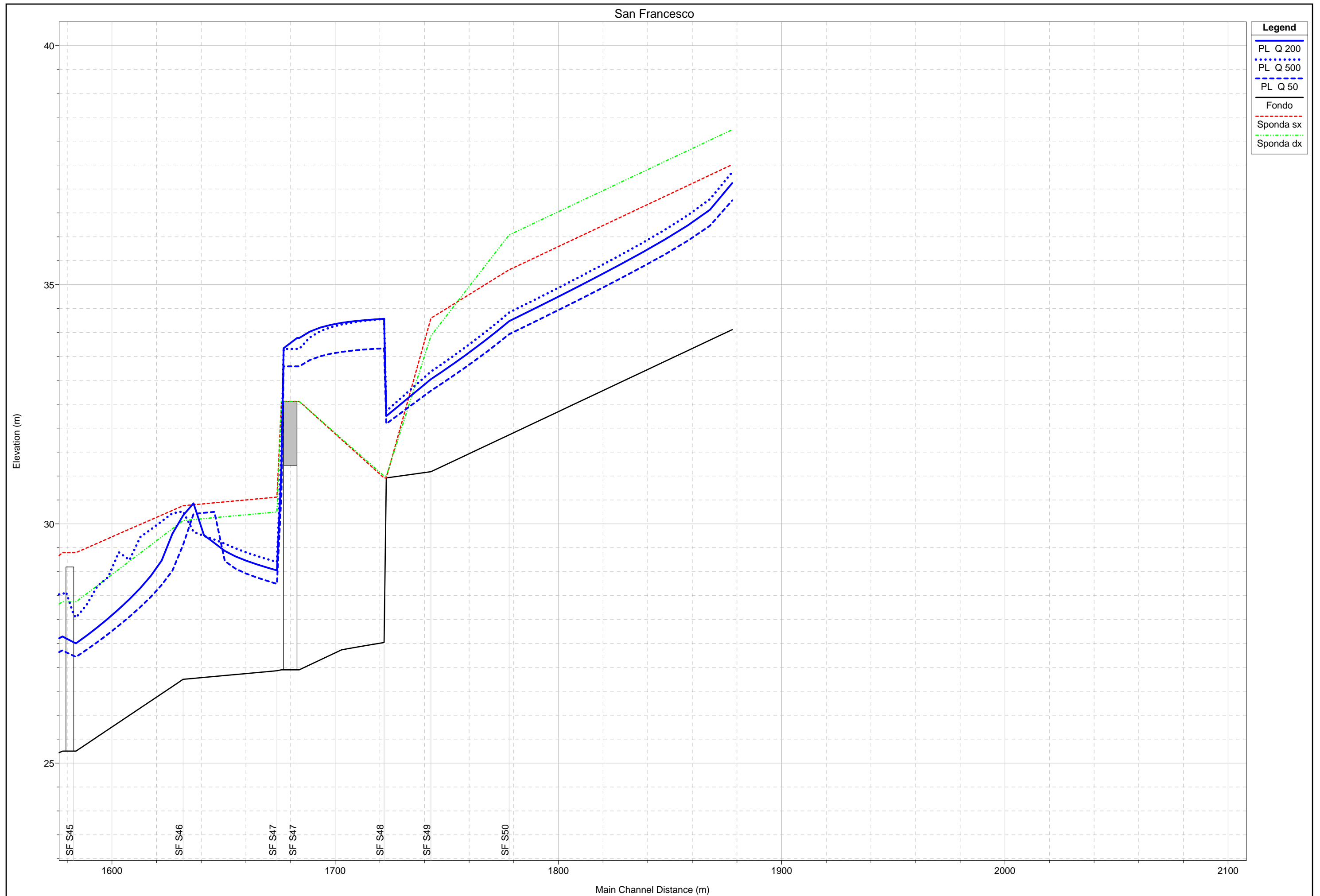


Torrente San Francesco

Rapallo

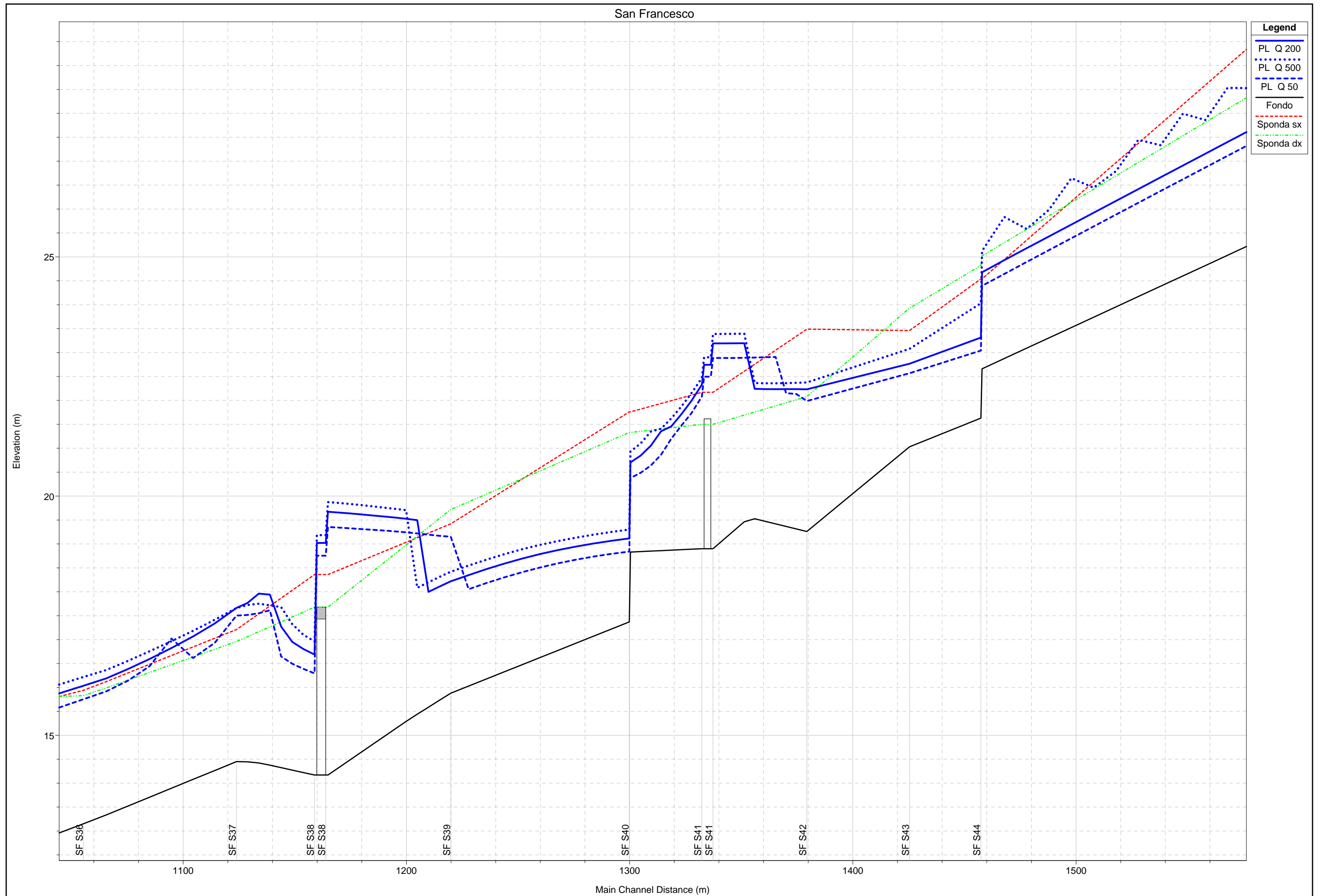
dalla sezione SF-S50 alla SF-S1

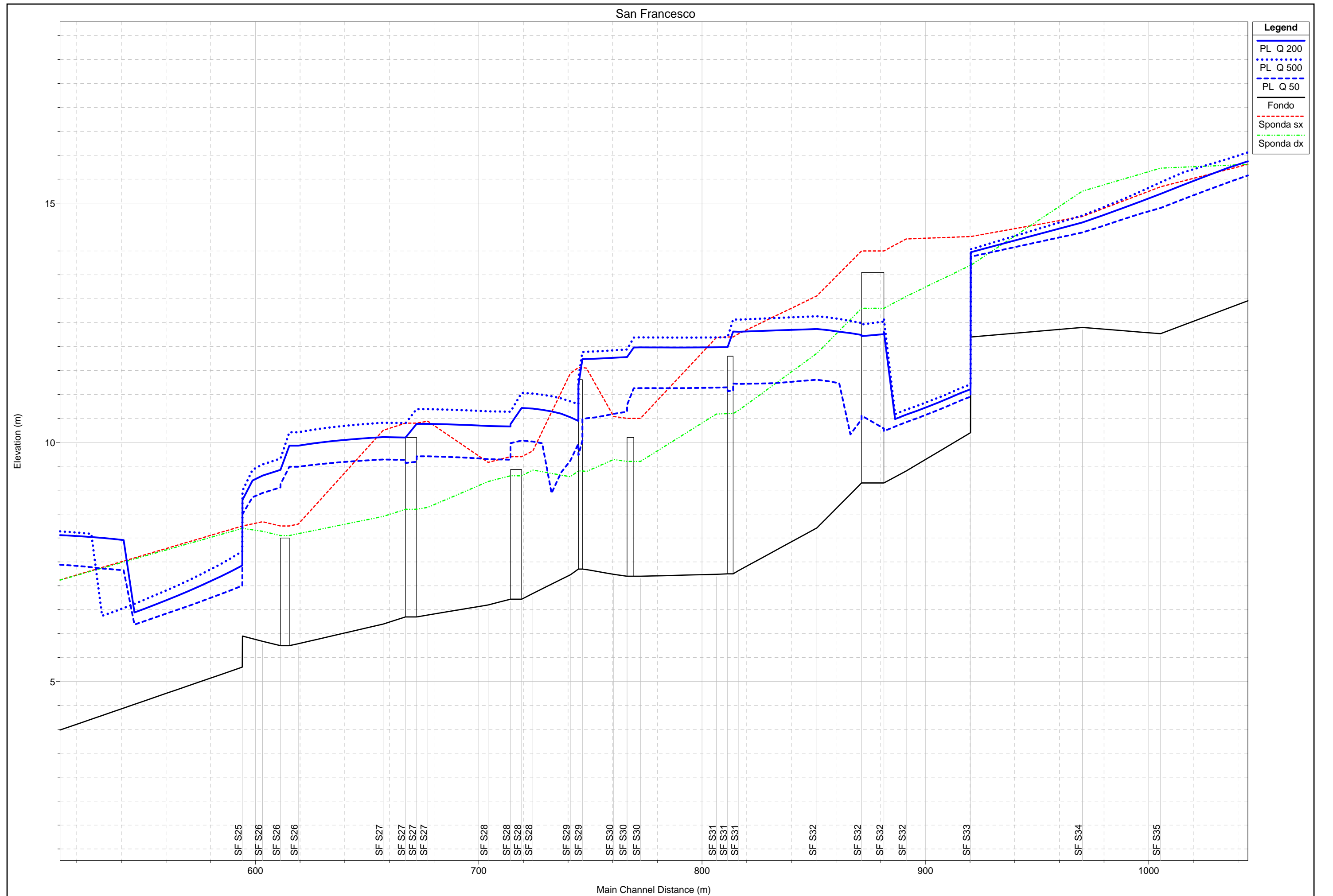
- Profili di corrente
- Sezioni idrauliche
- Tabelle dei risultati



1 cm Horiz. = 15 m 1 cm Vert. = 0.7 m

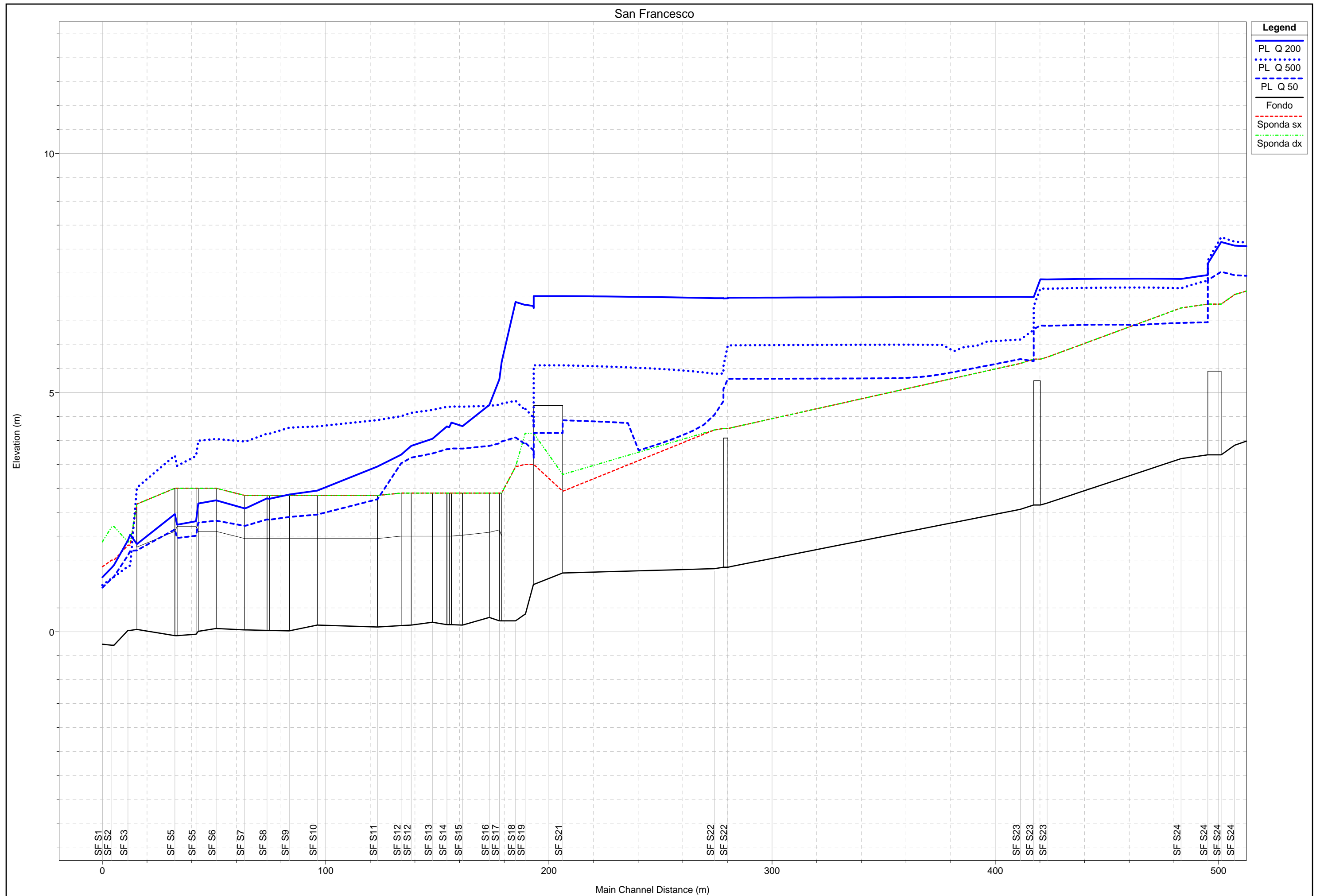
Approvato con D.C.P. n. 24 del 21-03-2007





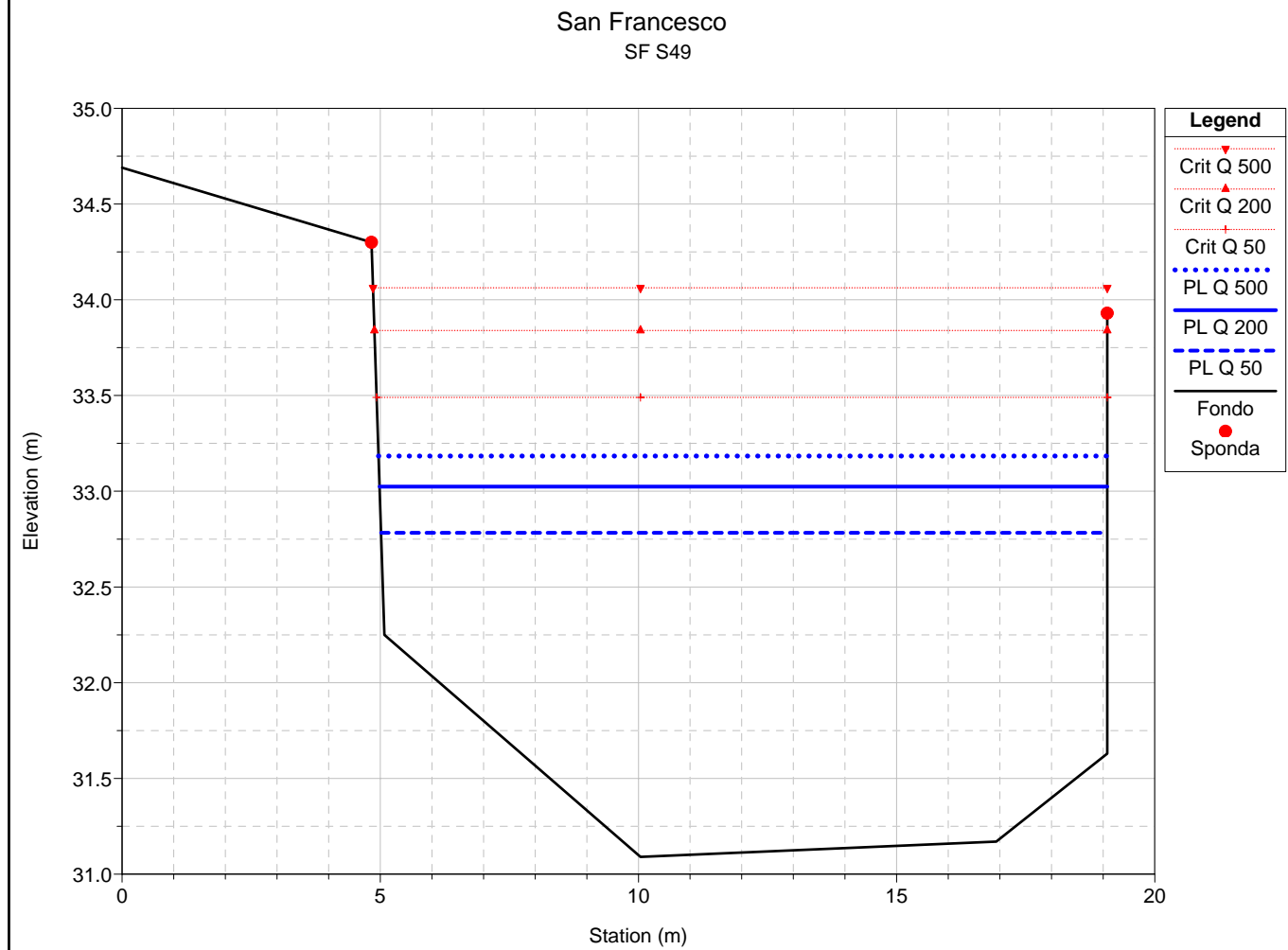
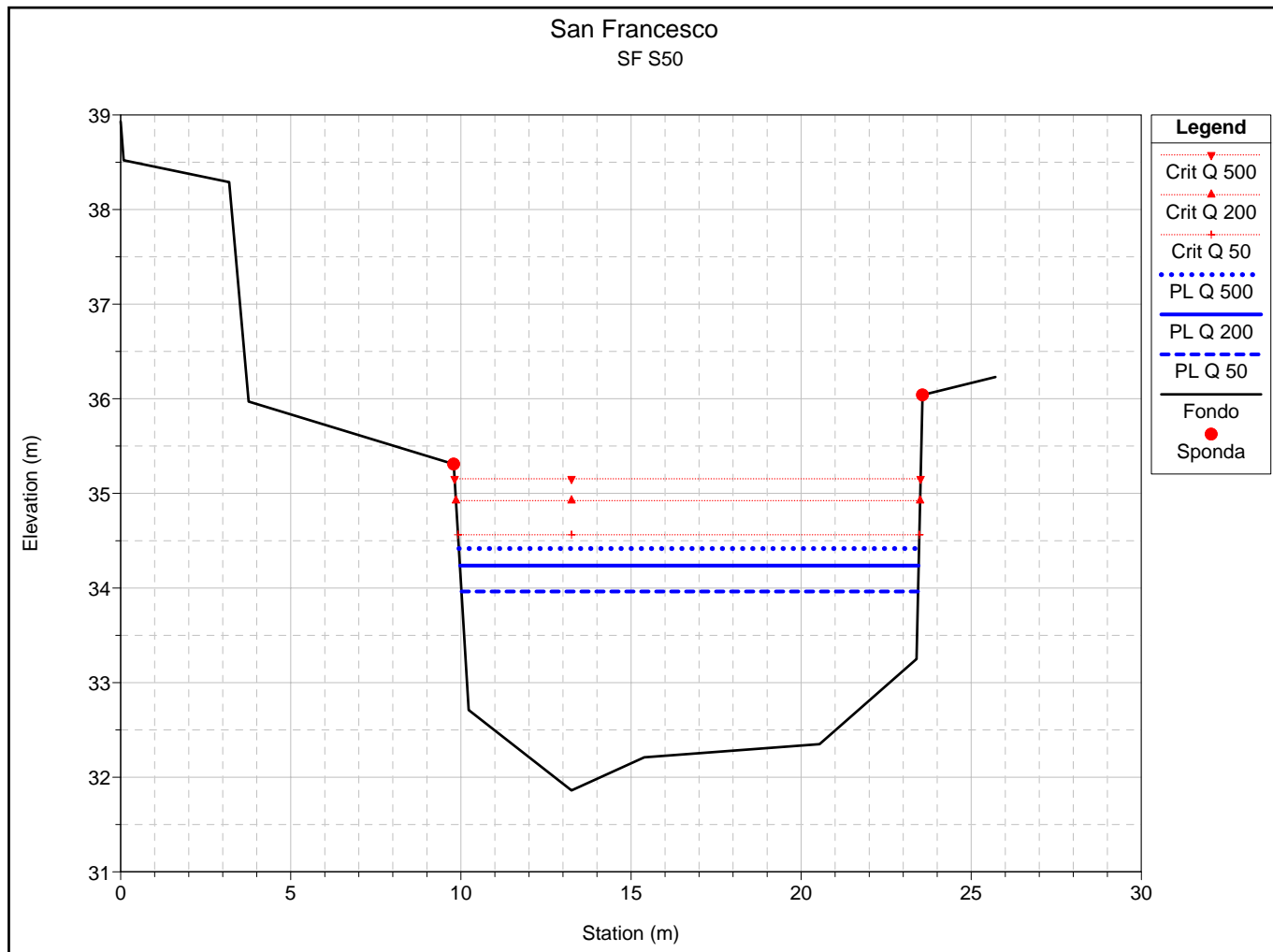
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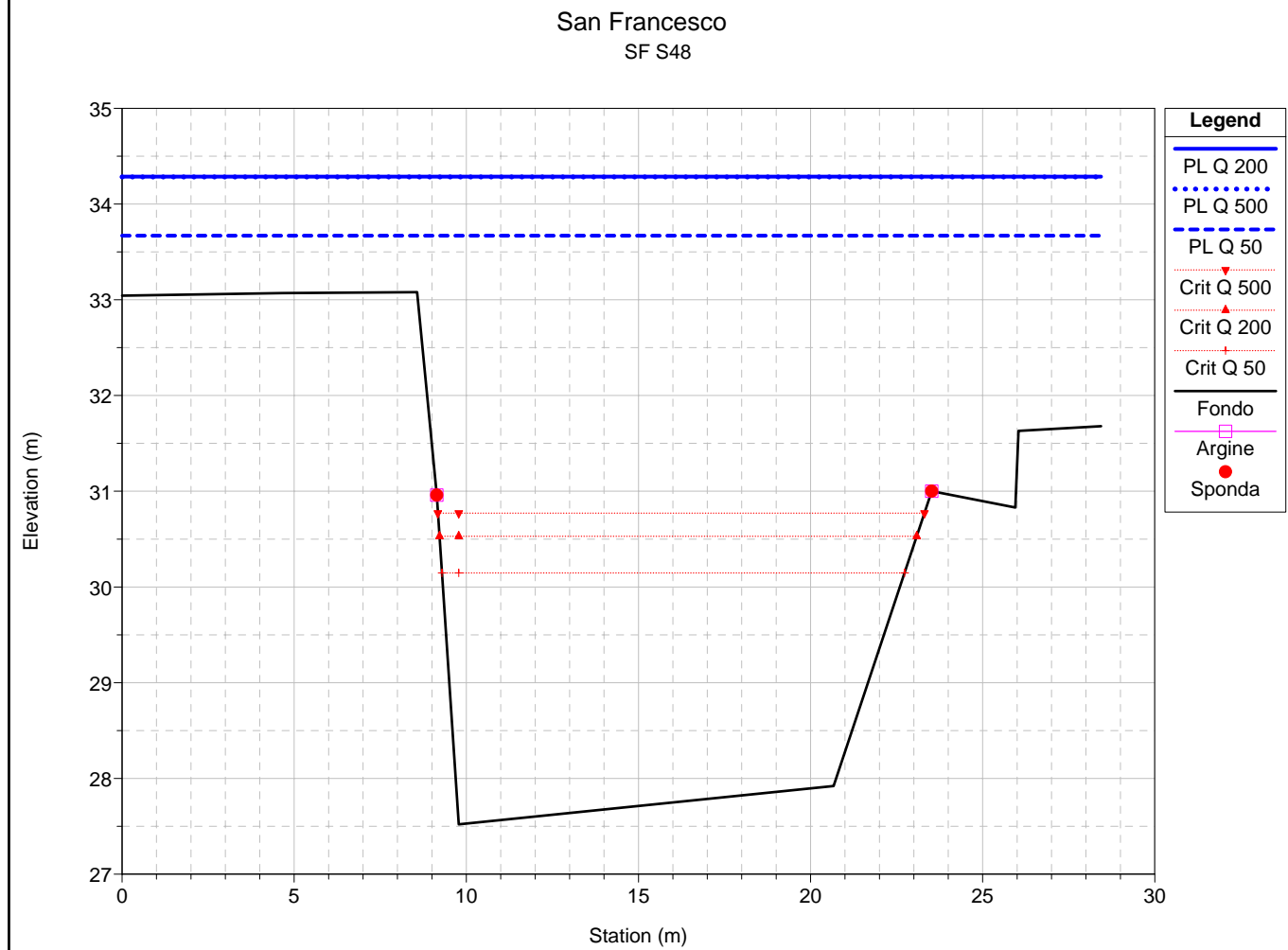
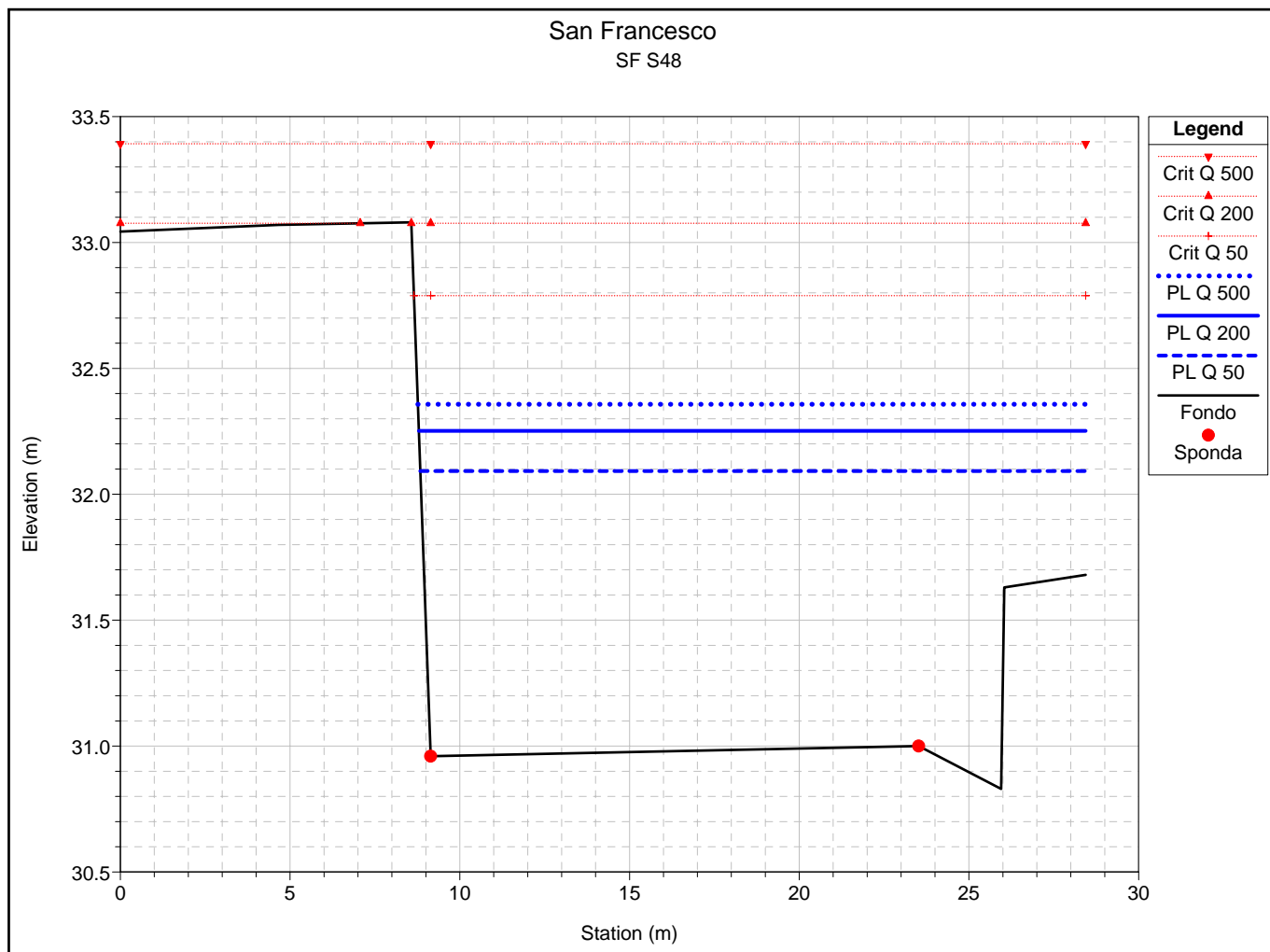
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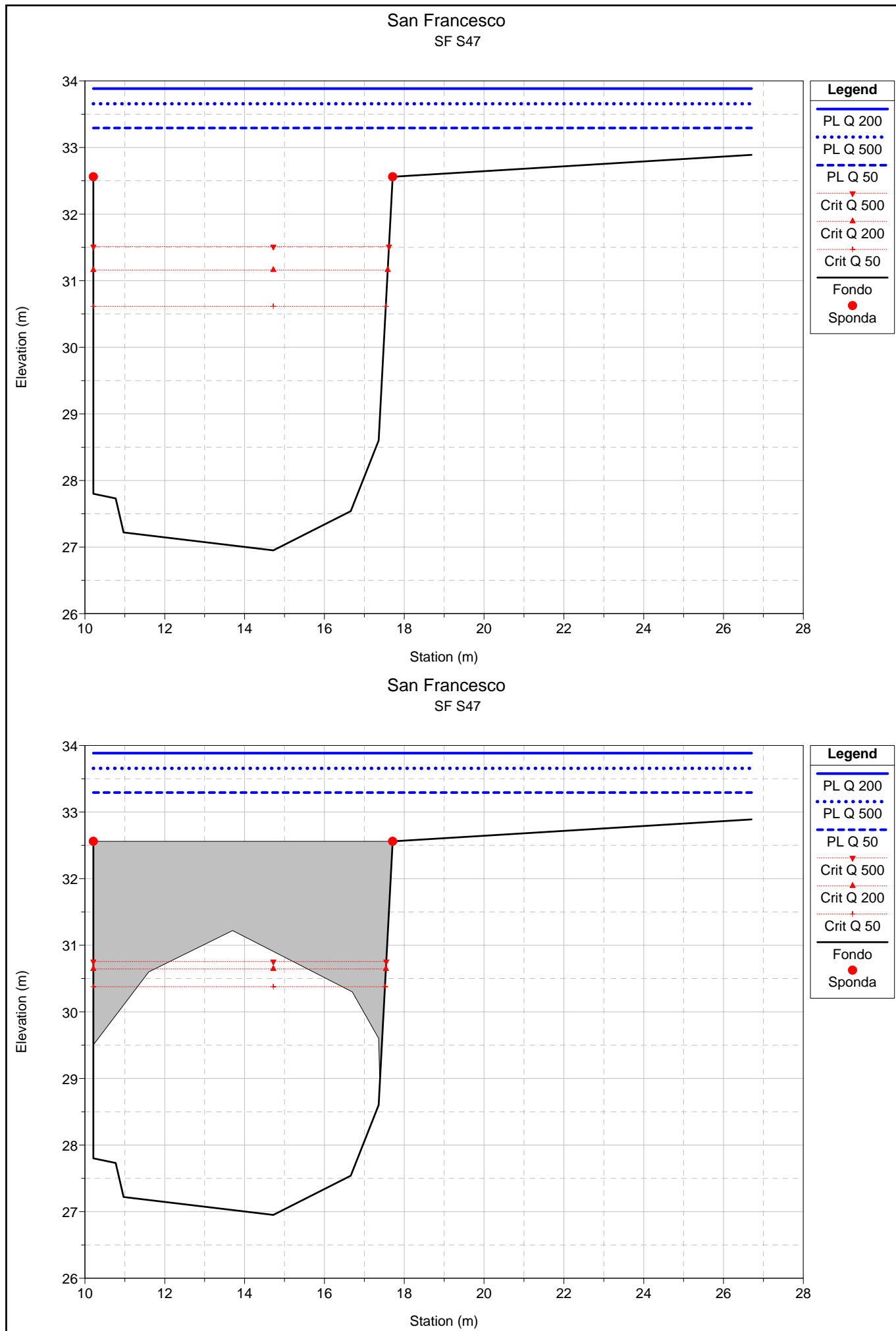


