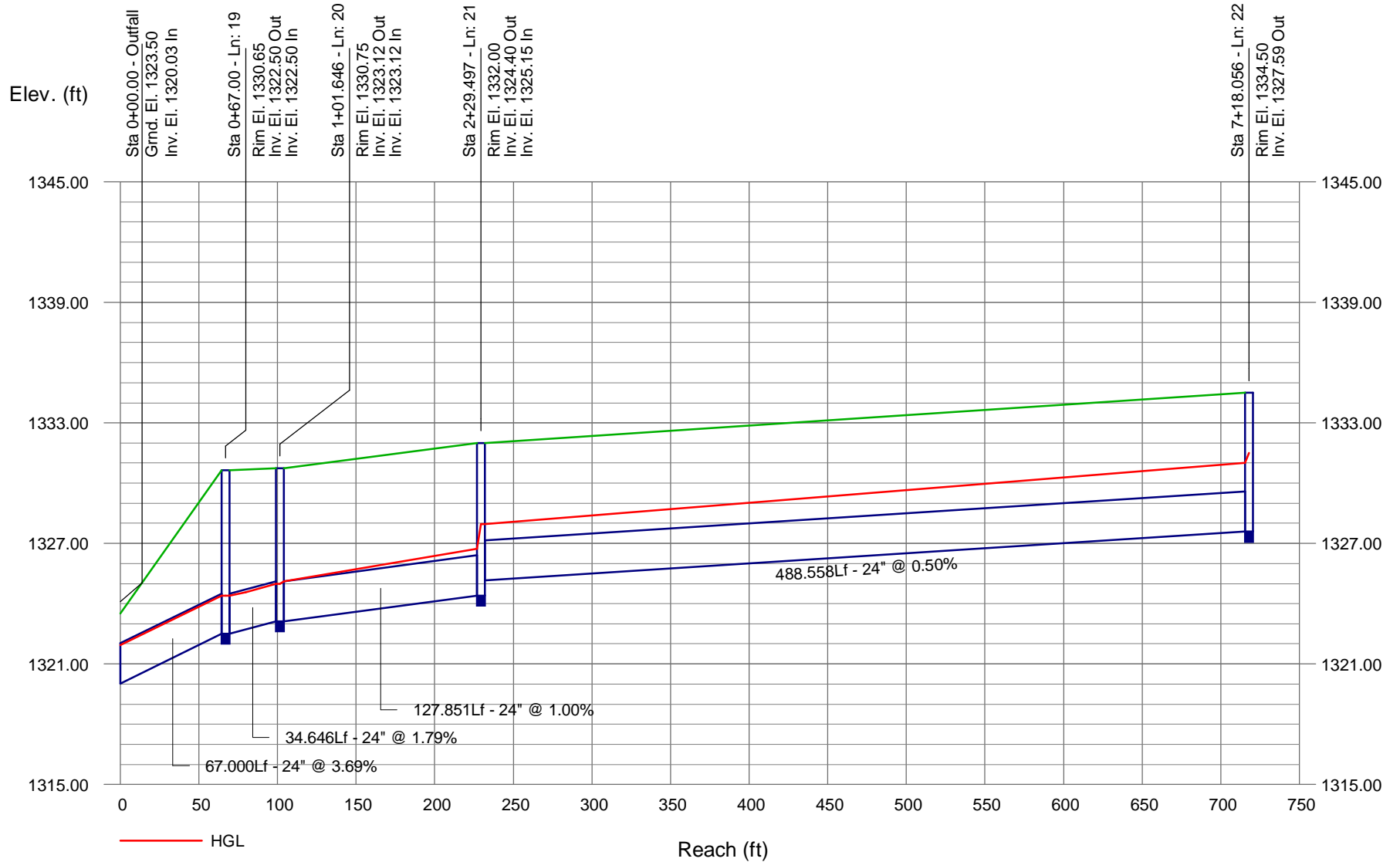
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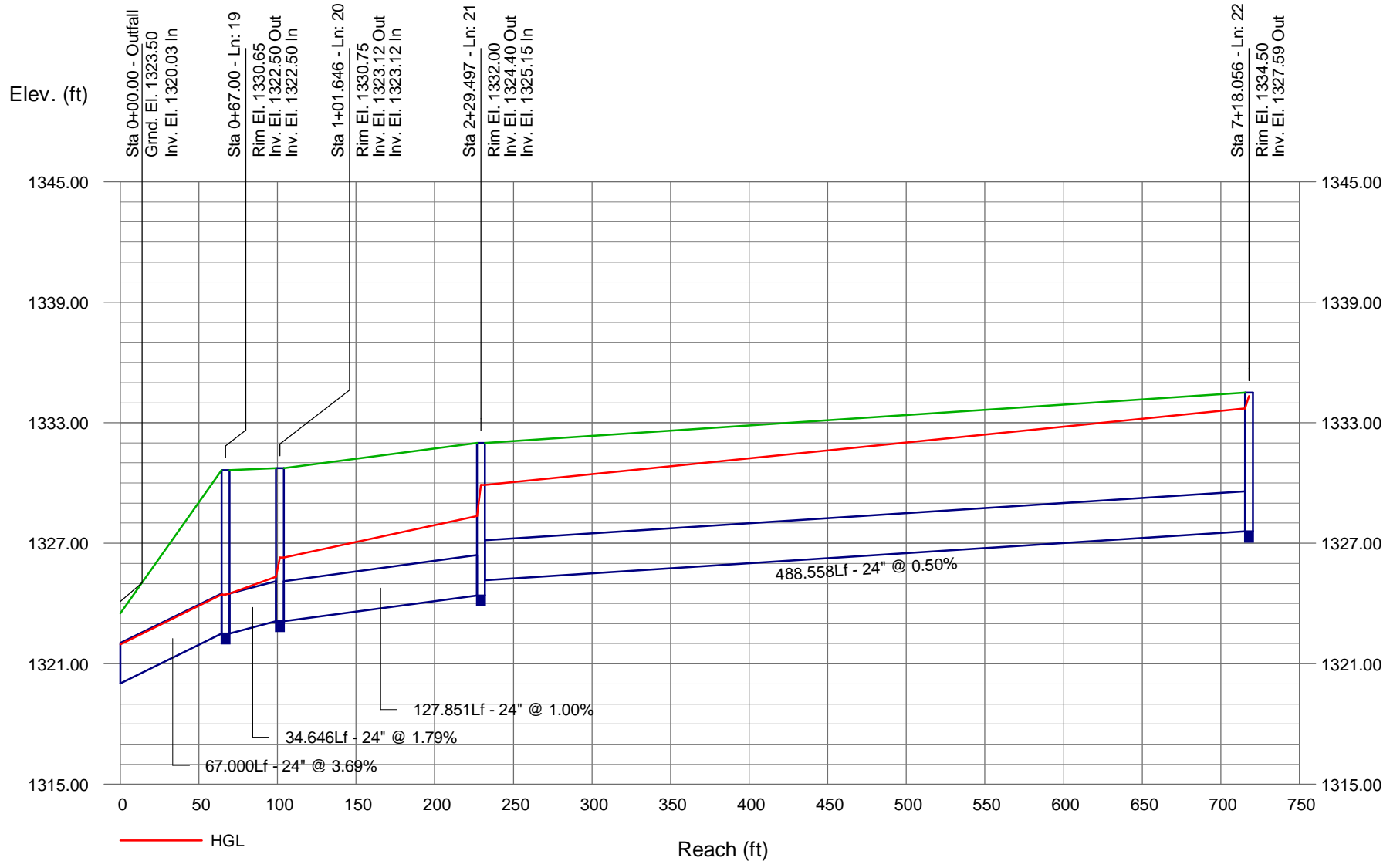
**2 YEAR EVENT**

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**5 YEAR EVENT**

# Storm Sewer Profile



**10 YEAR EVENT**