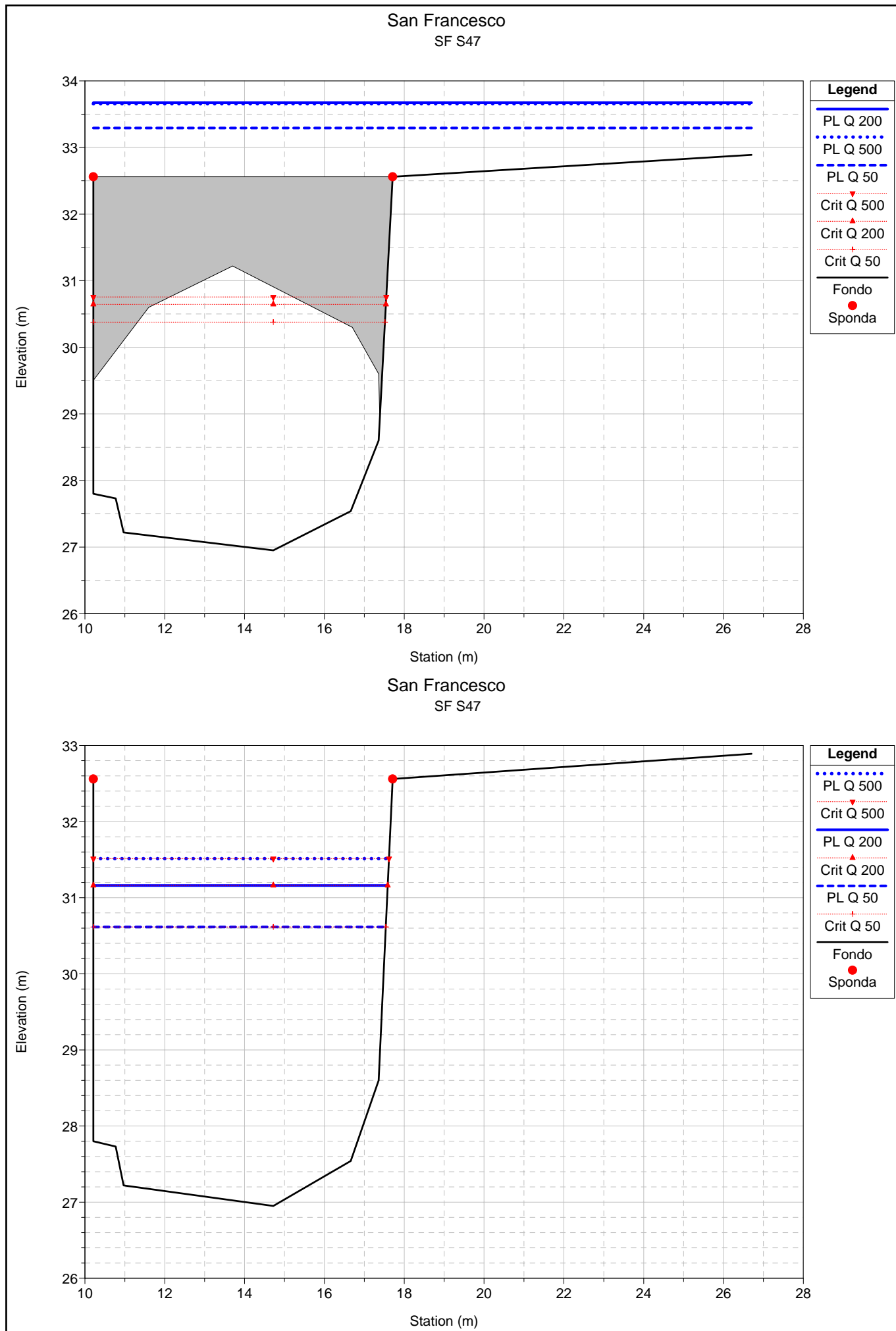
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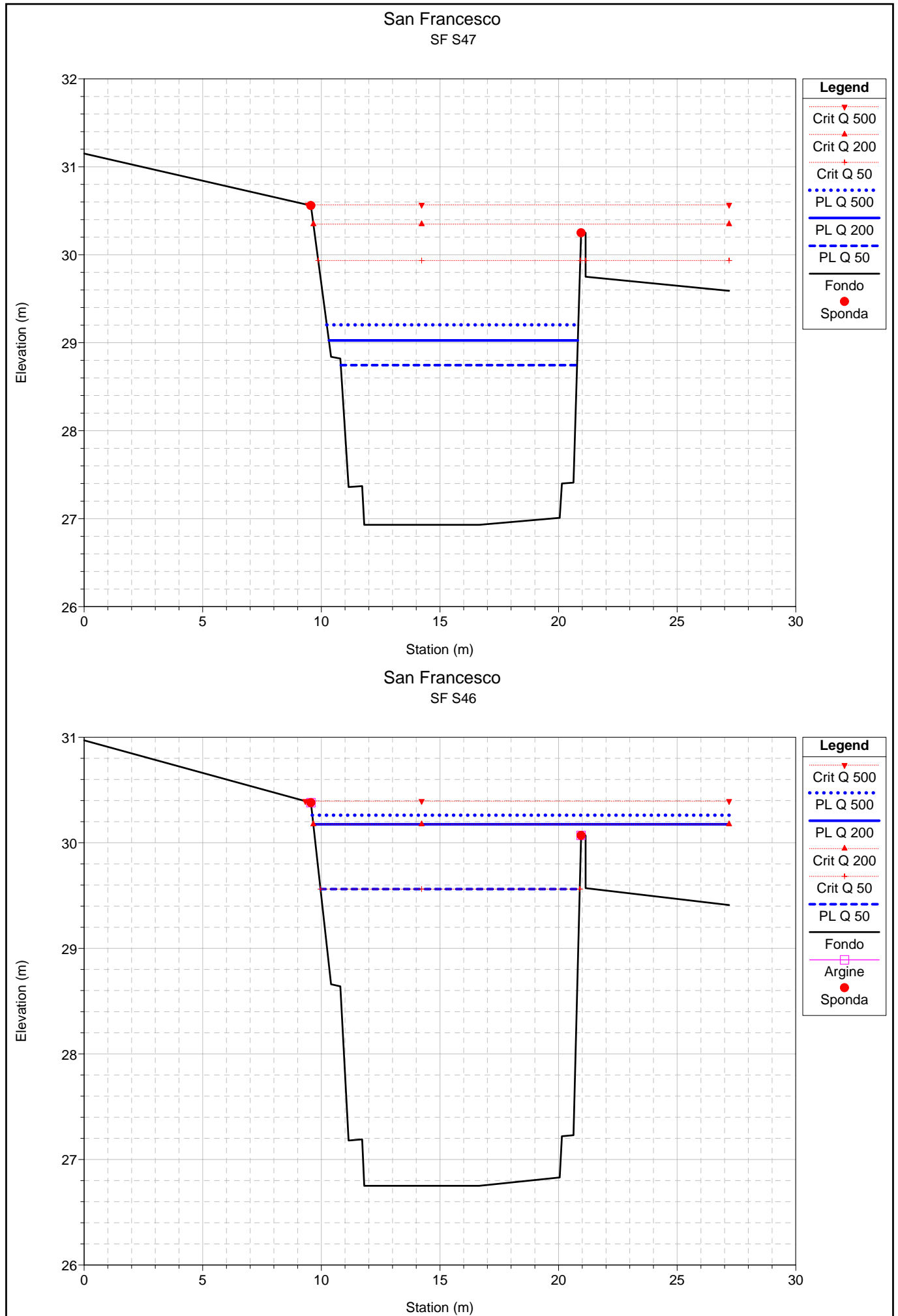
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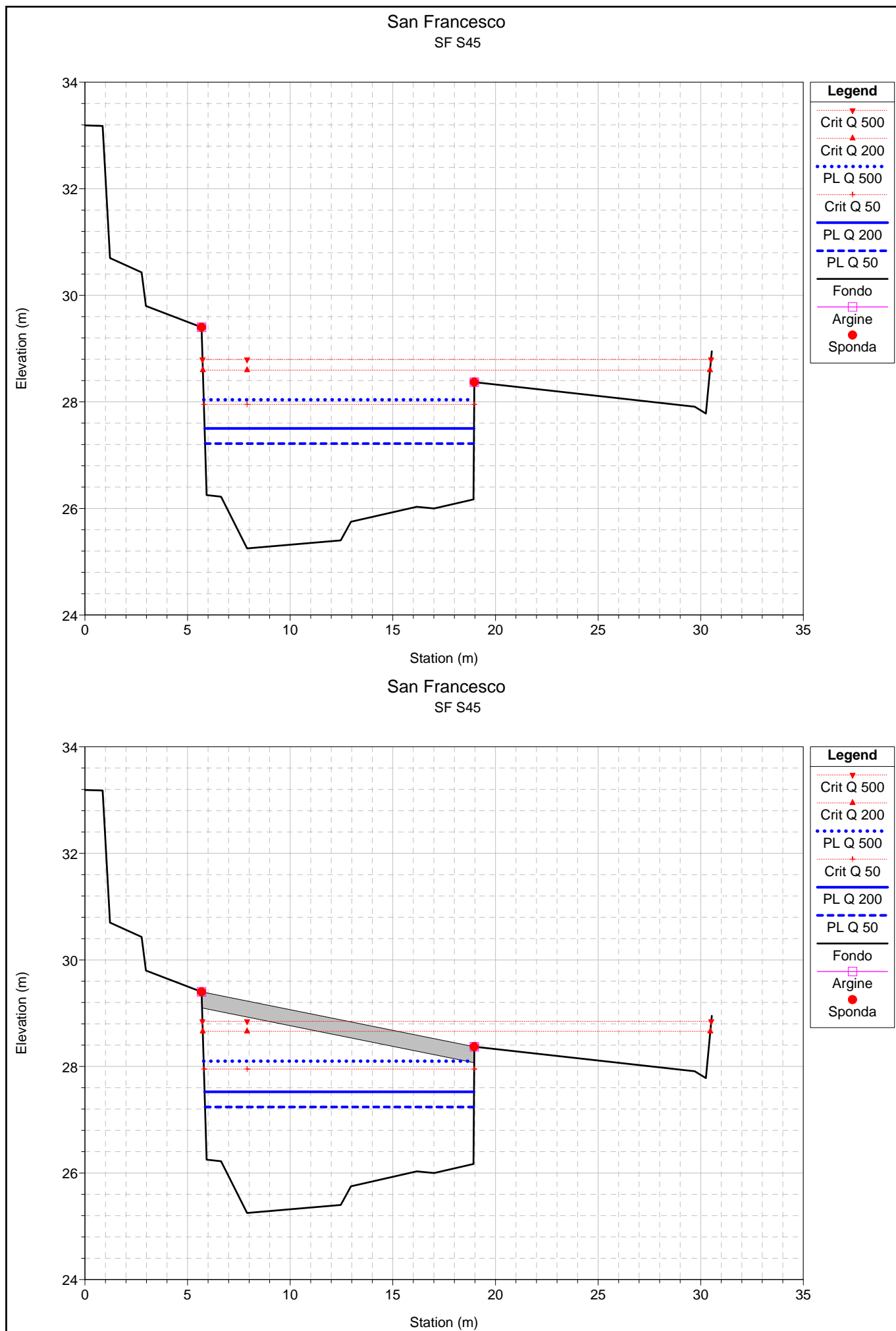


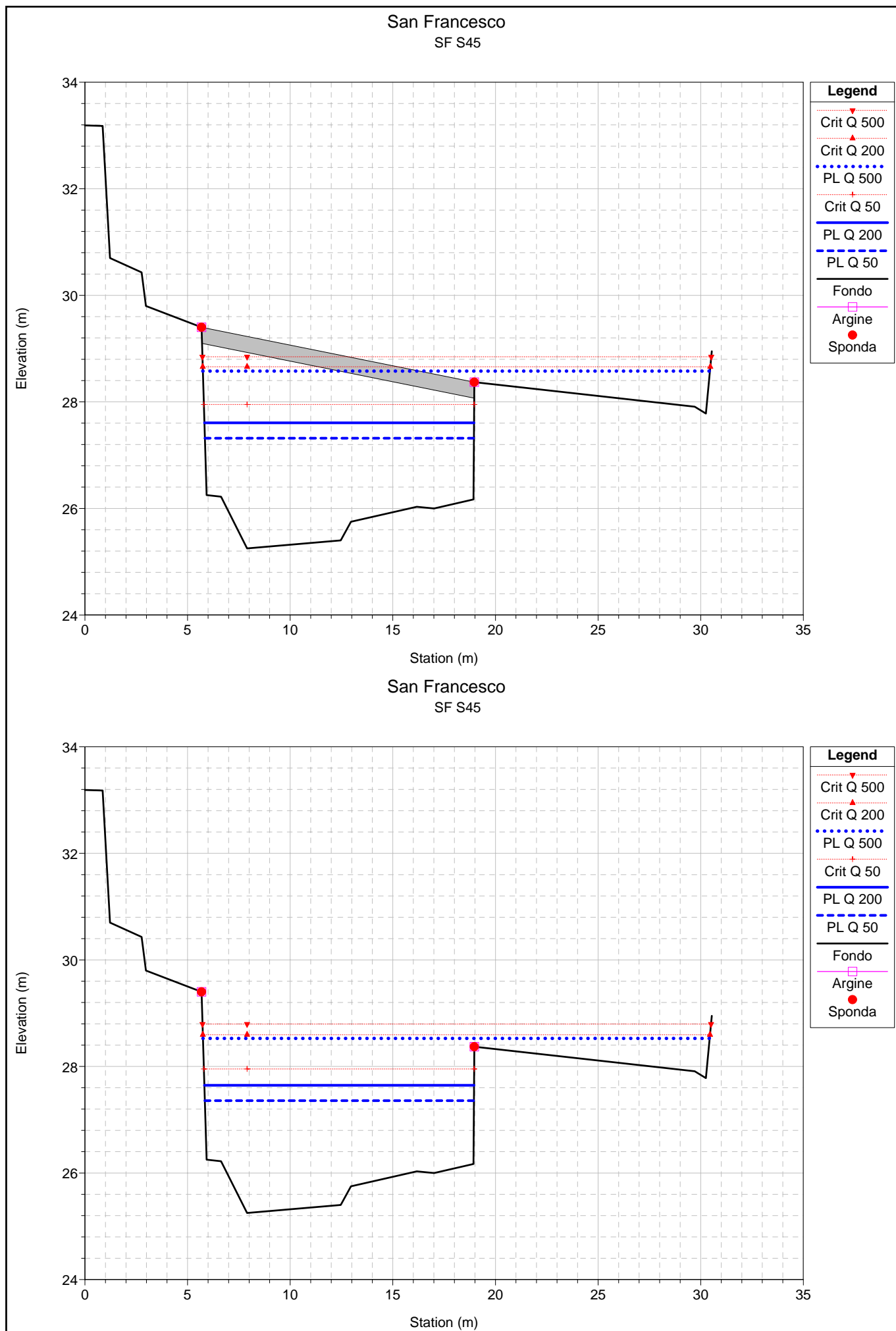


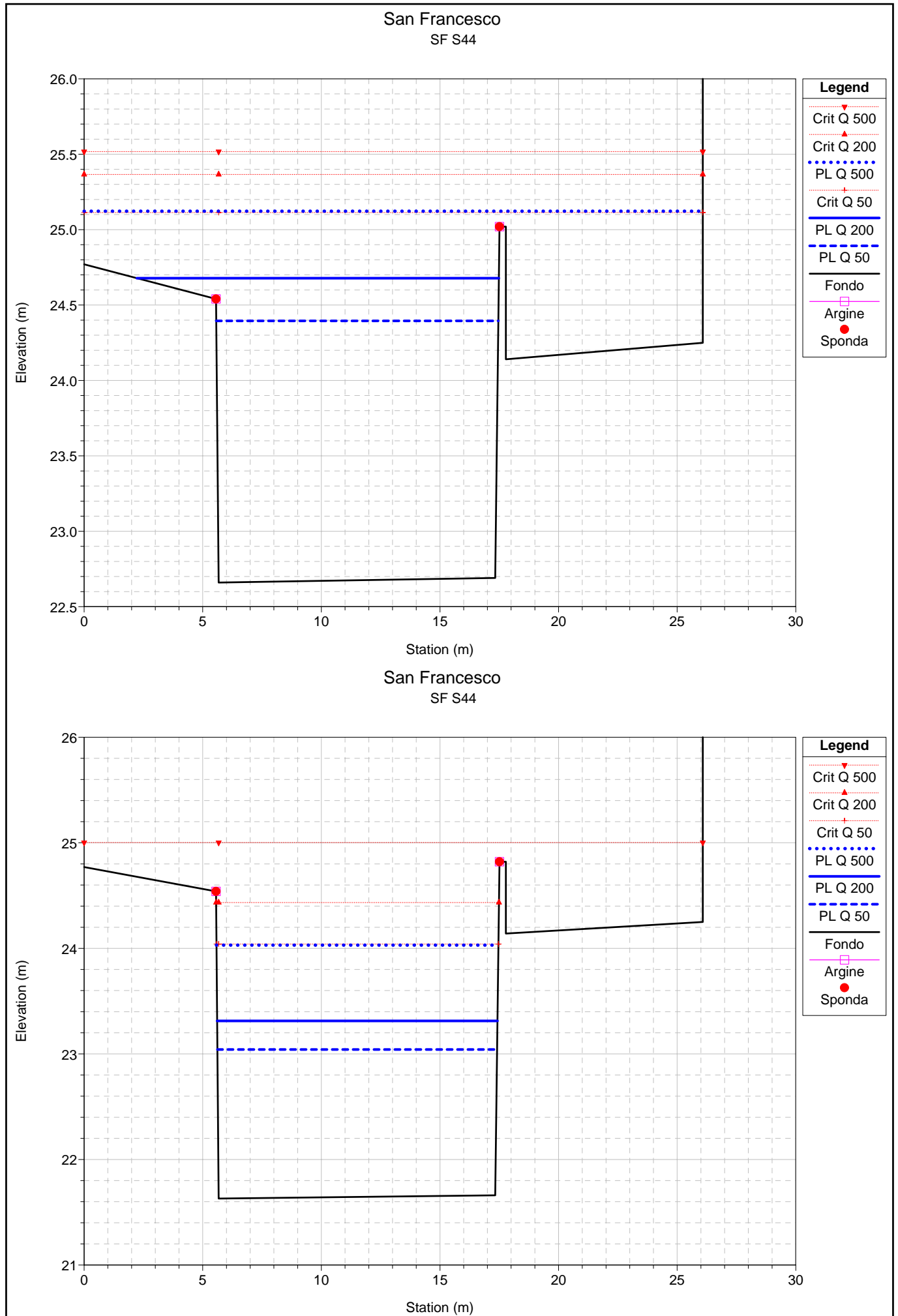


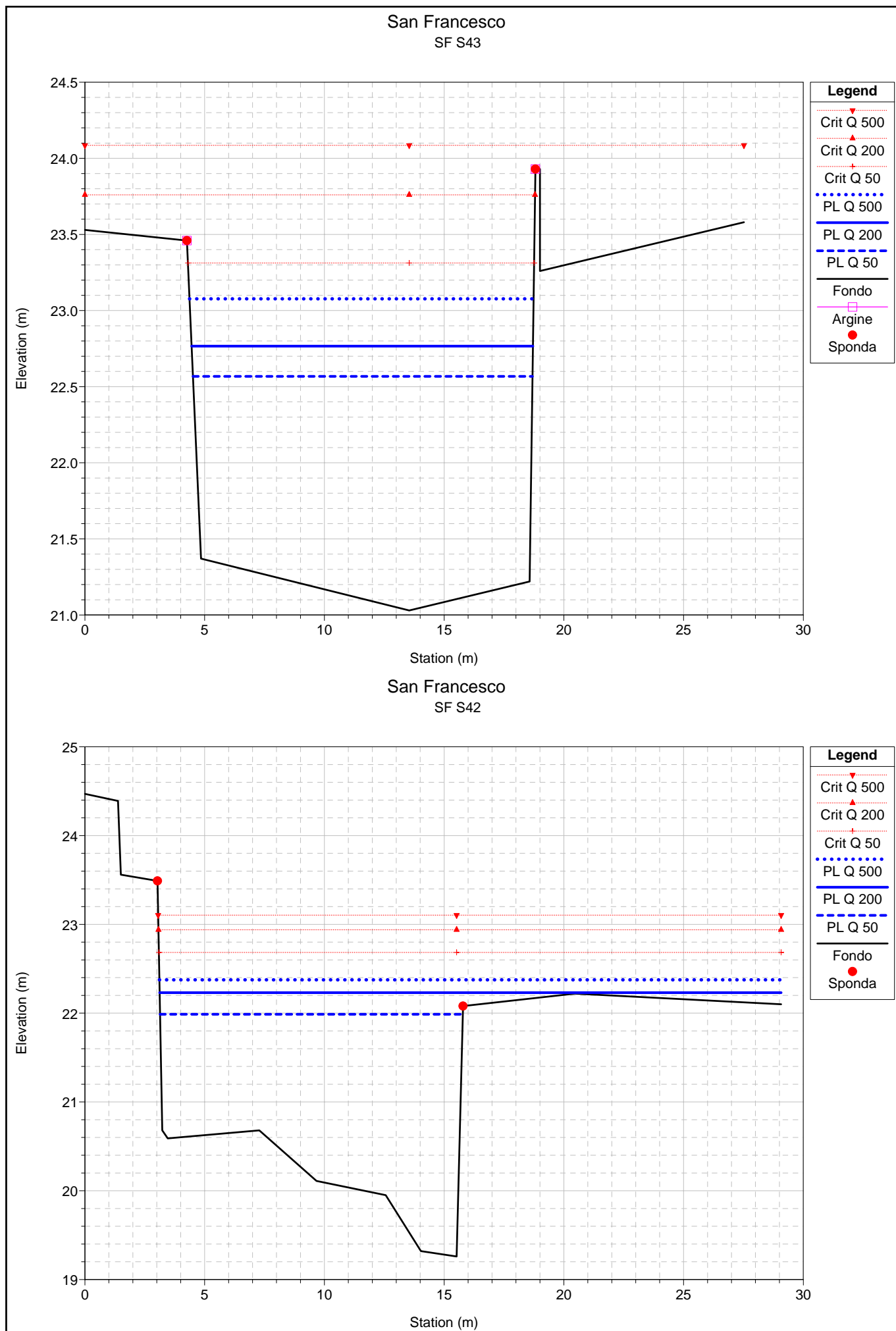


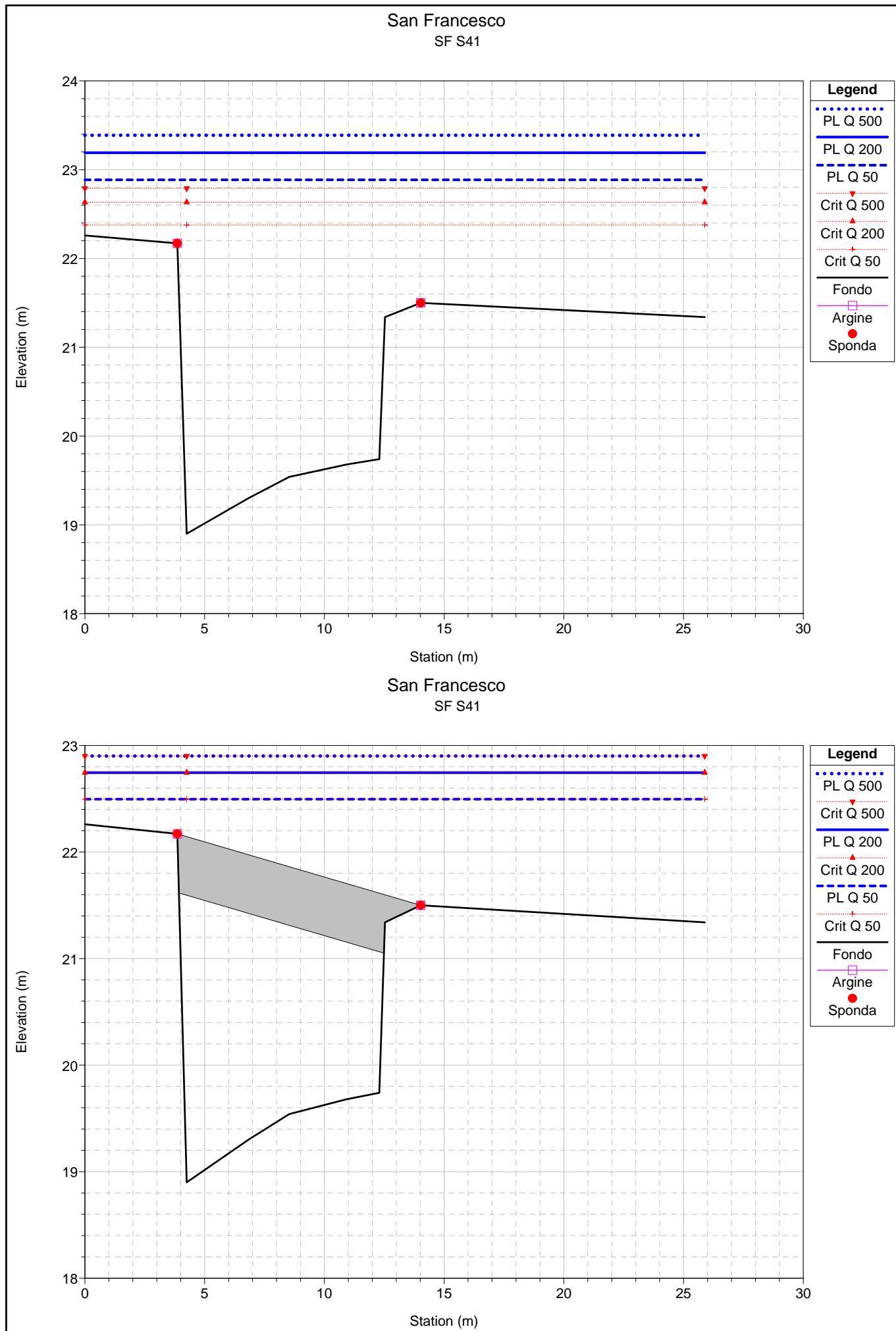


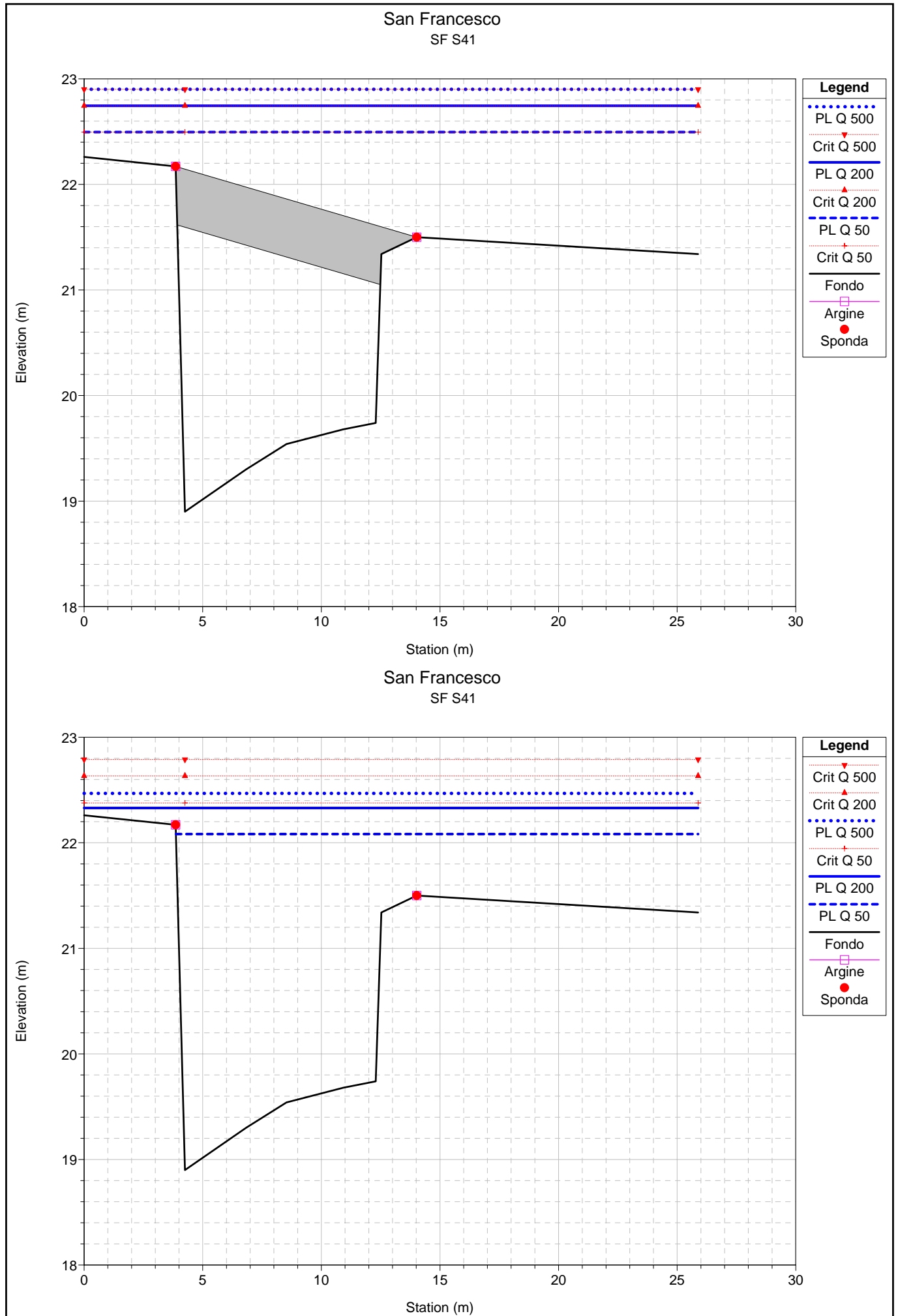


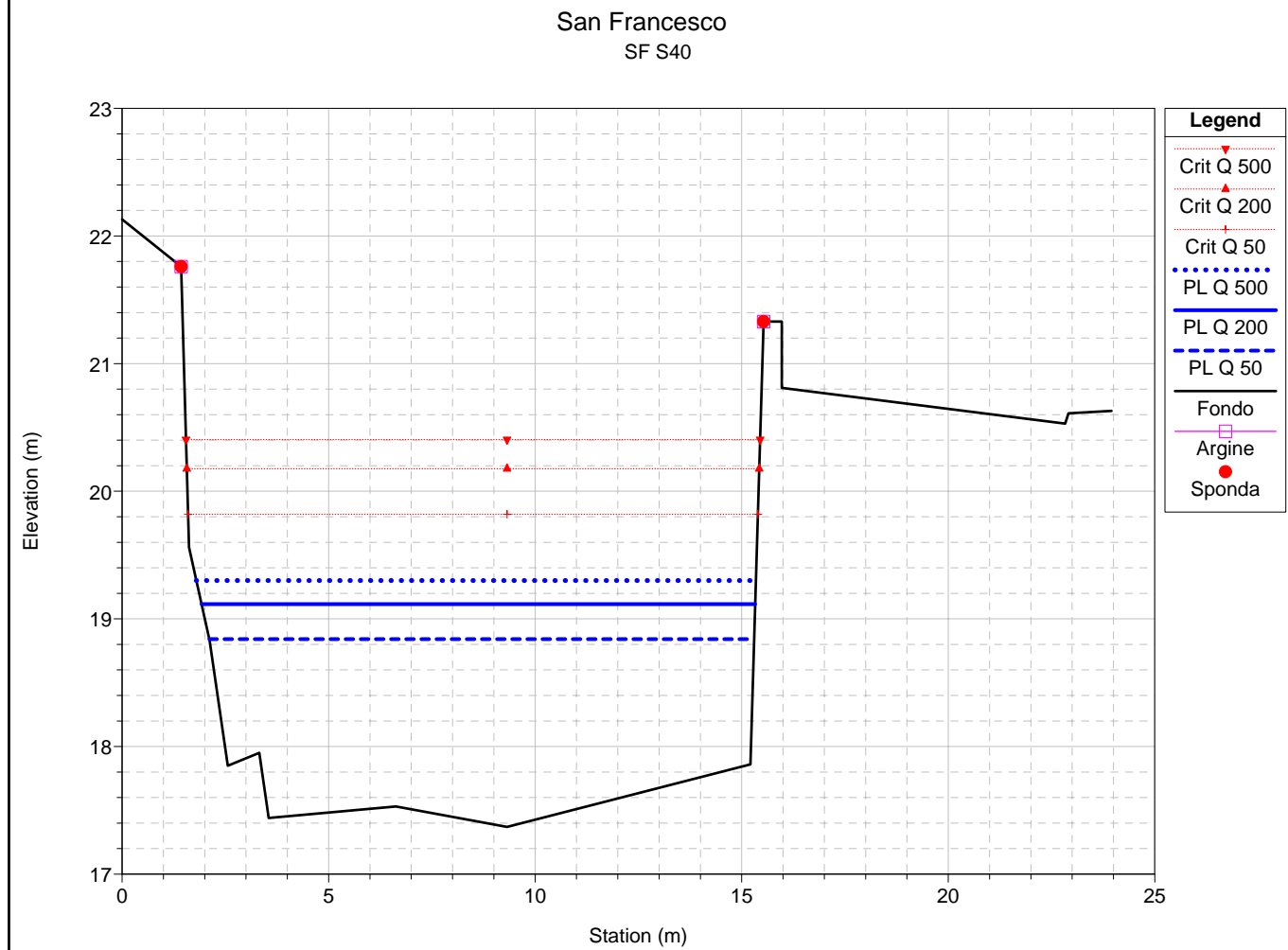
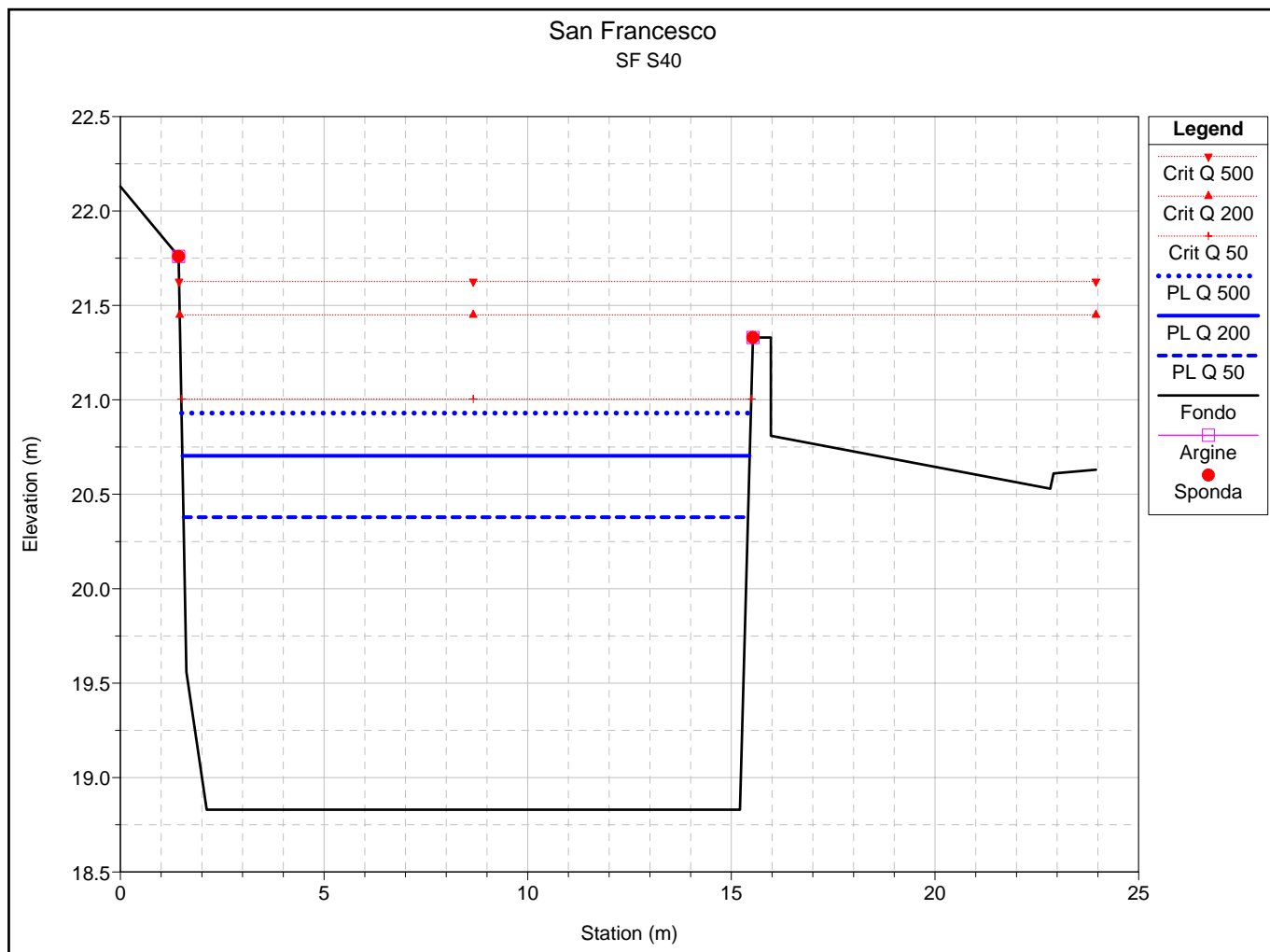


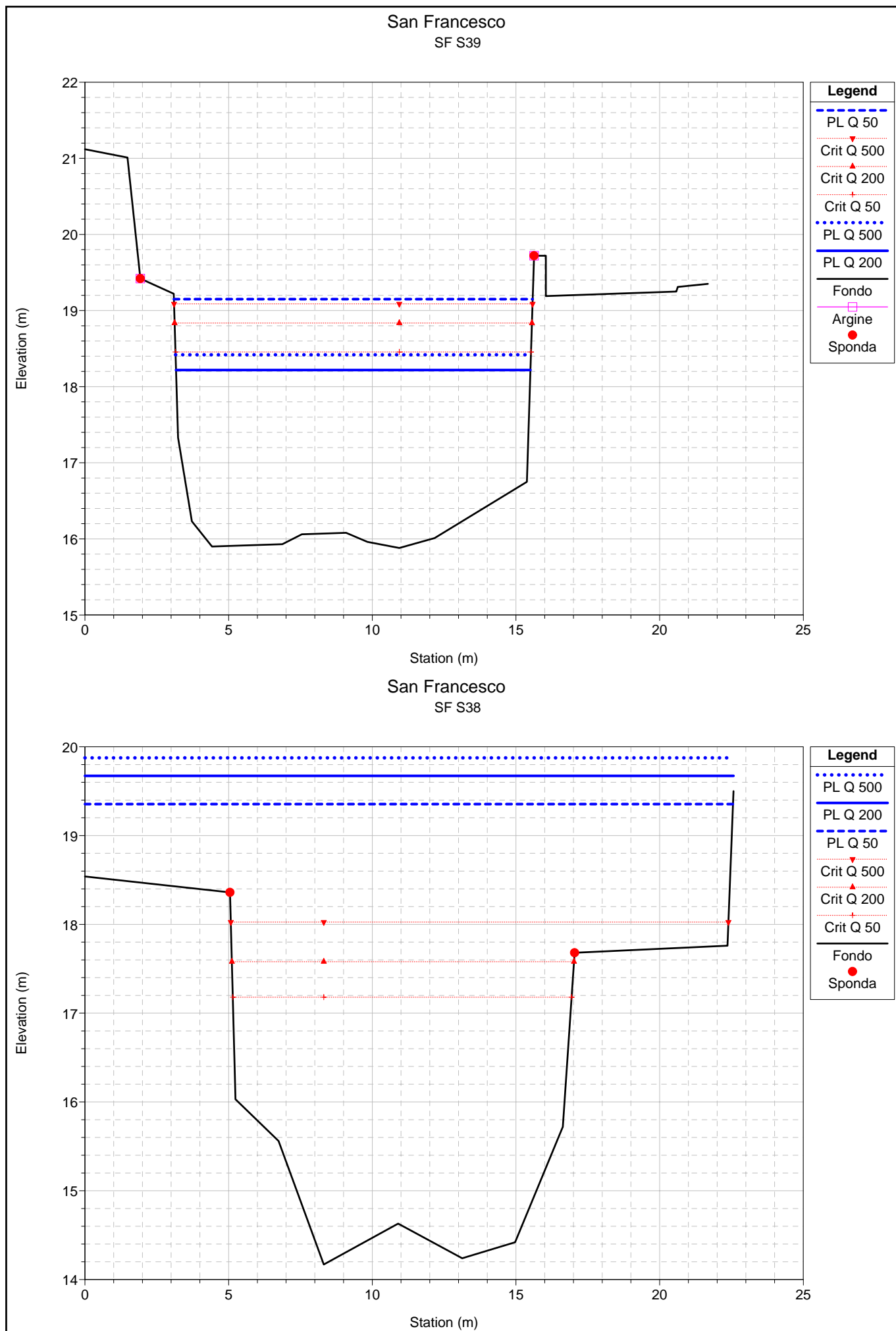


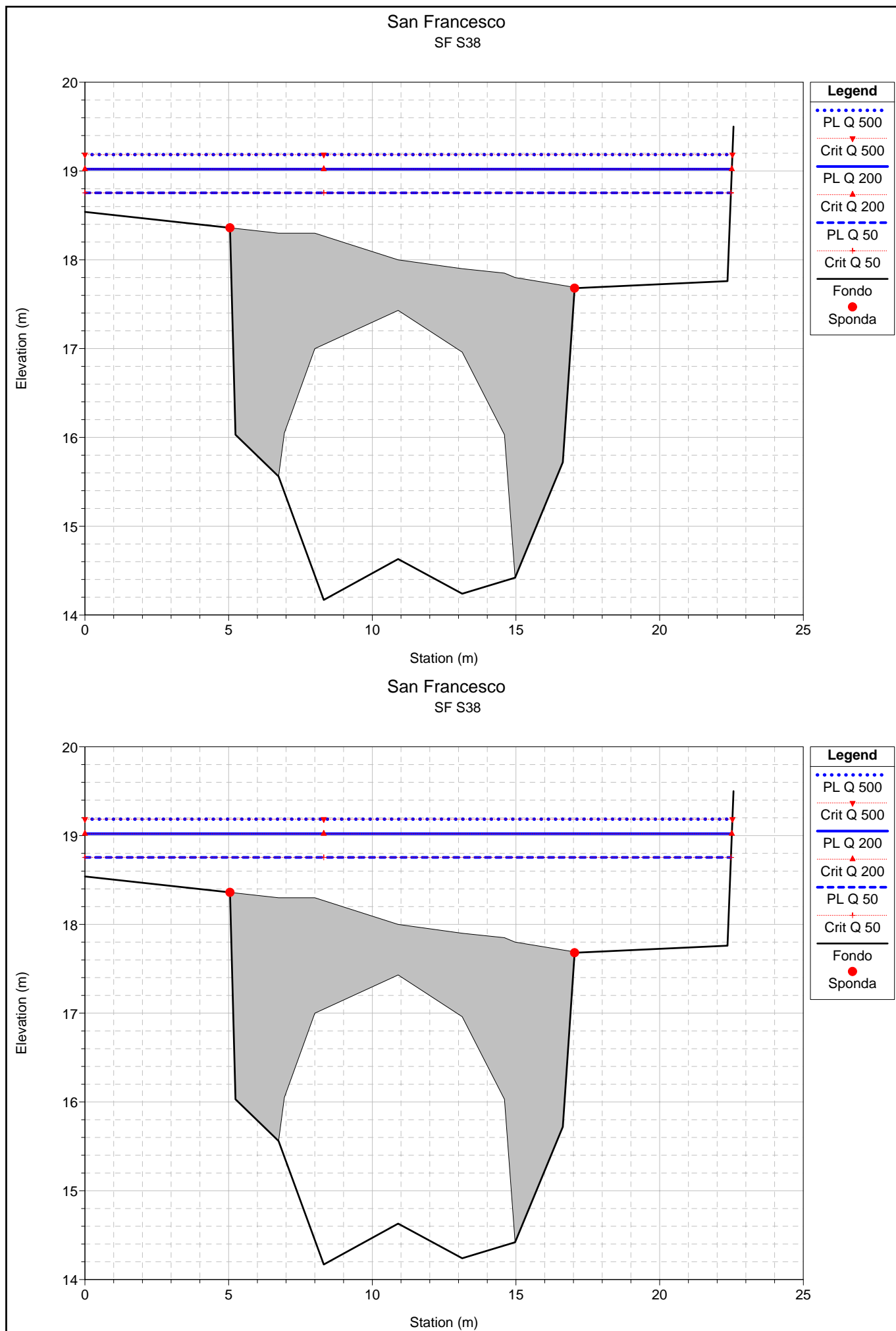


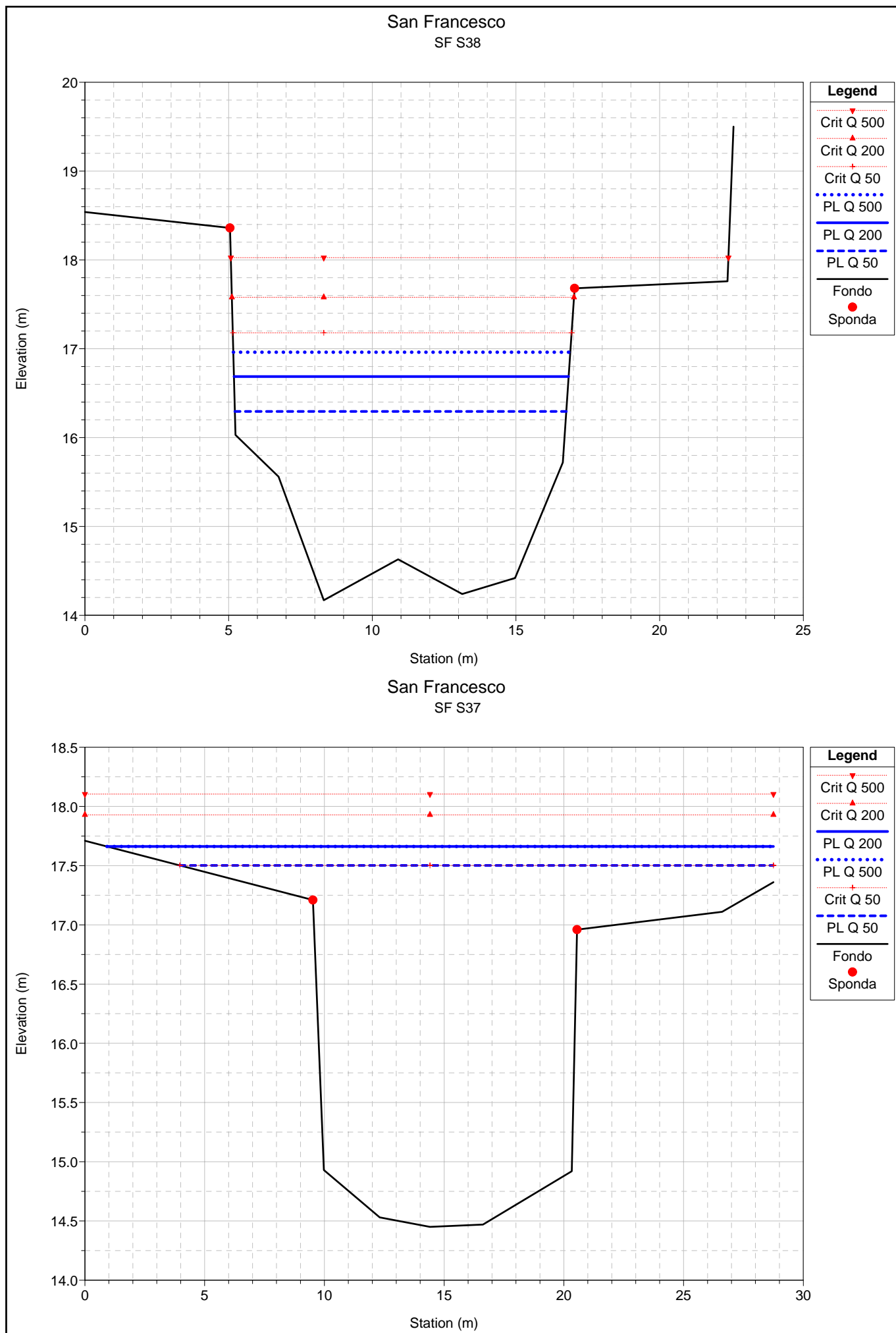


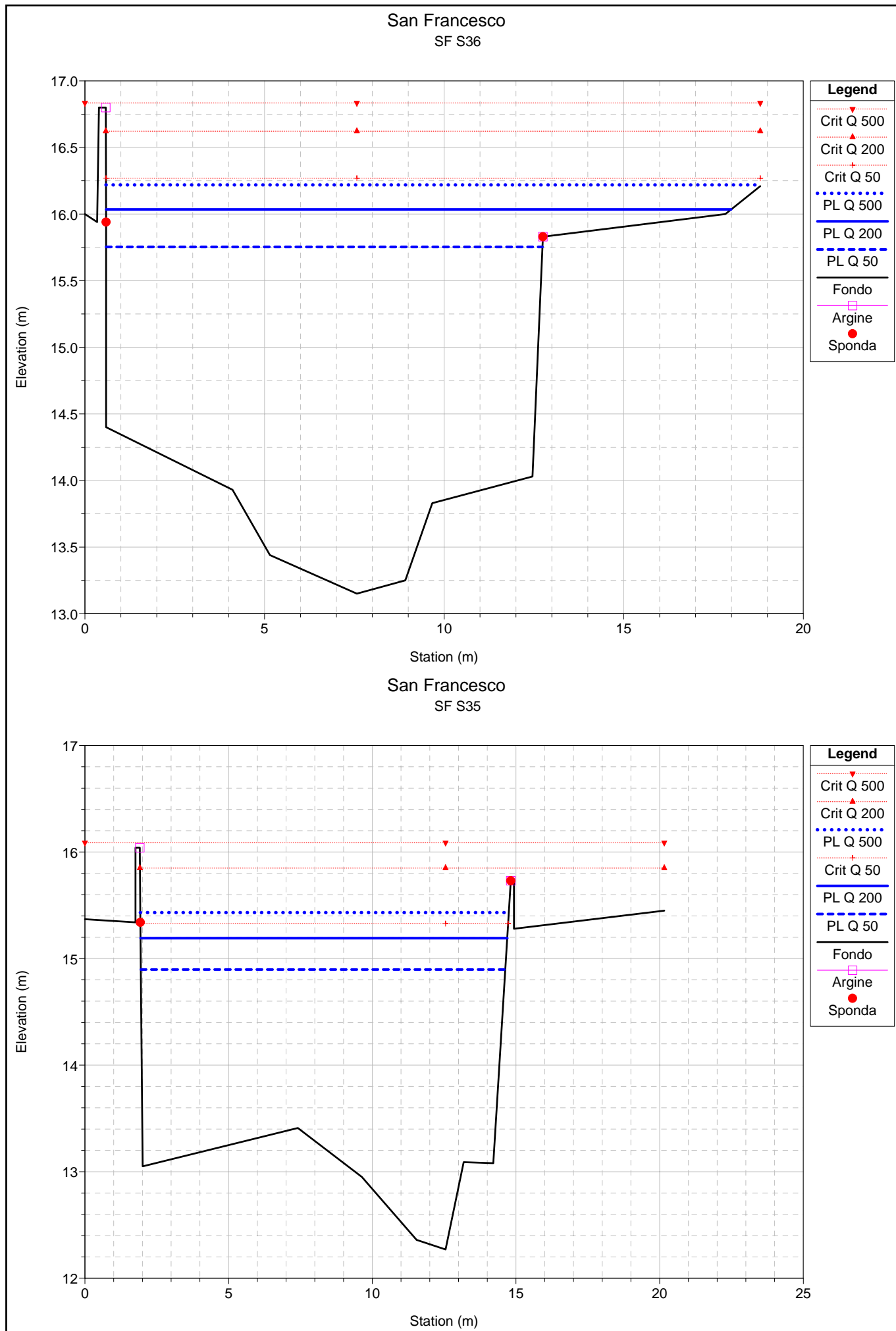


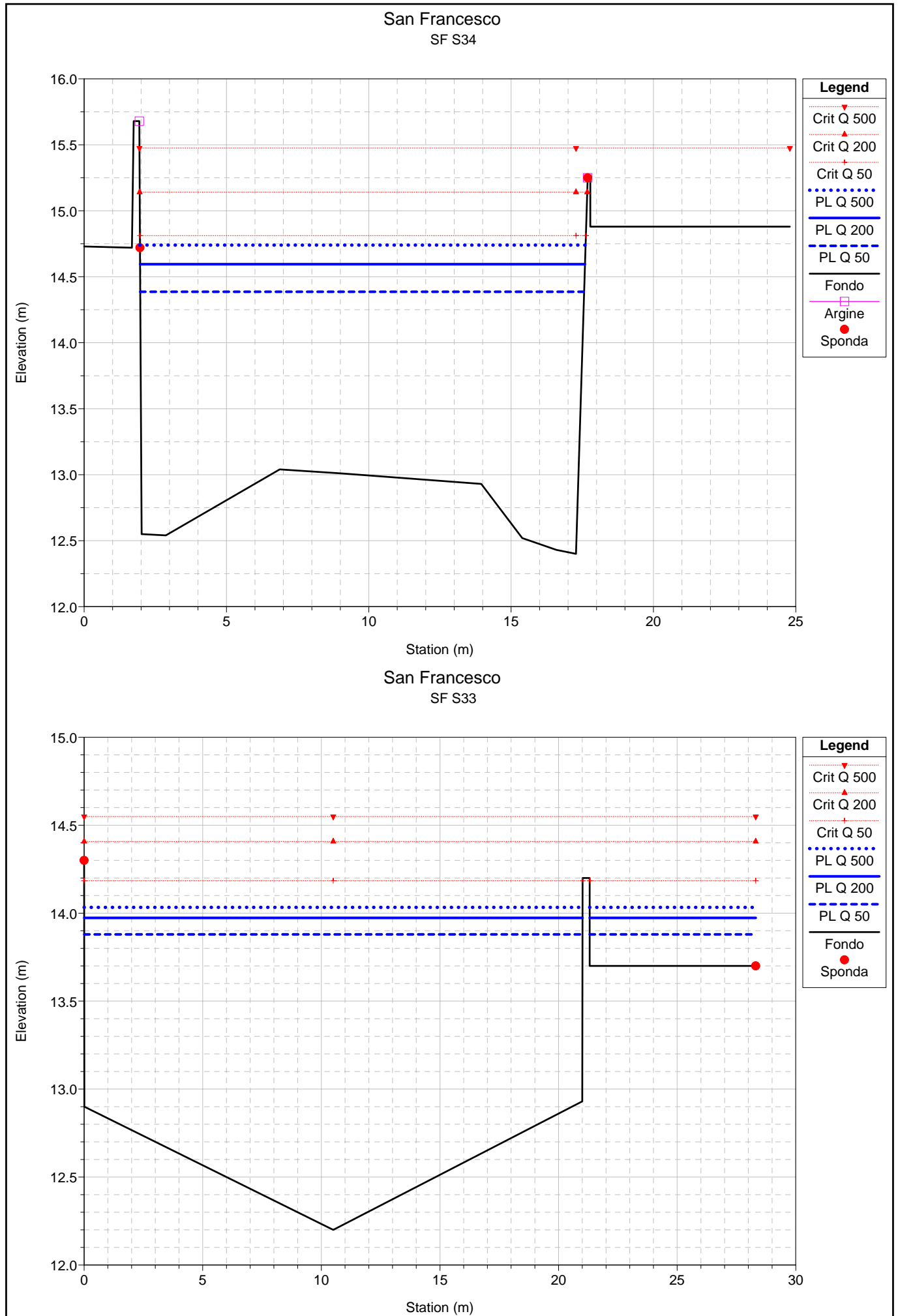


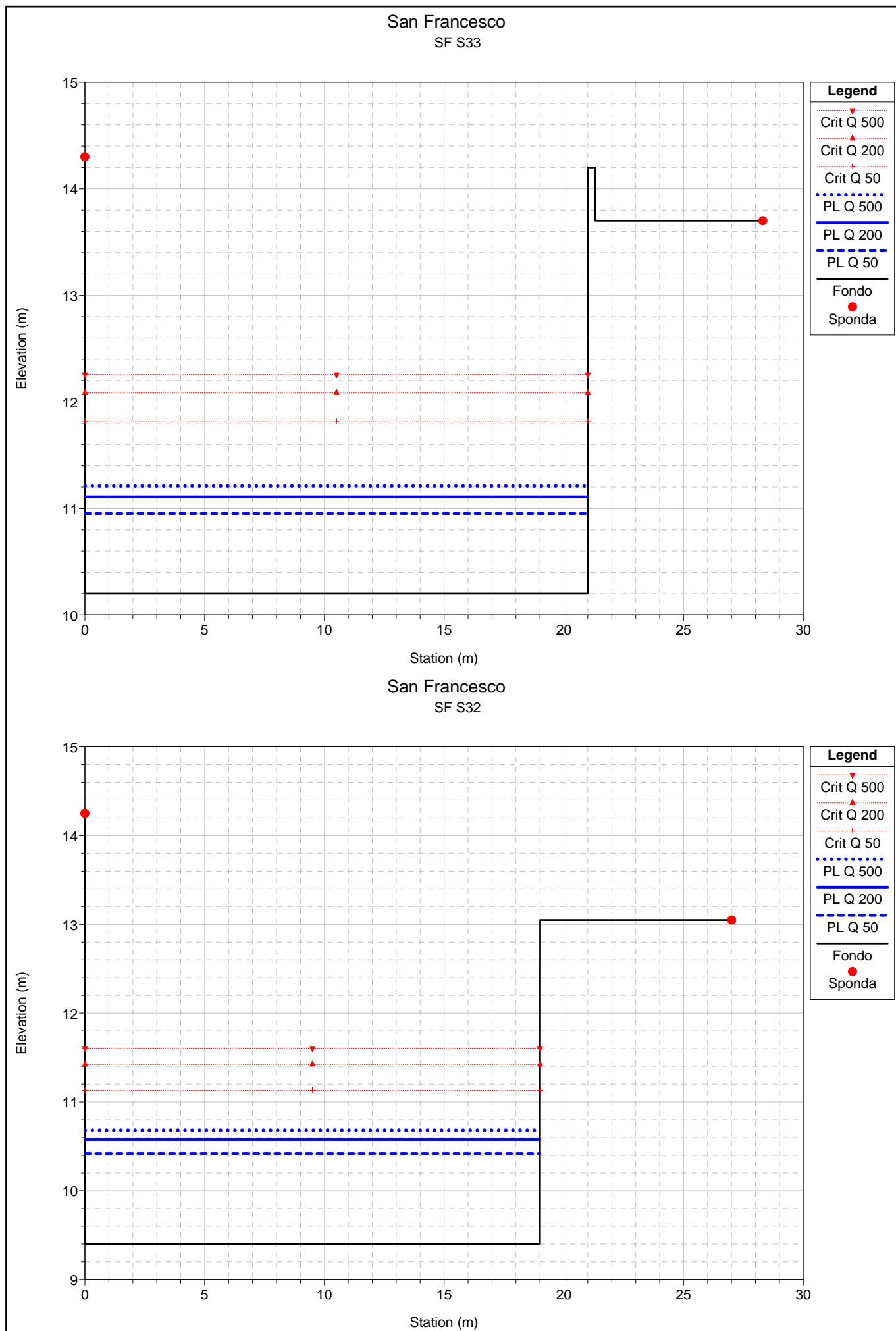




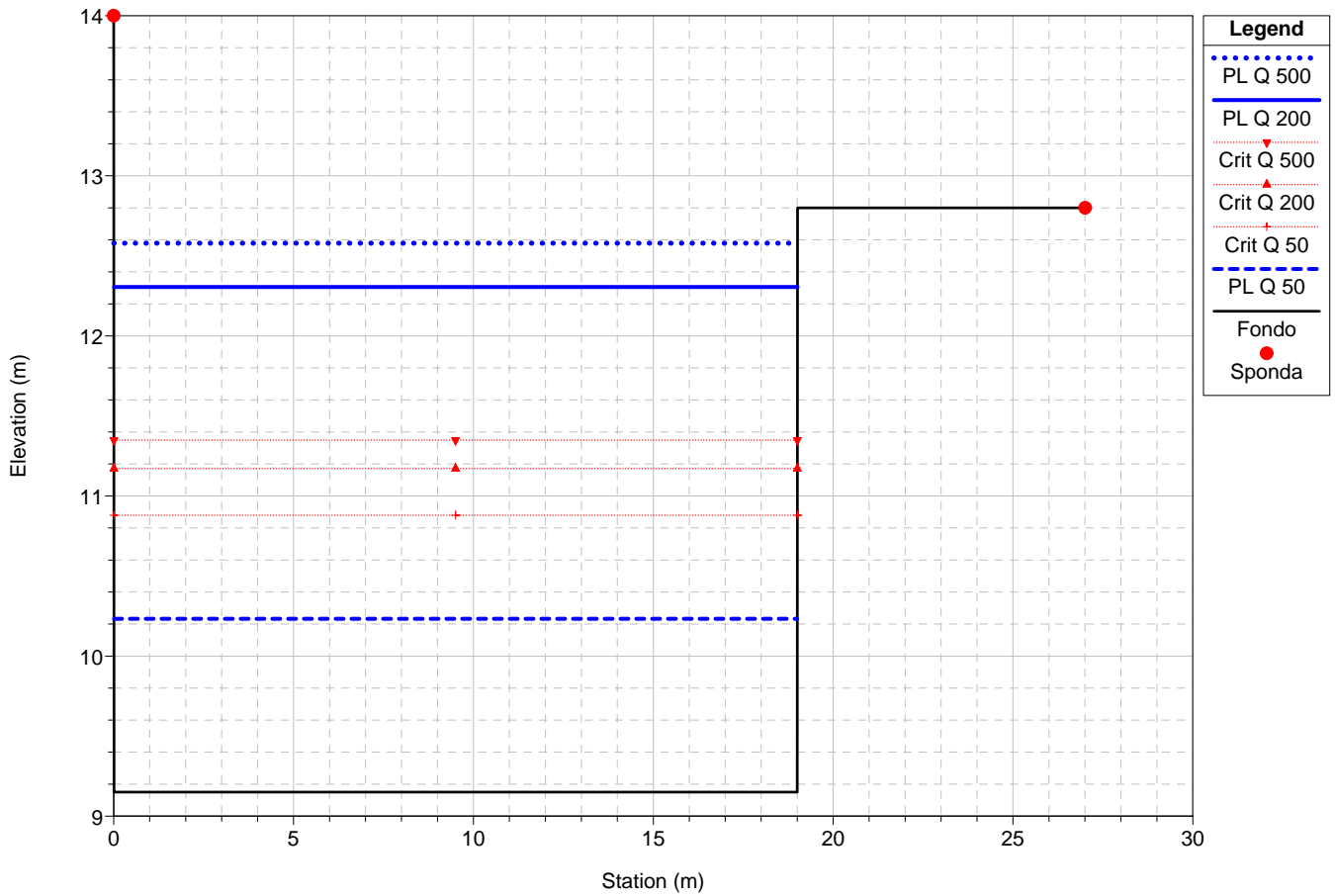




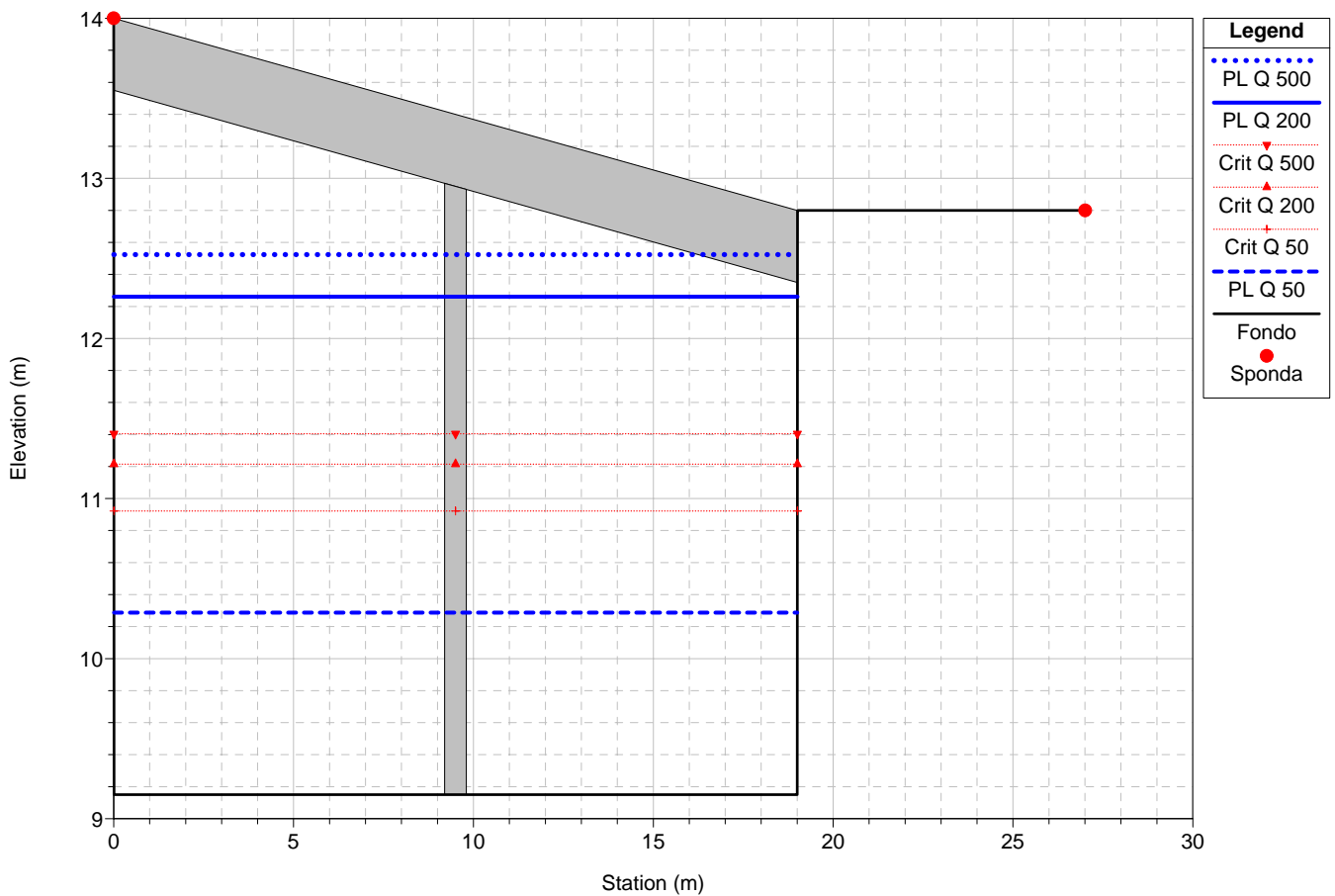


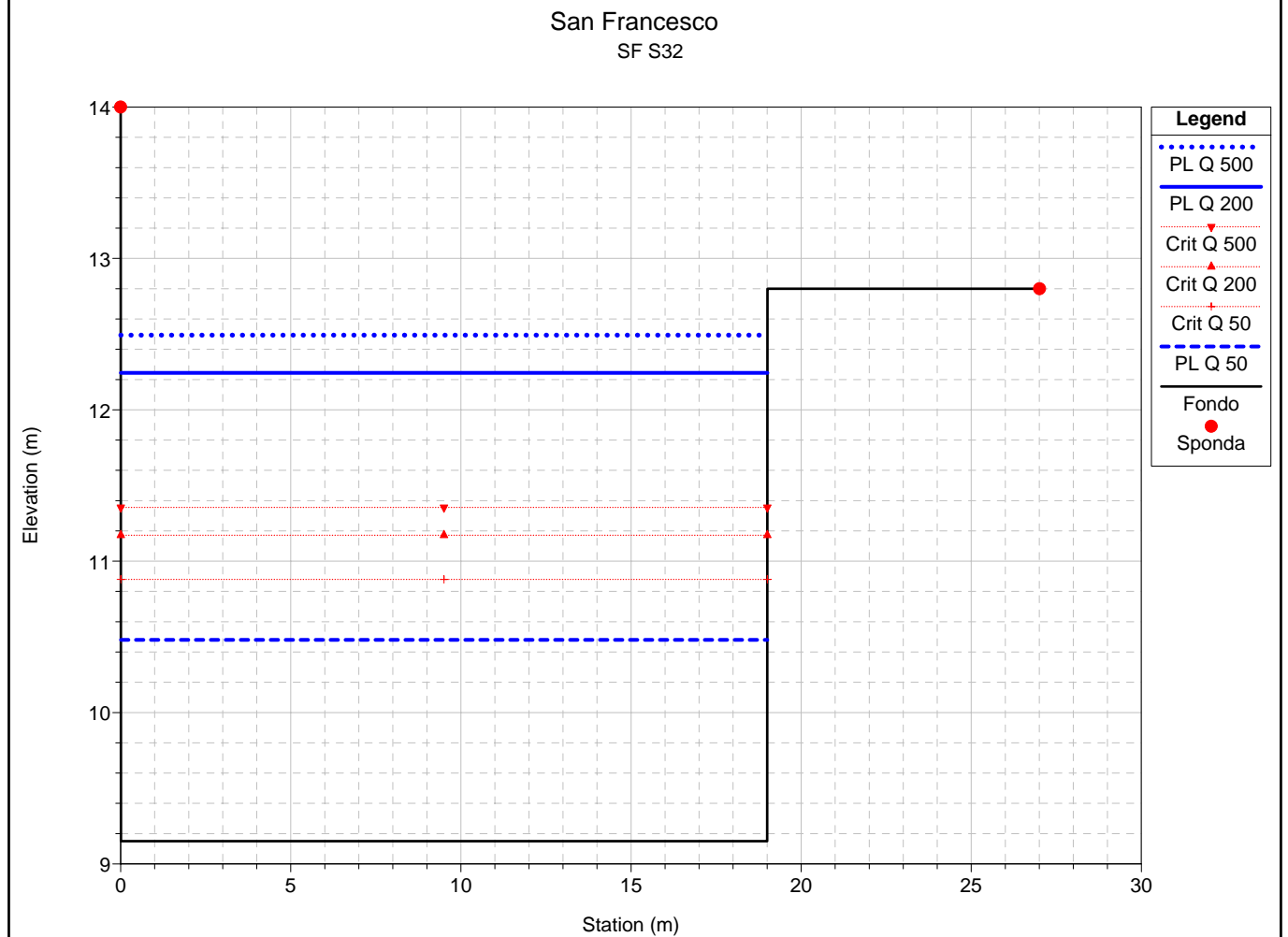
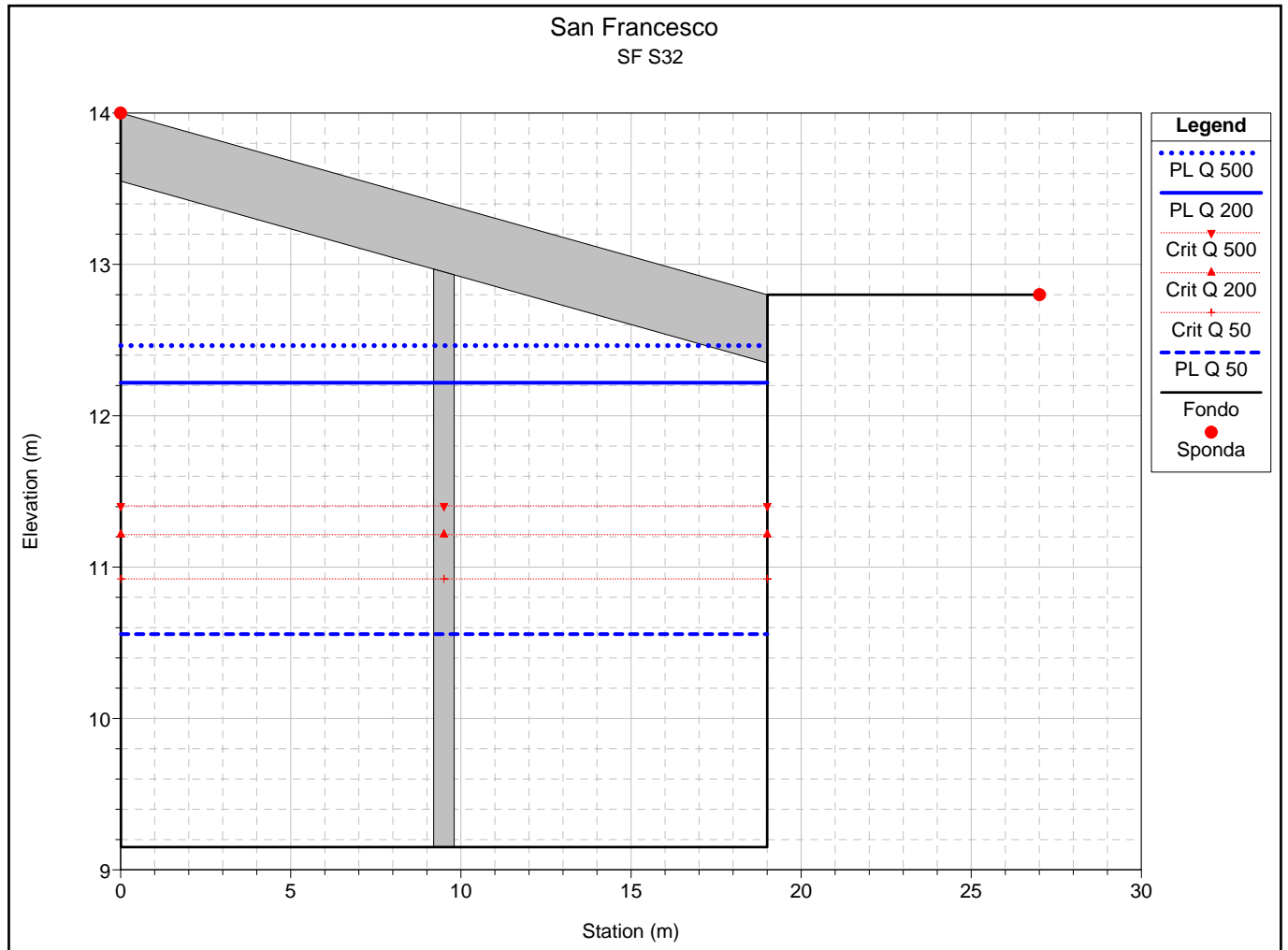


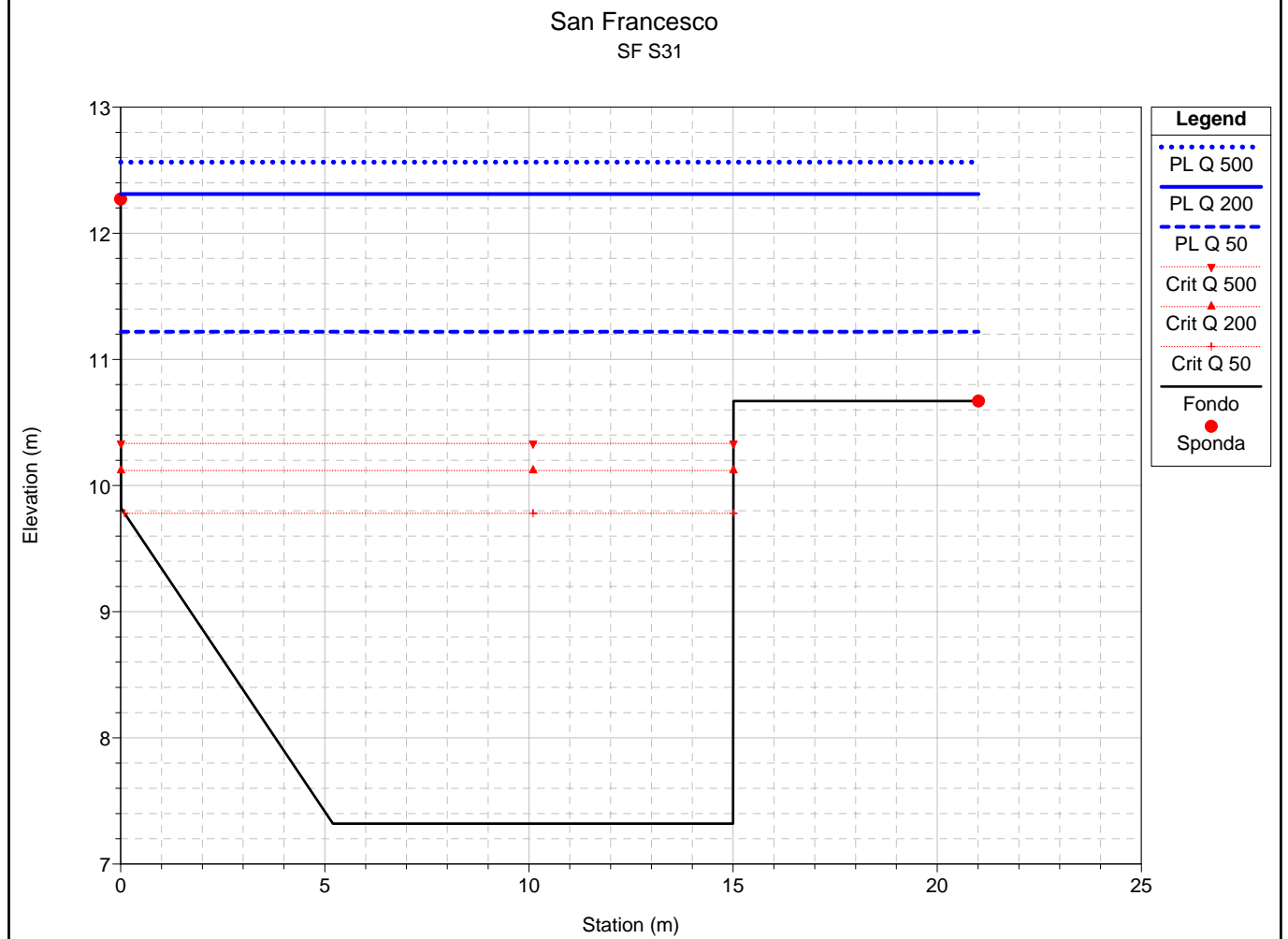
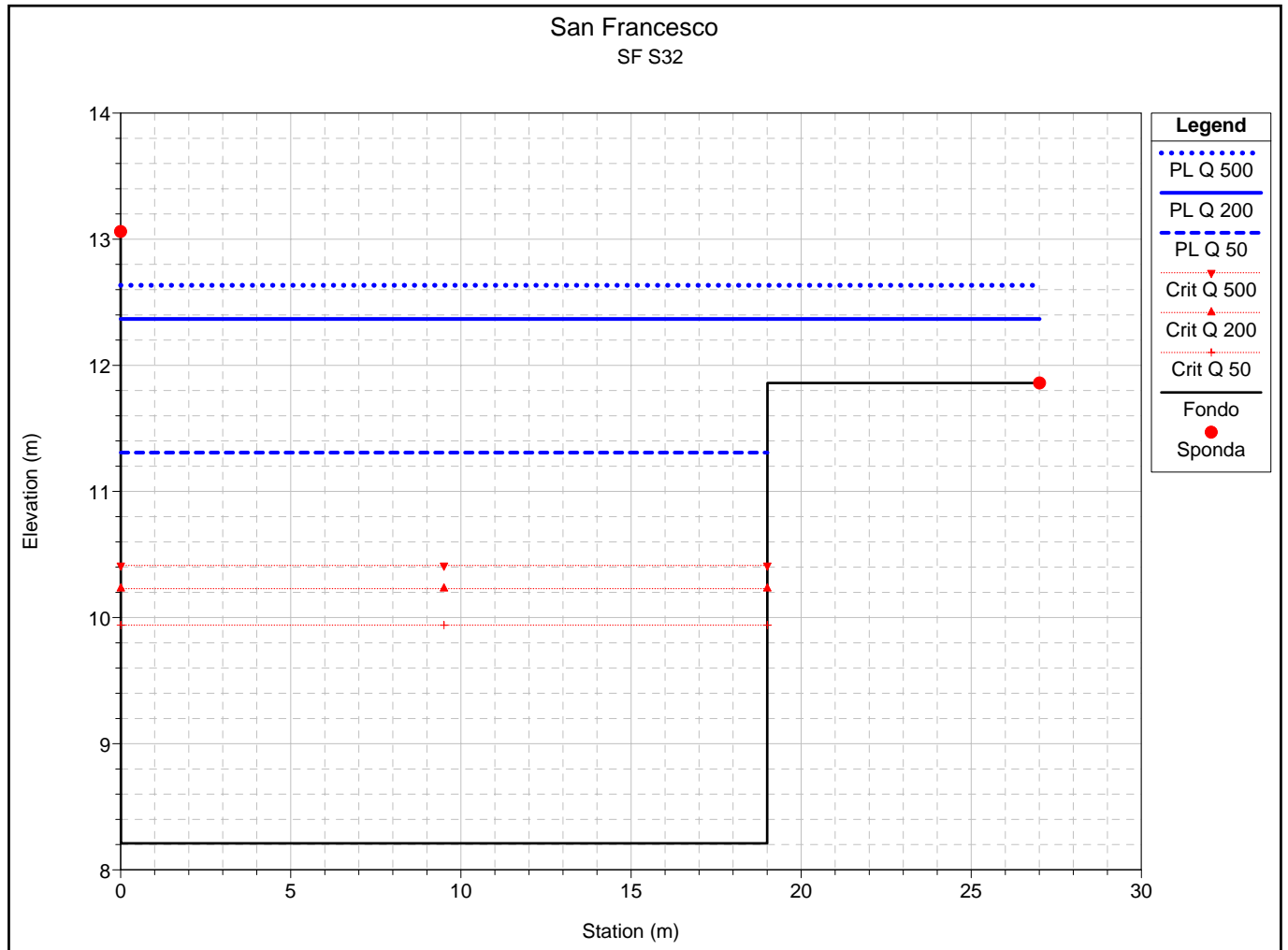
San Francesco
SF S32



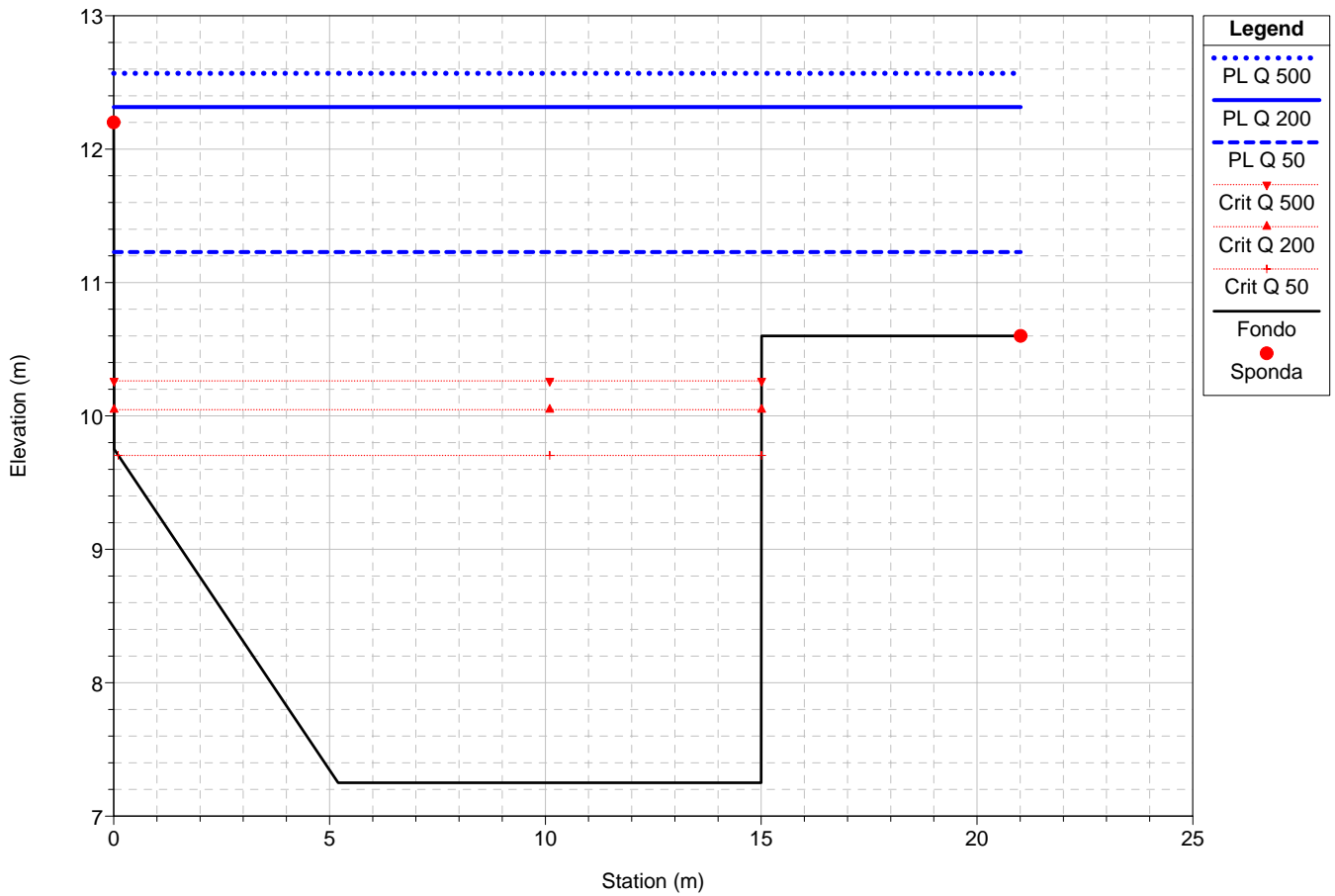
San Francesco
SF S32



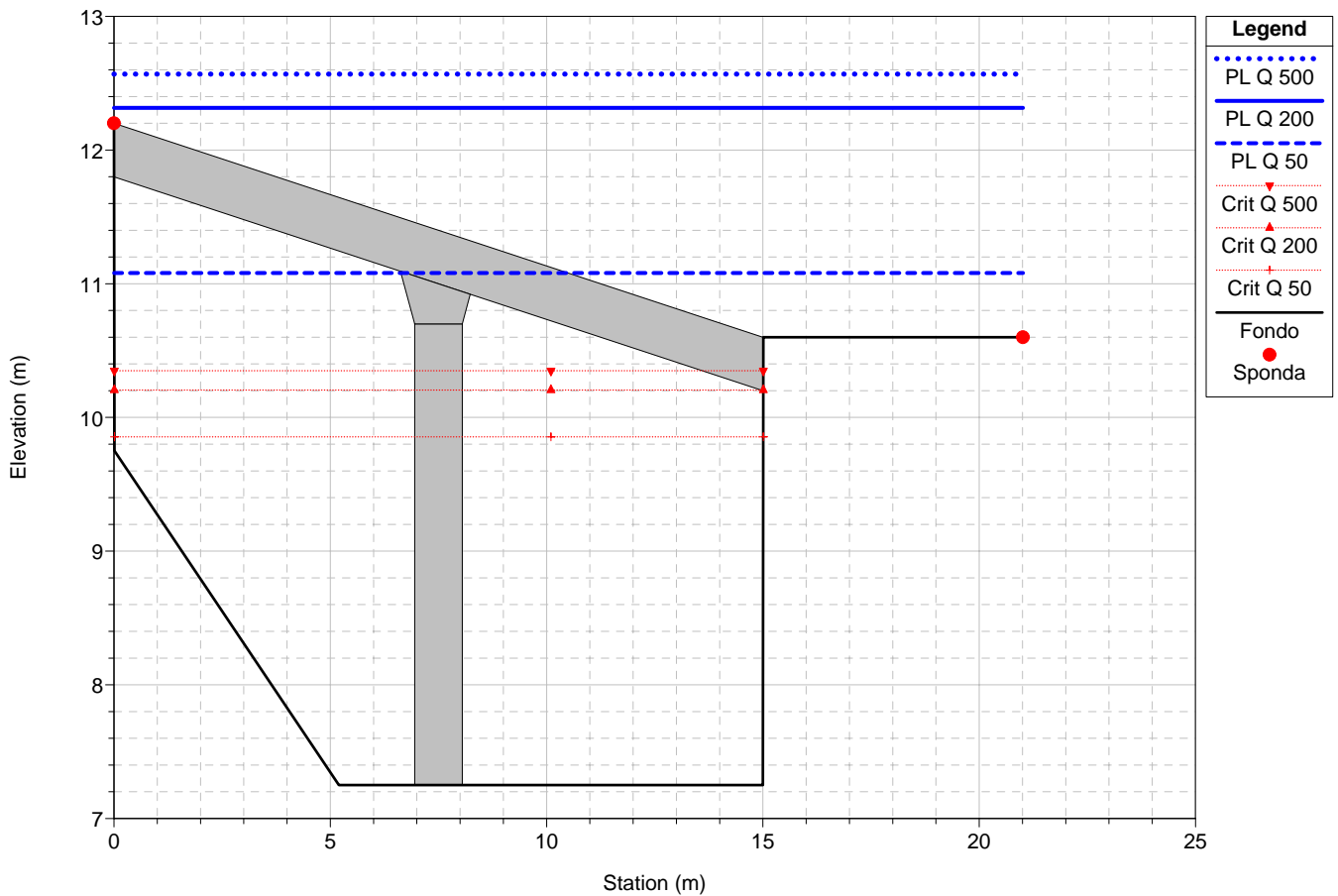




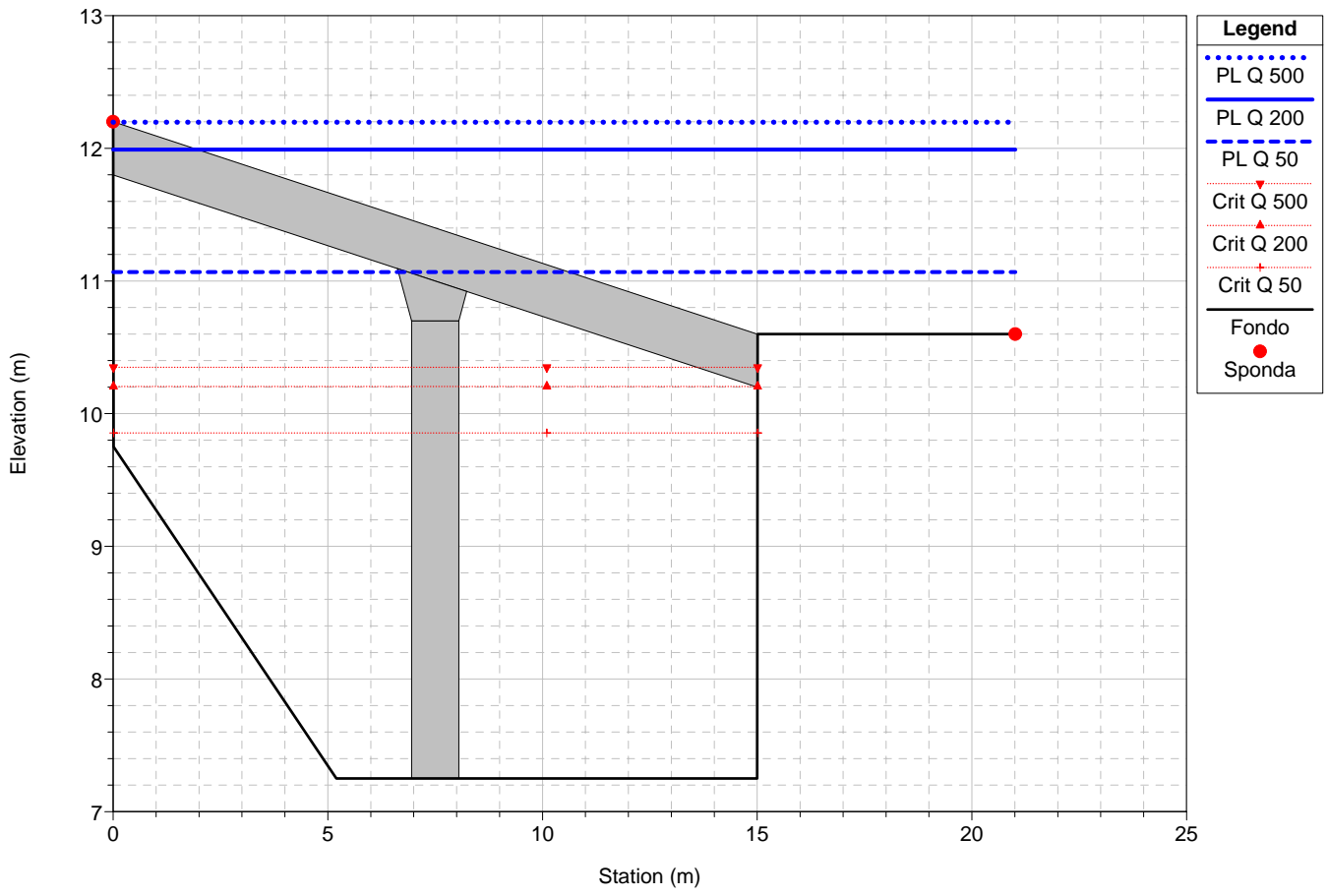
San Francesco
SF S31



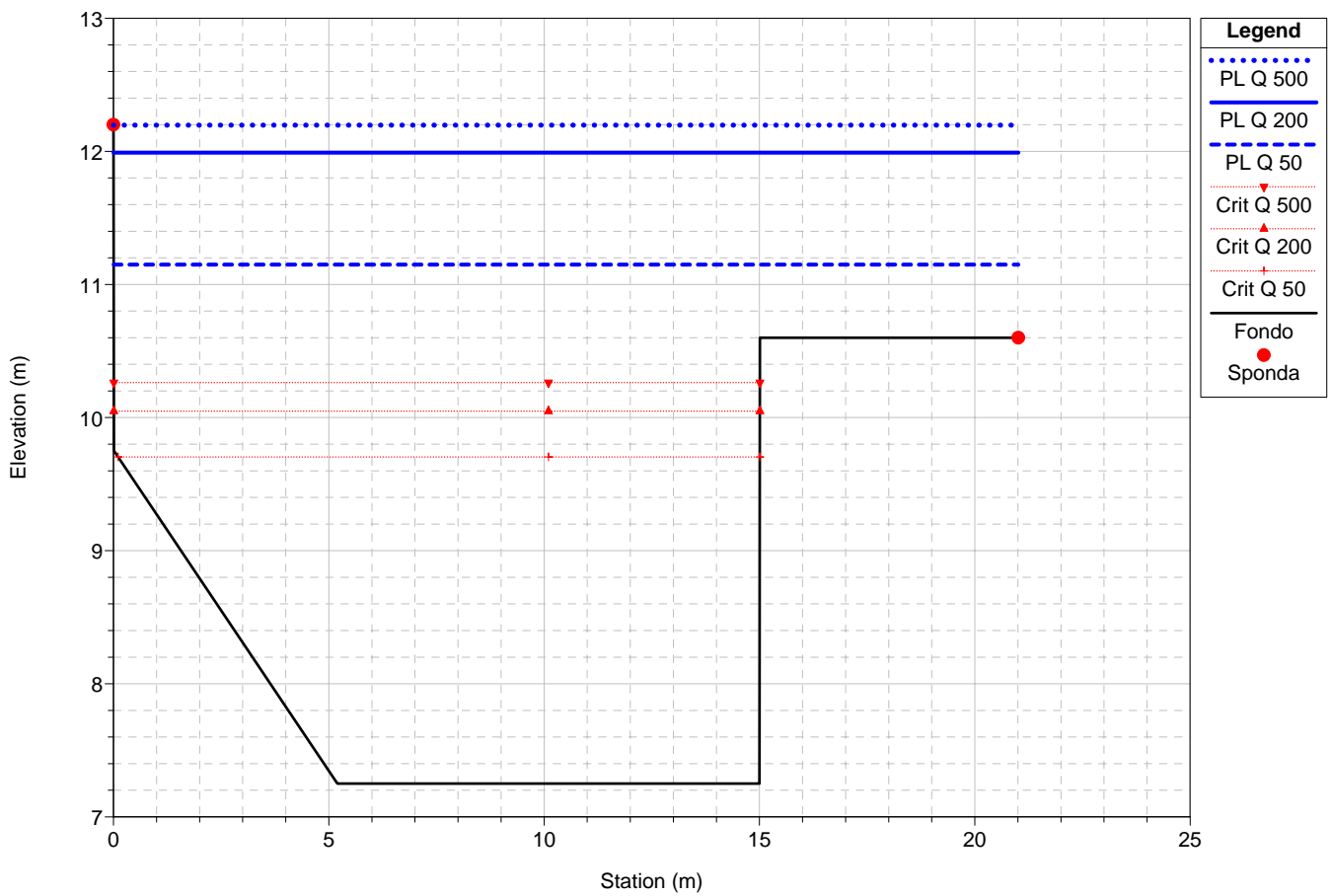
San Francesco
SF S31



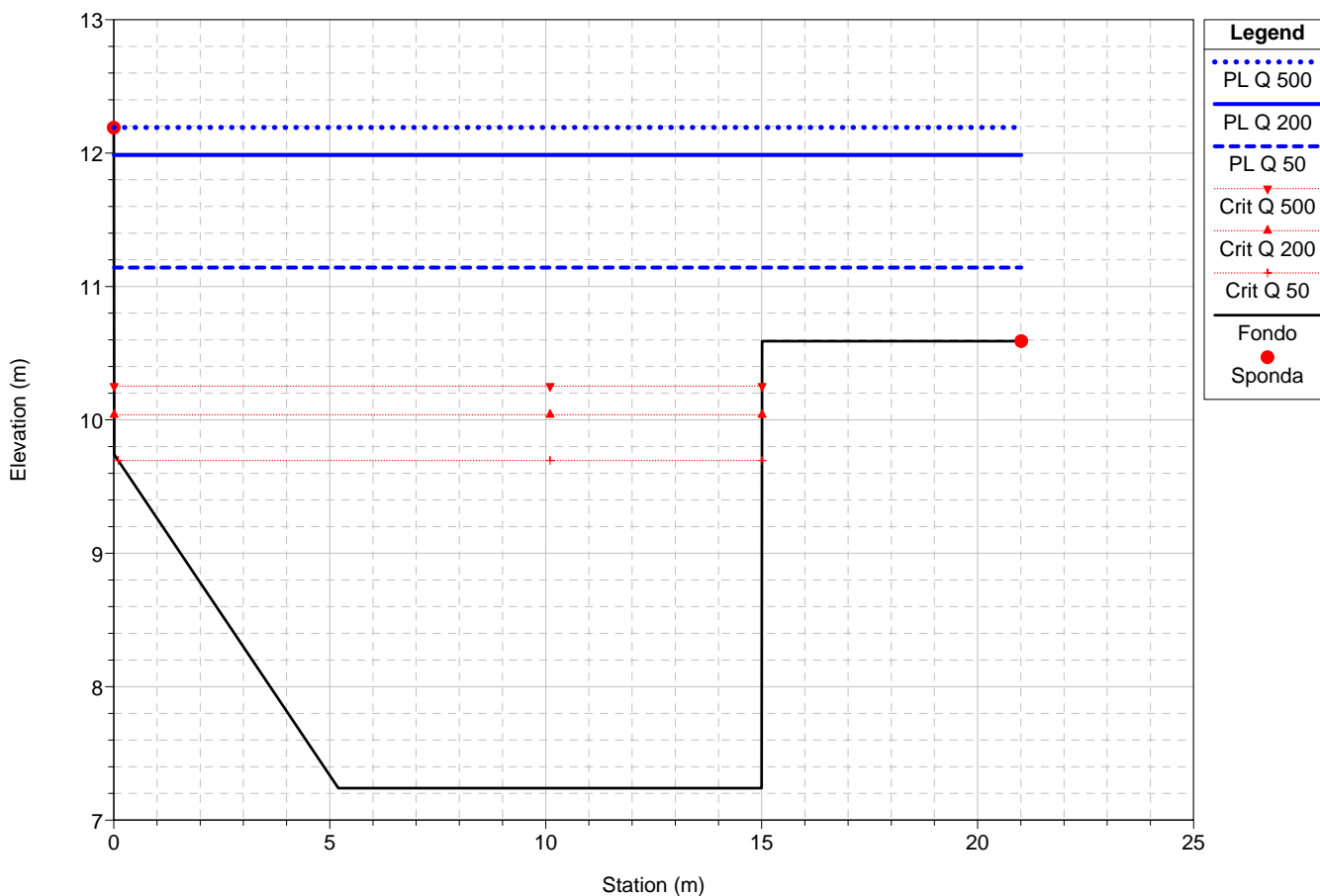
San Francesco
SF S31



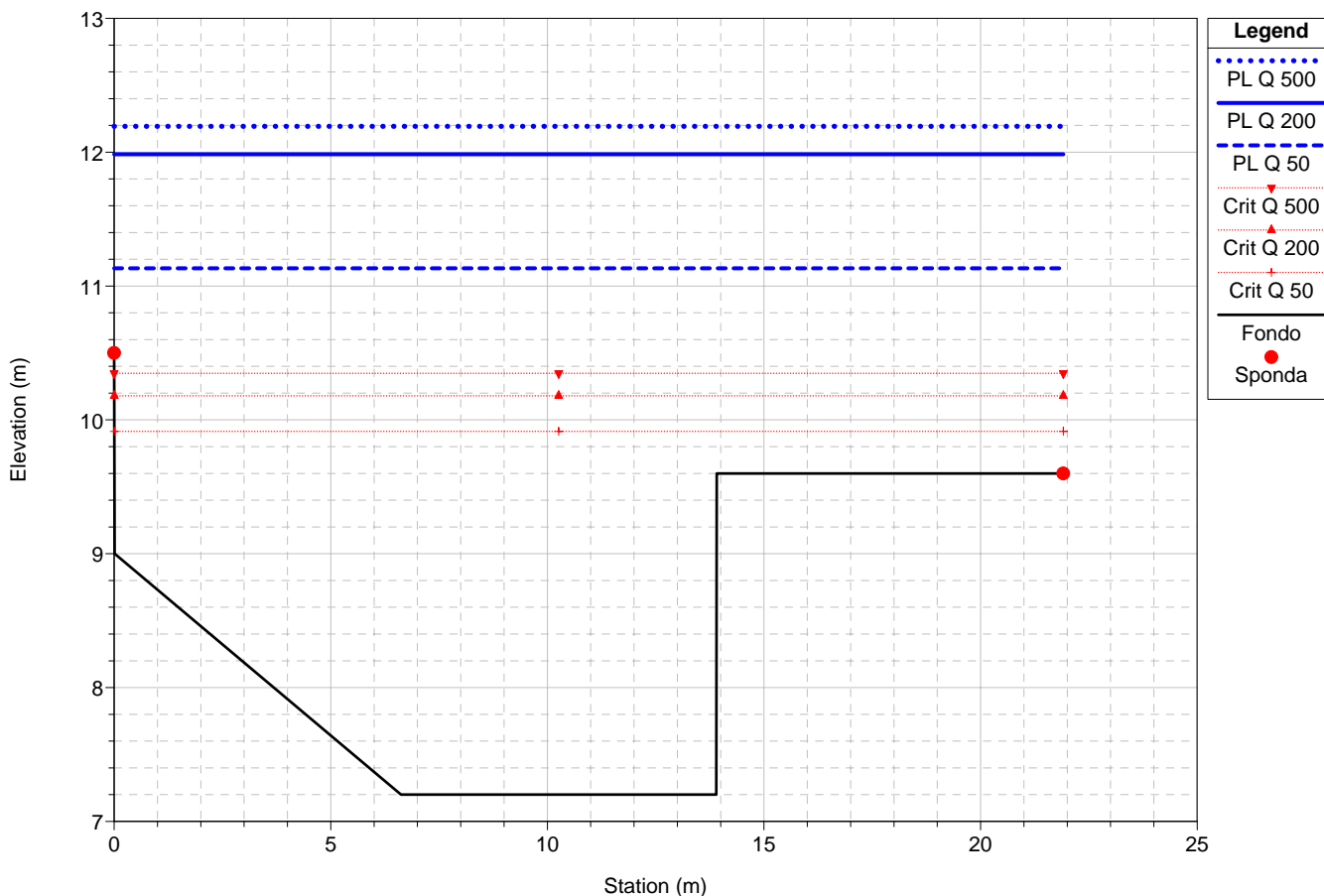
San Francesco
SF S31

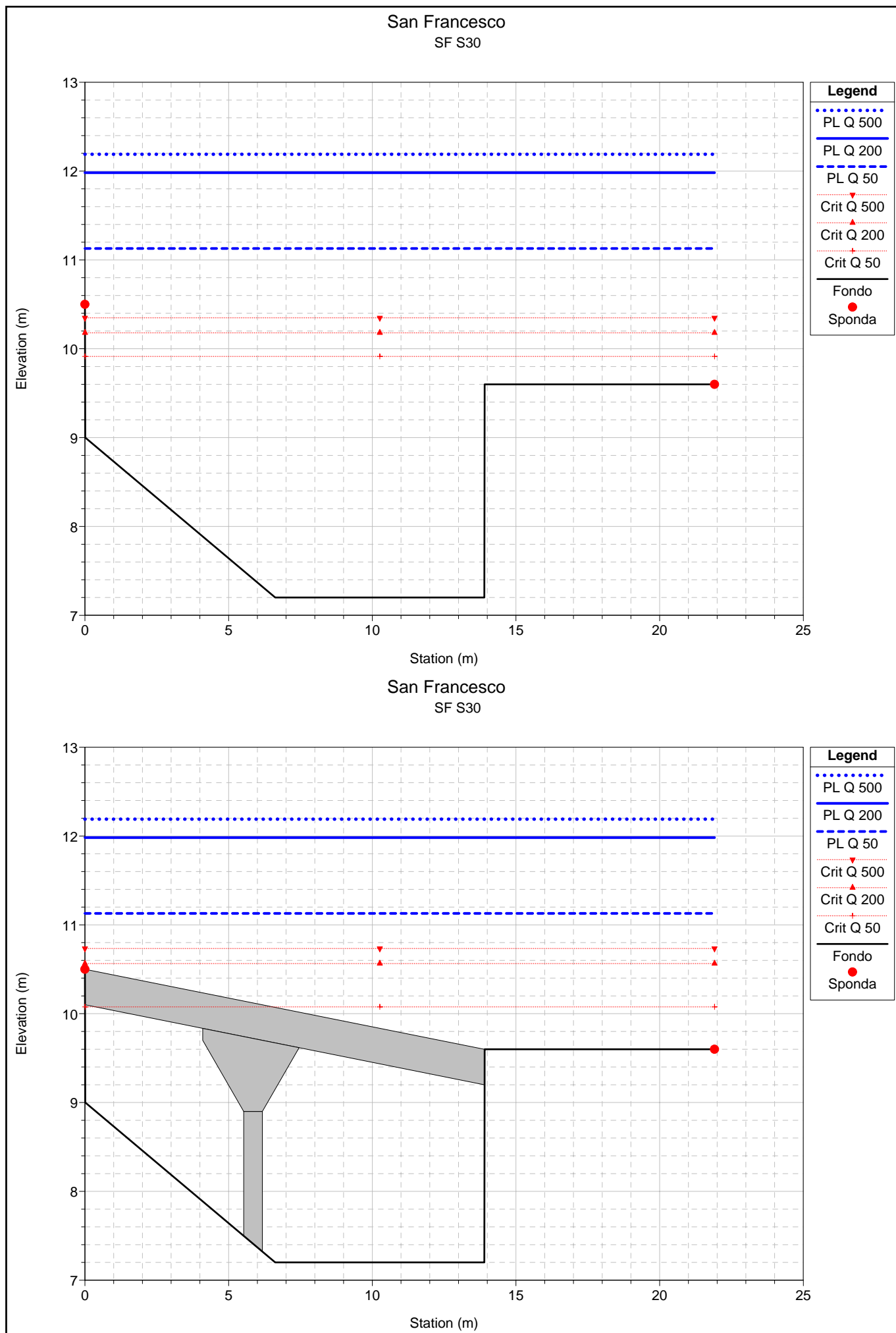


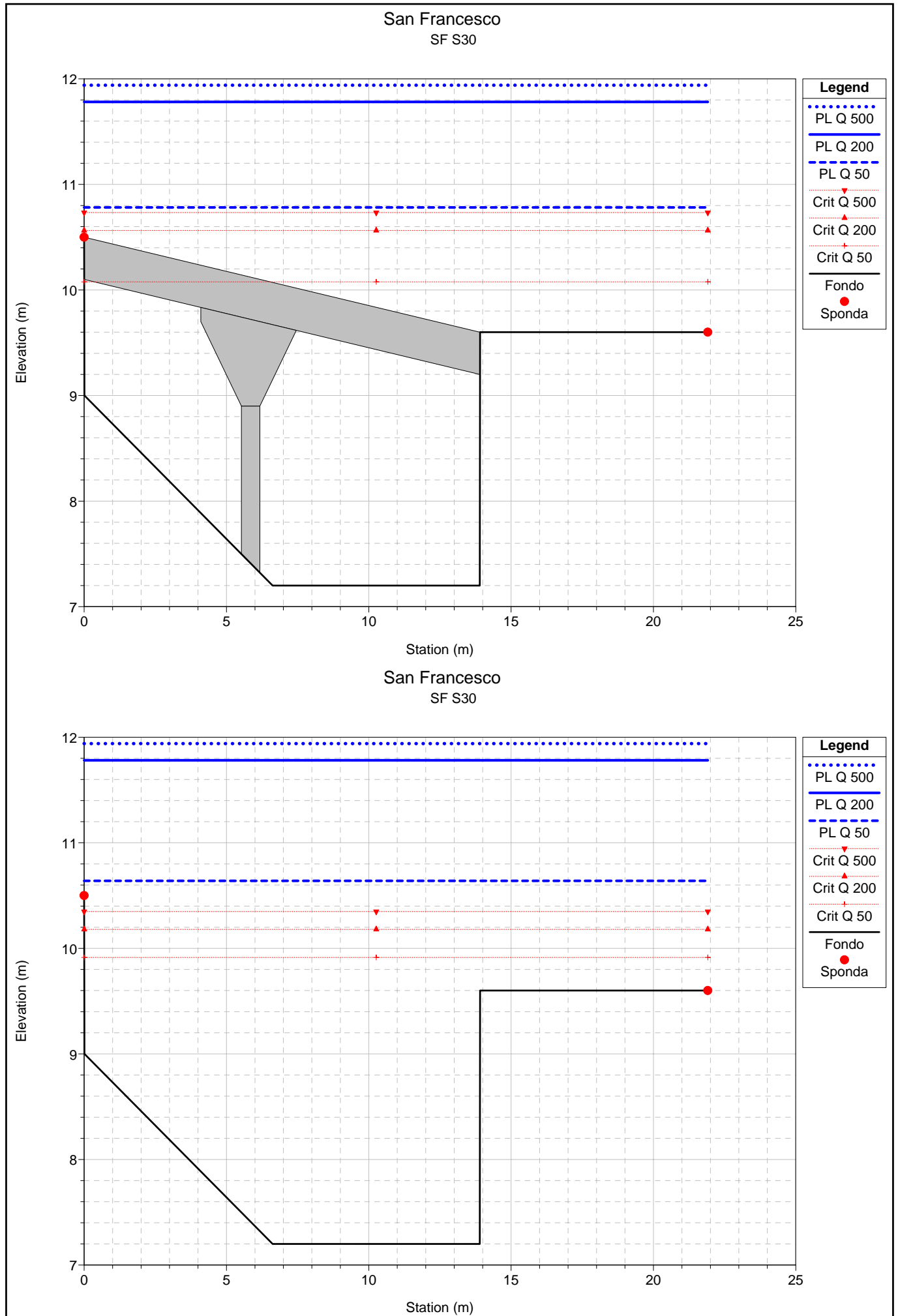
San Francesco
SF S31

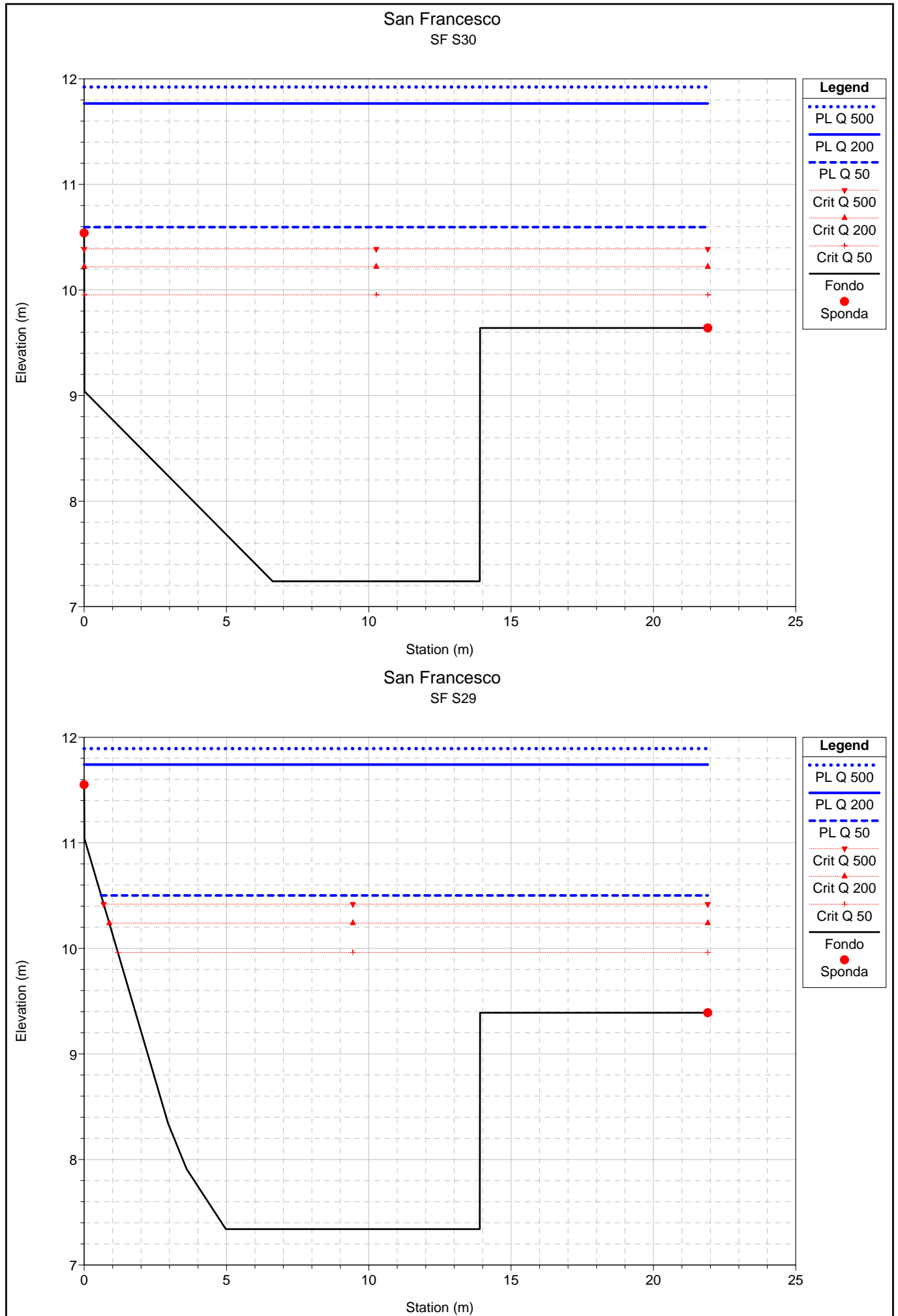


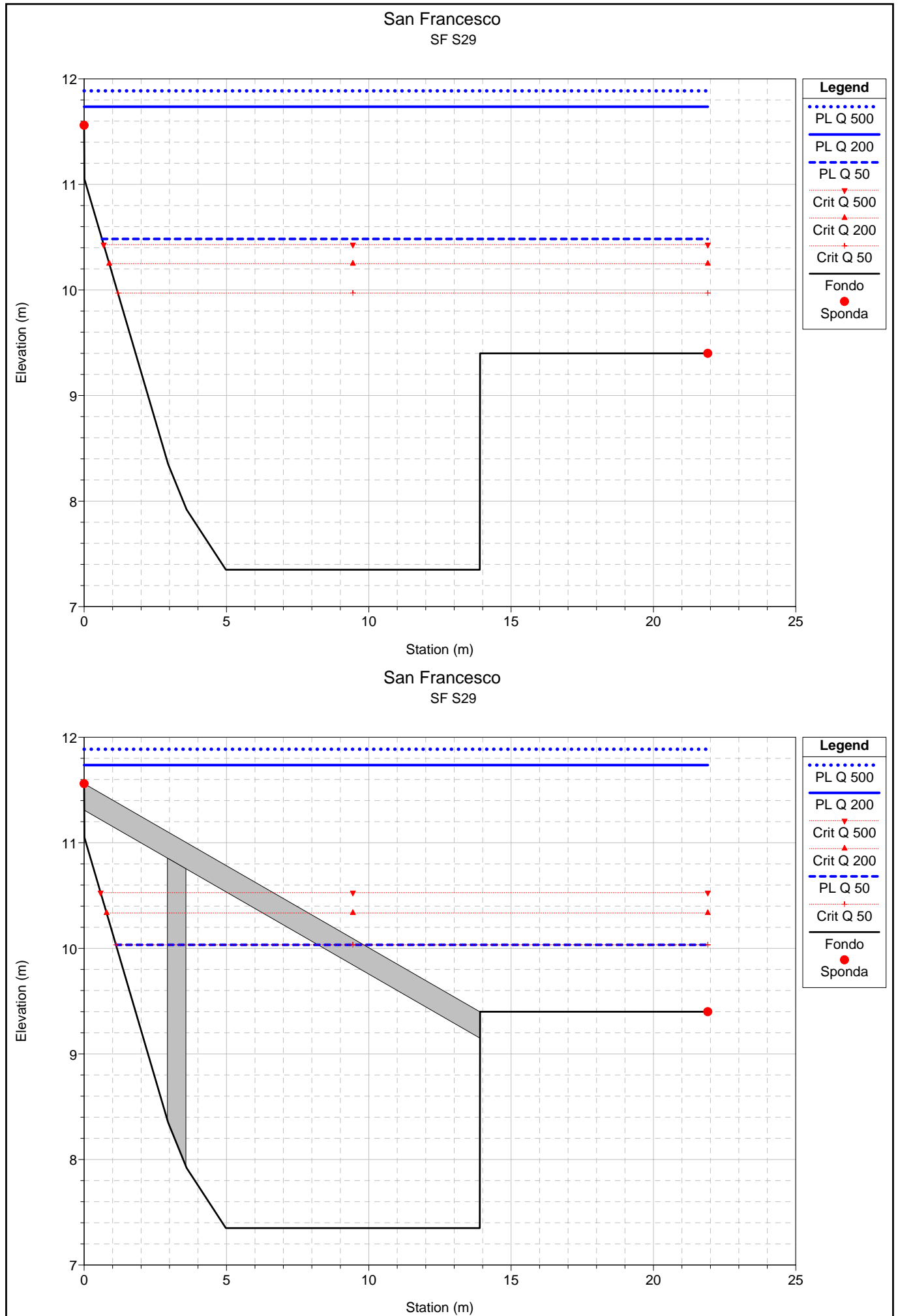
San Francesco
SF S30

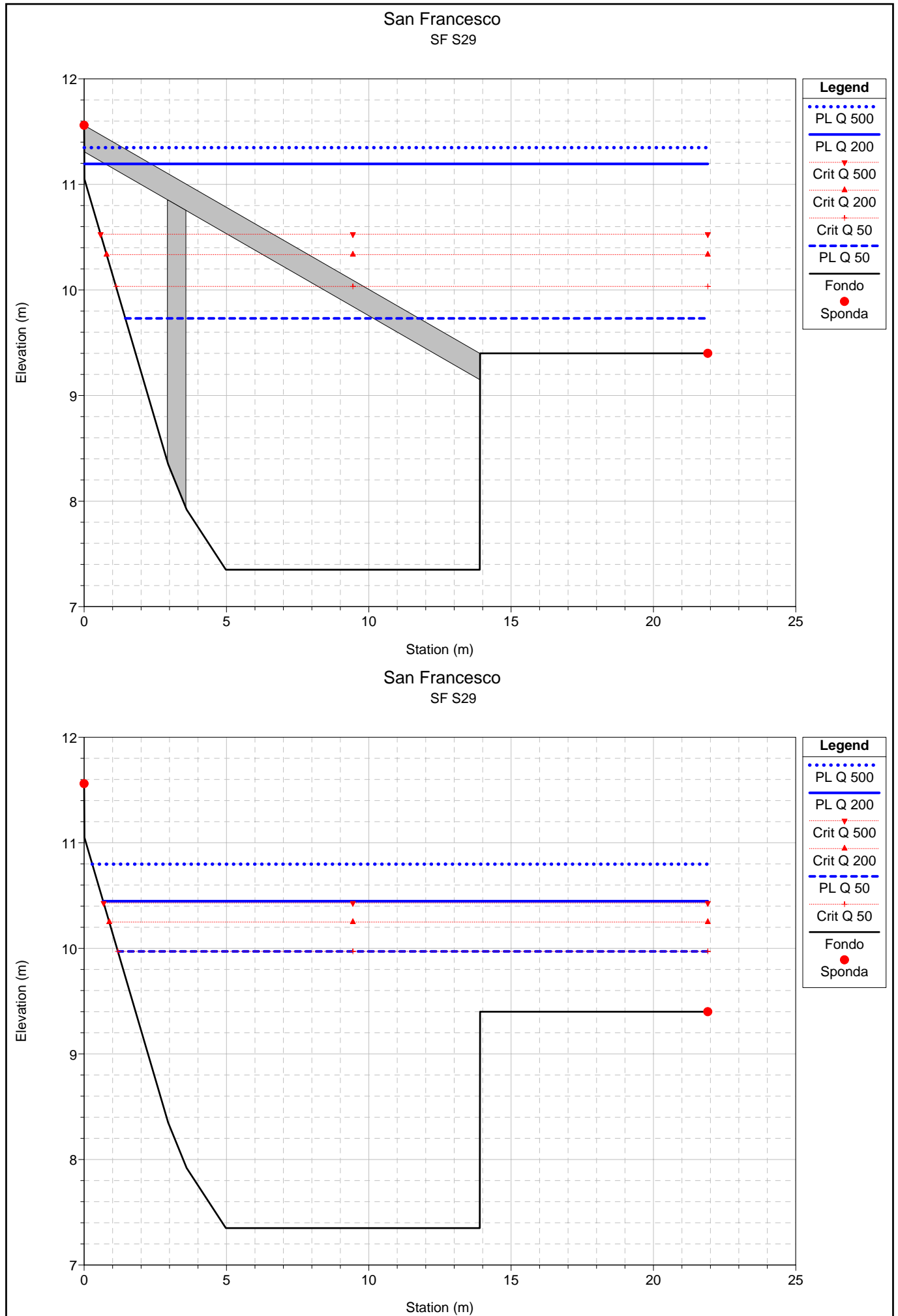




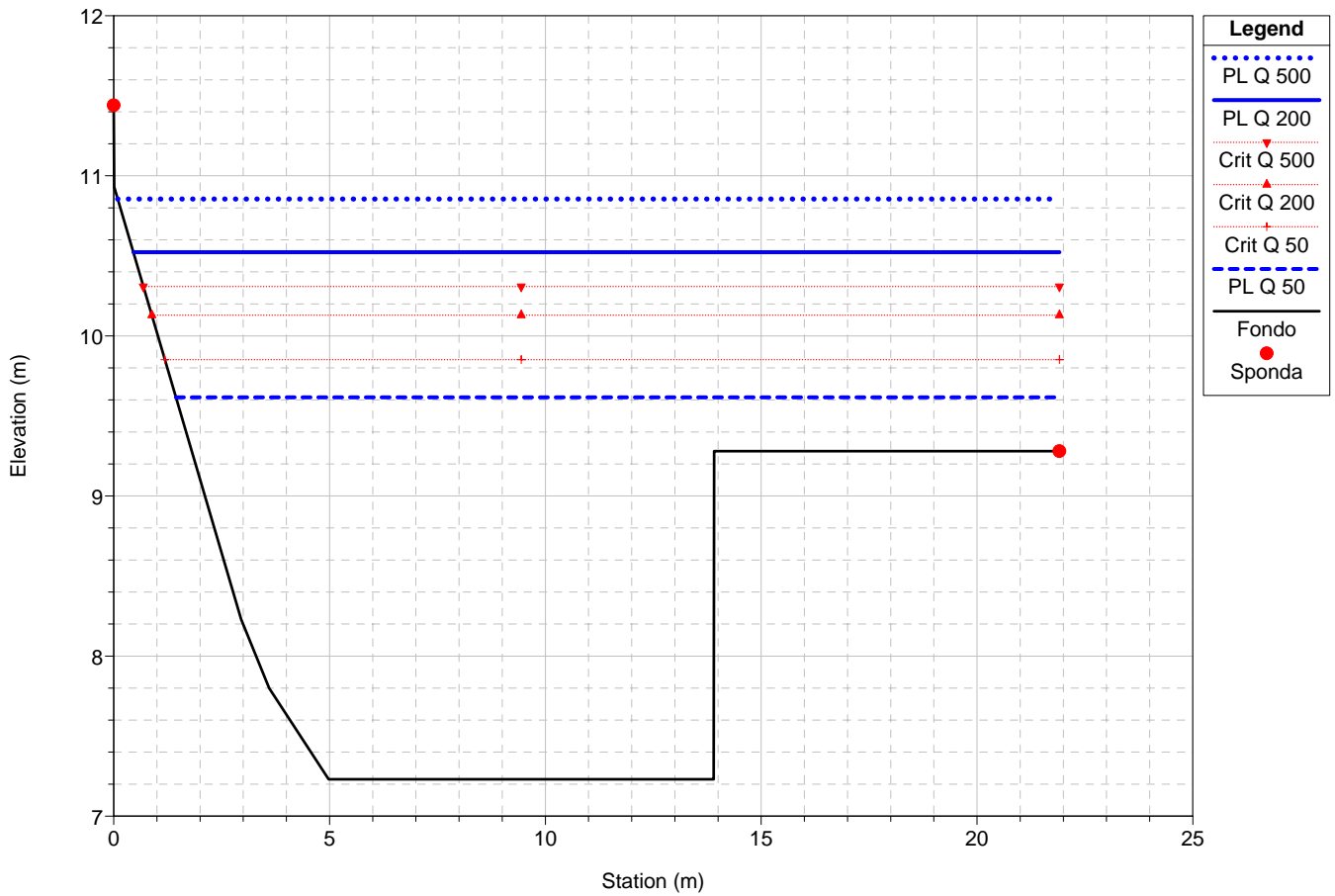




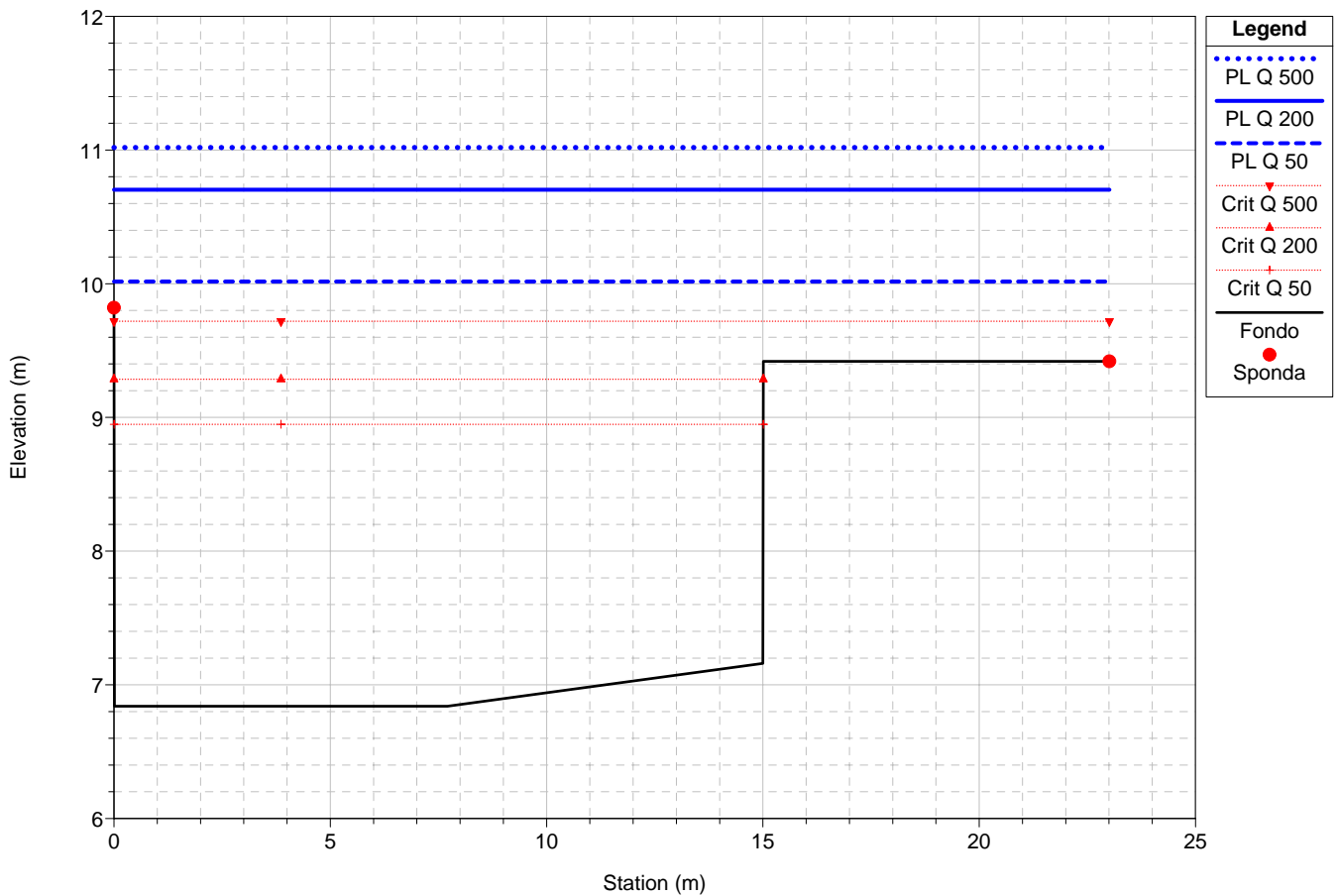


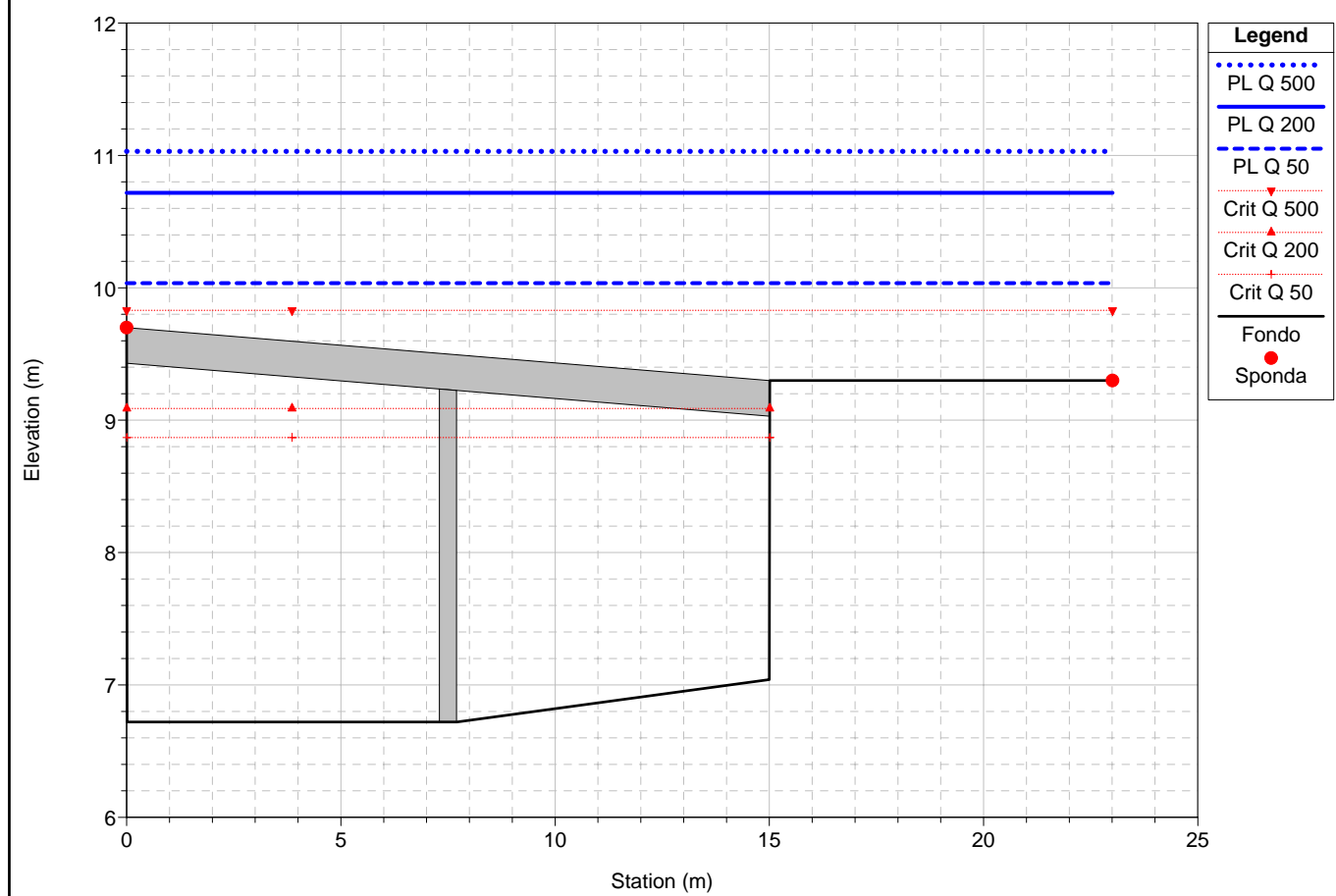
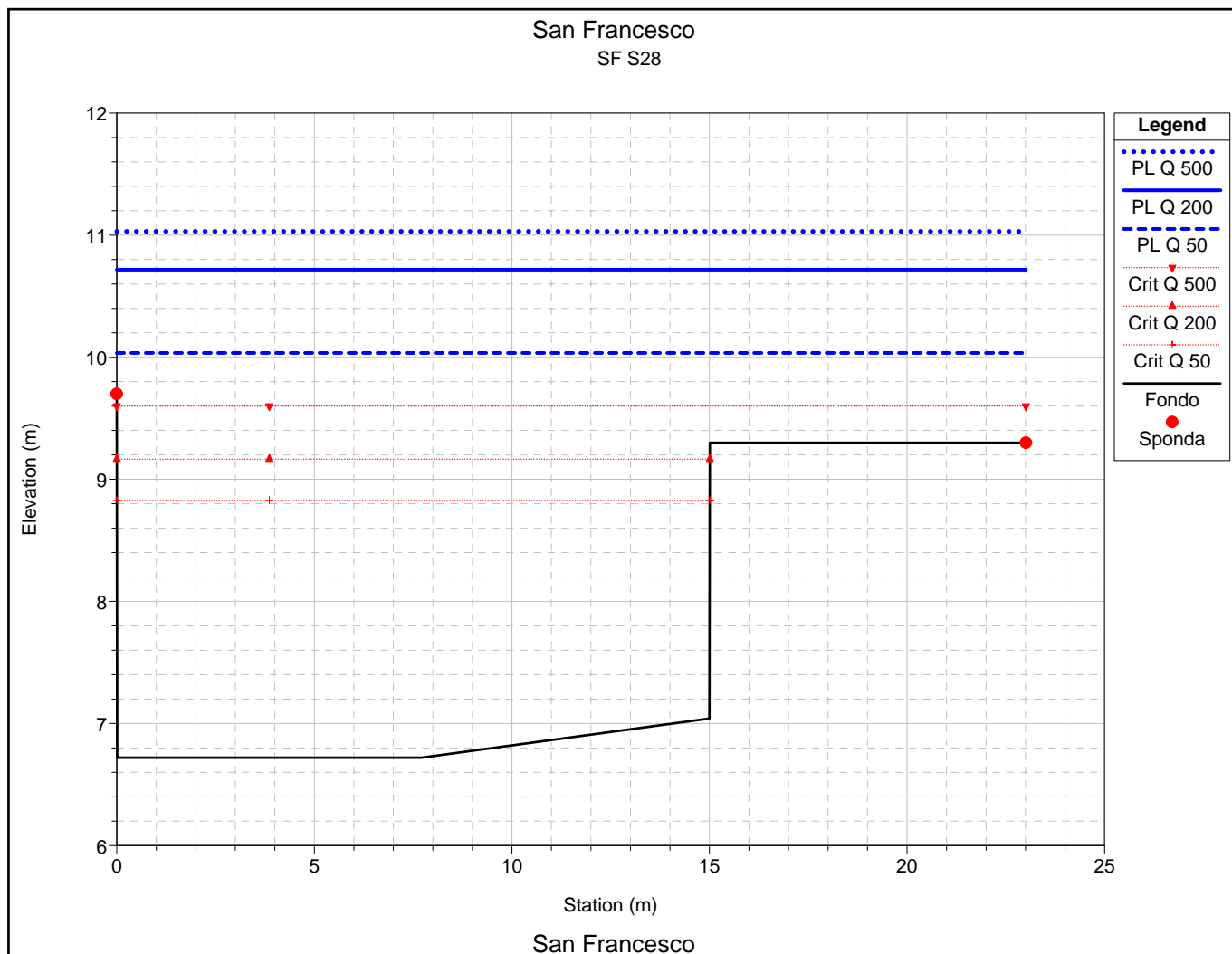


San Francesco
SF S29

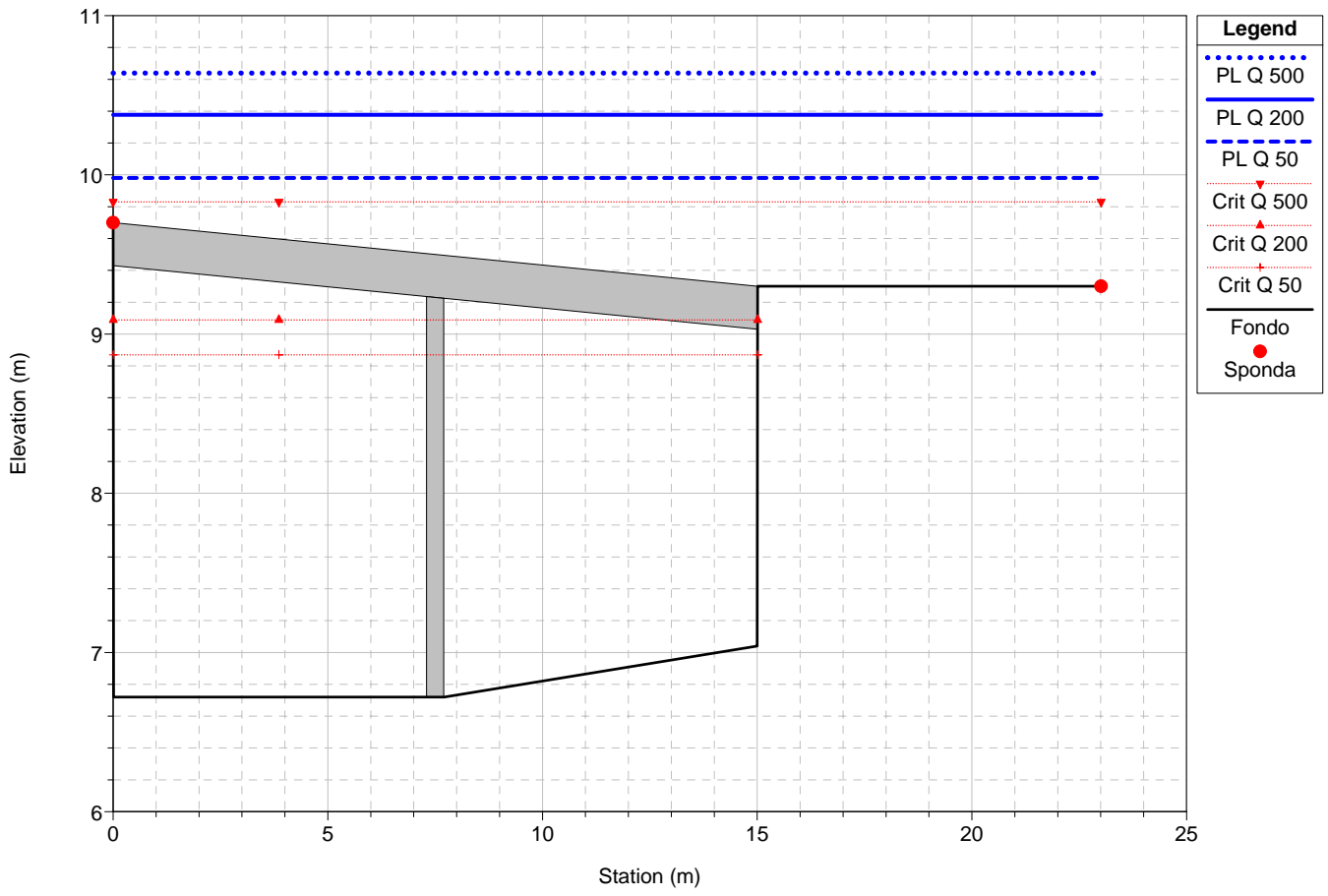


San Francesco
SF S28

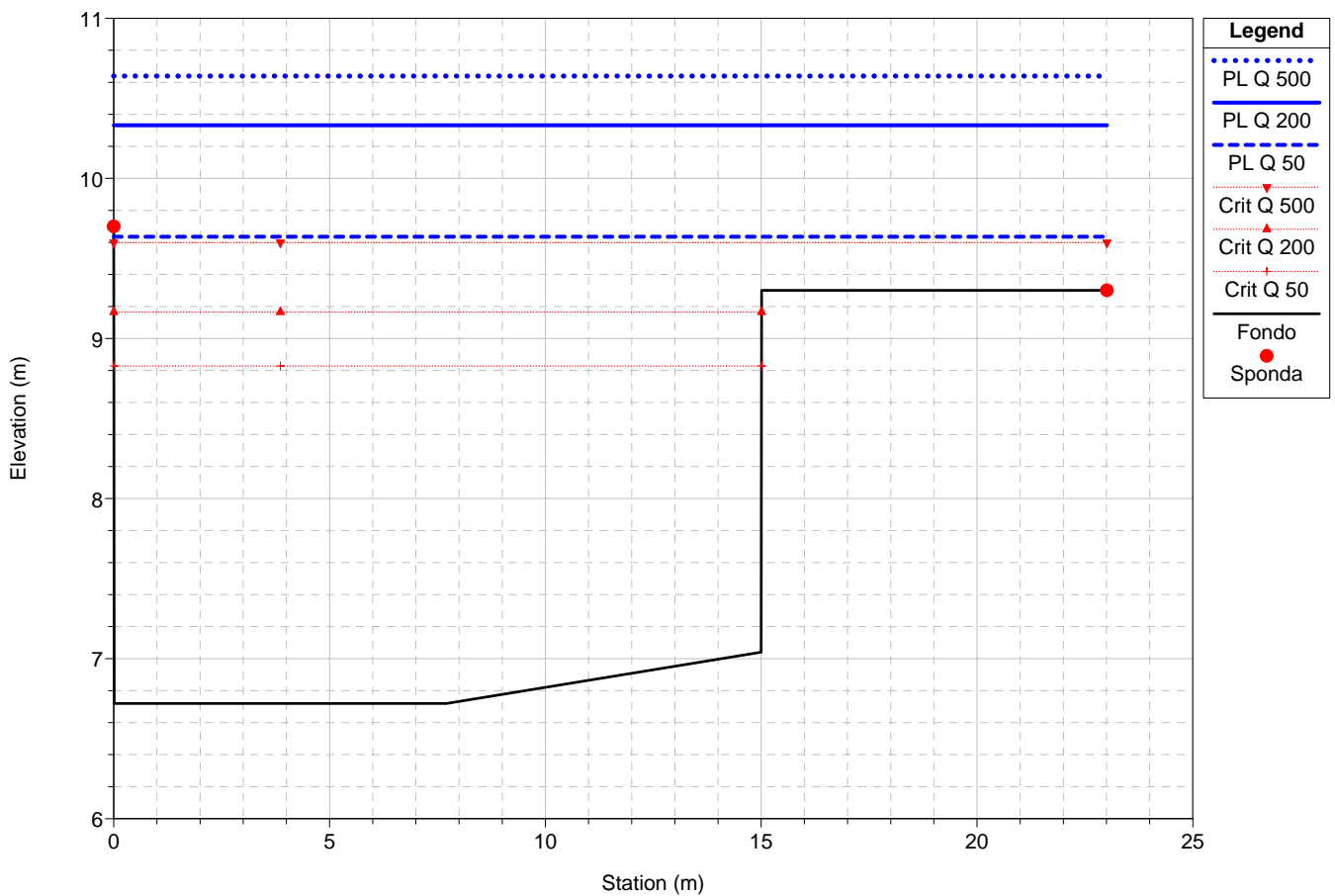


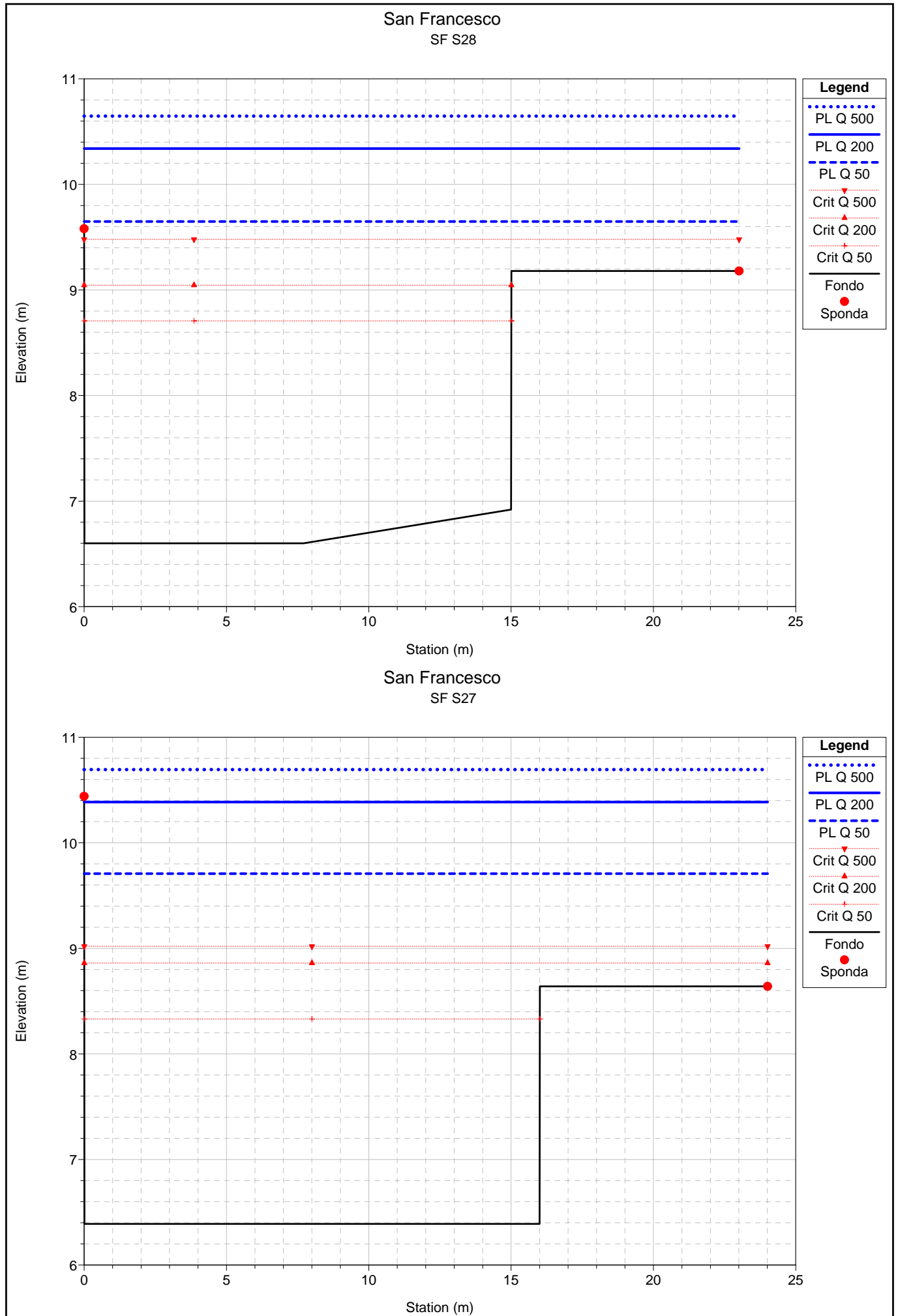


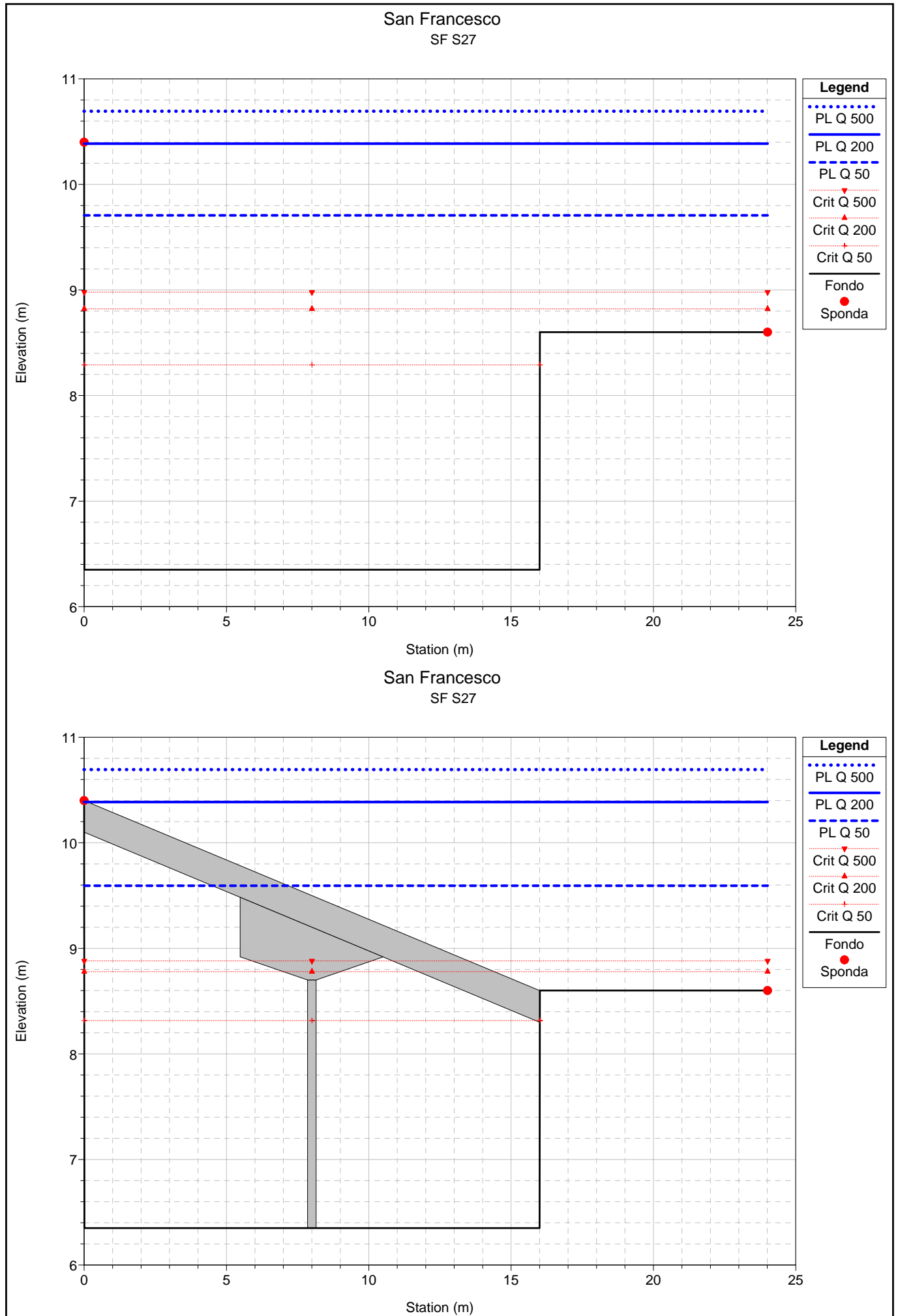
San Francesco

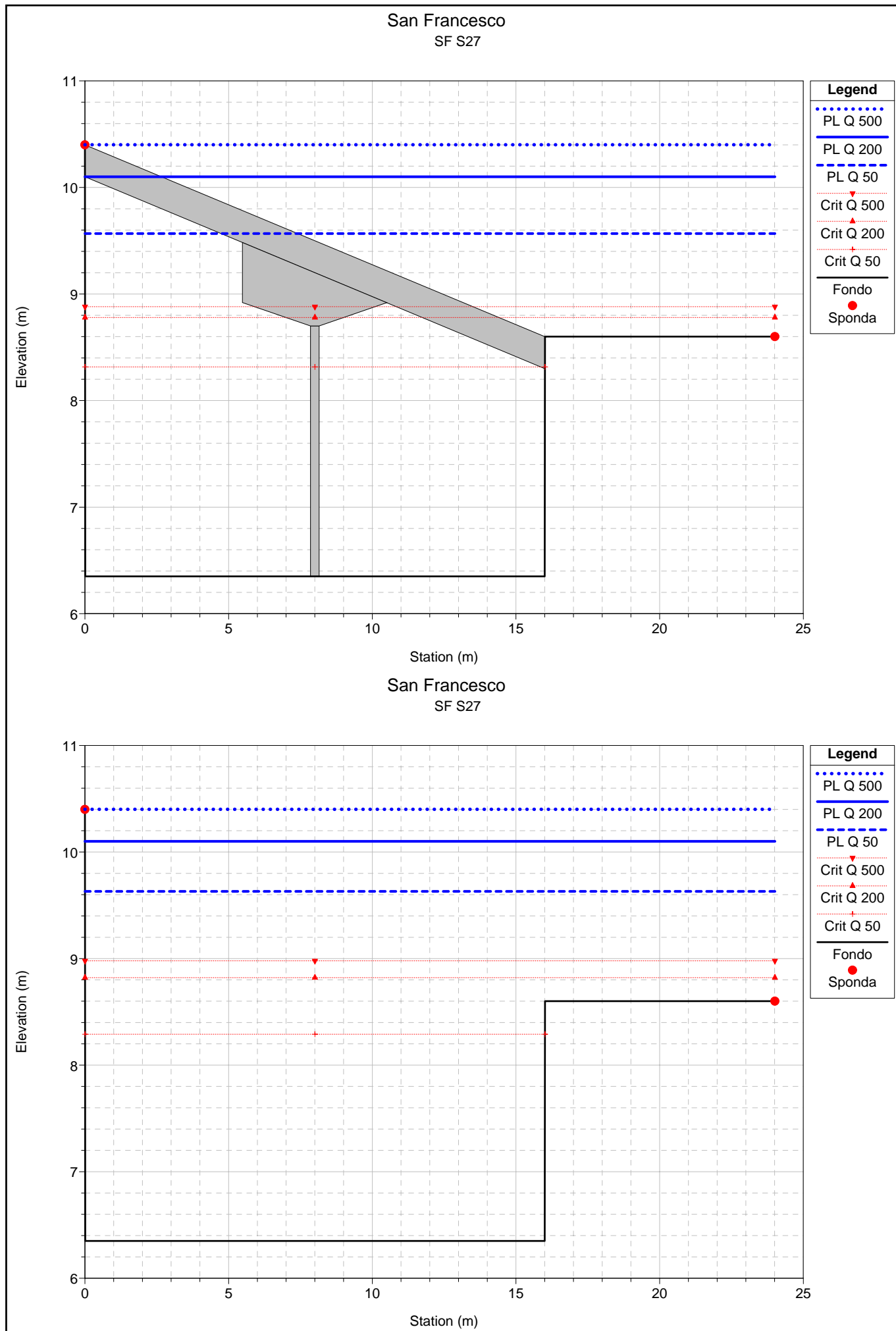


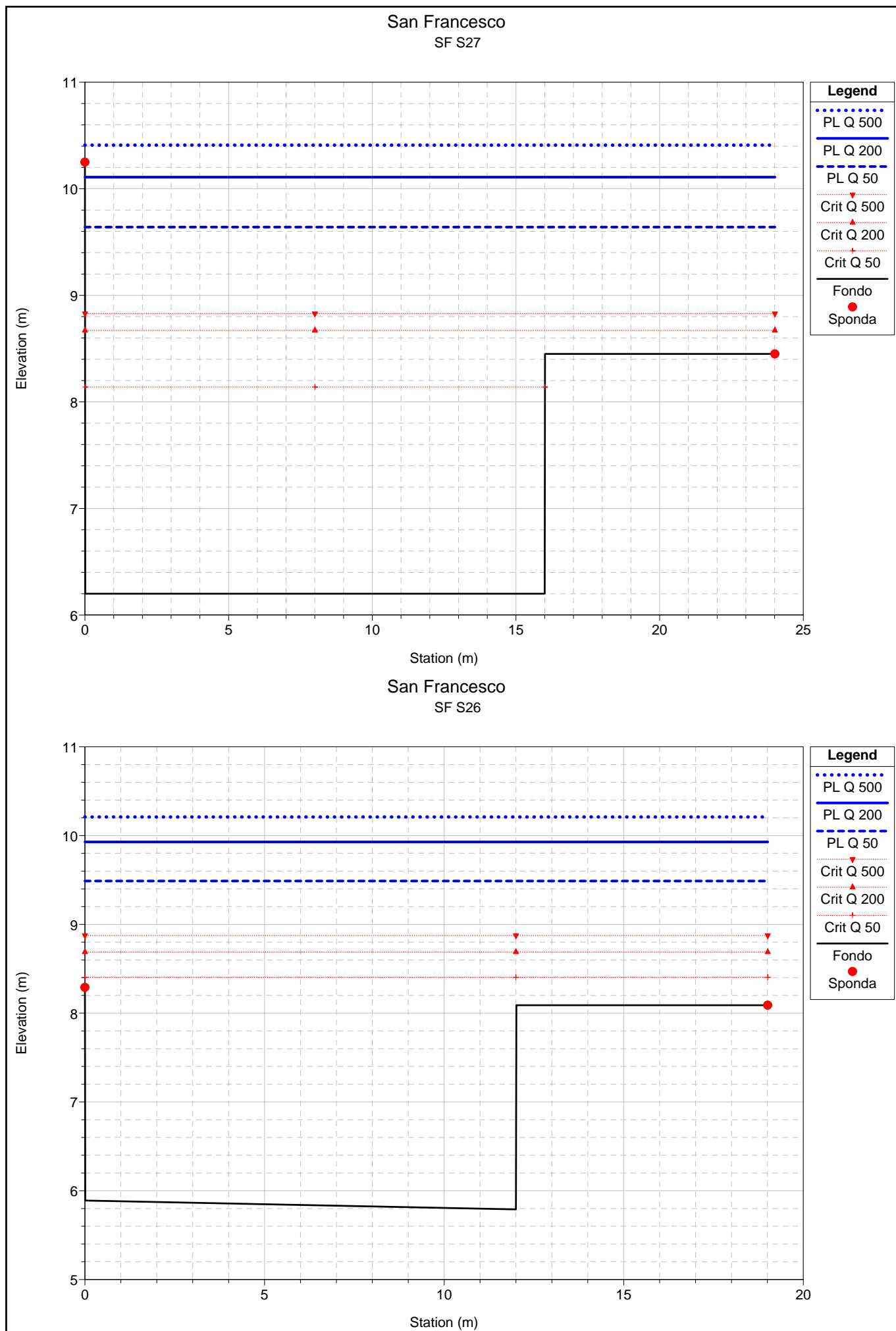
San Francesco
SF S28

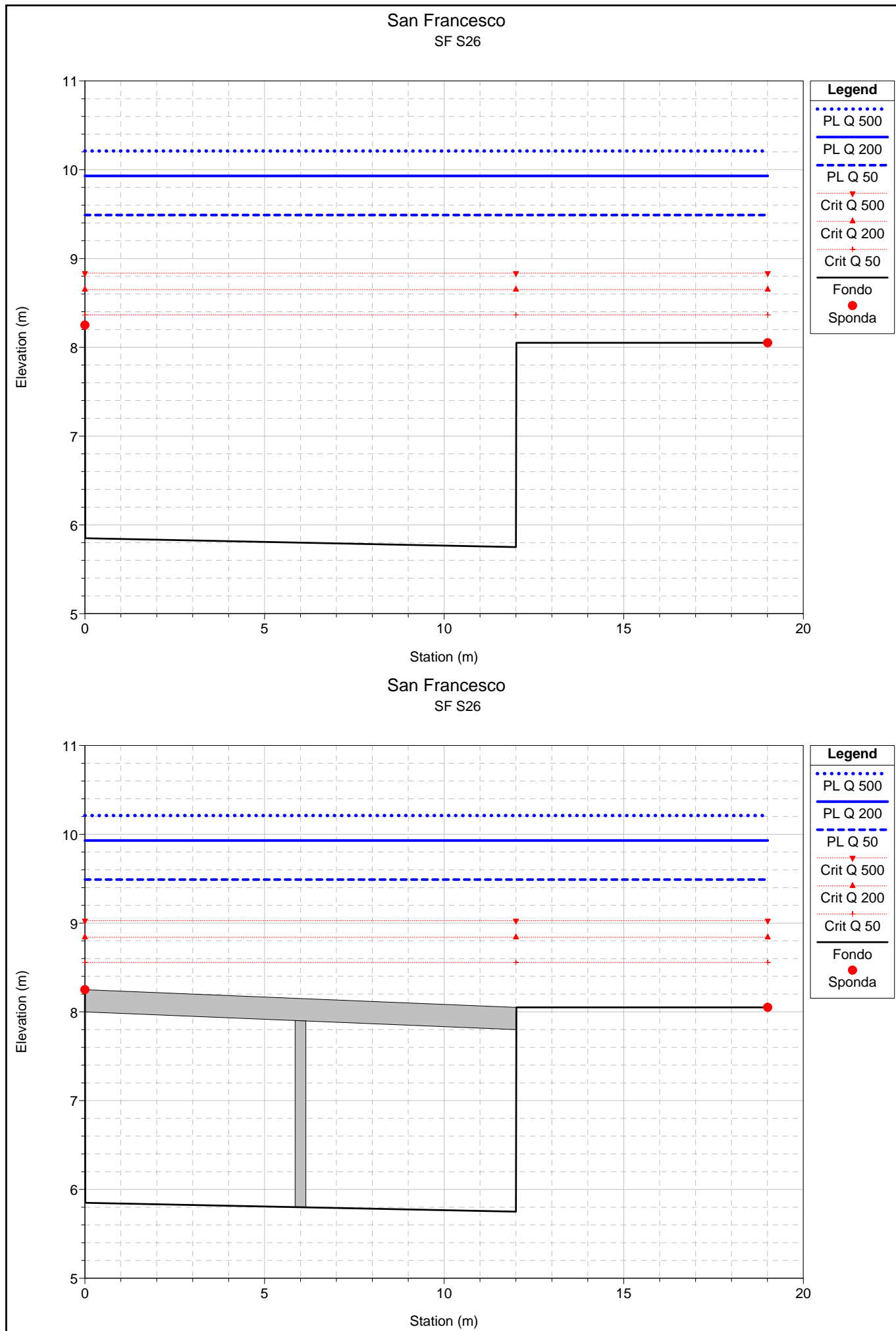


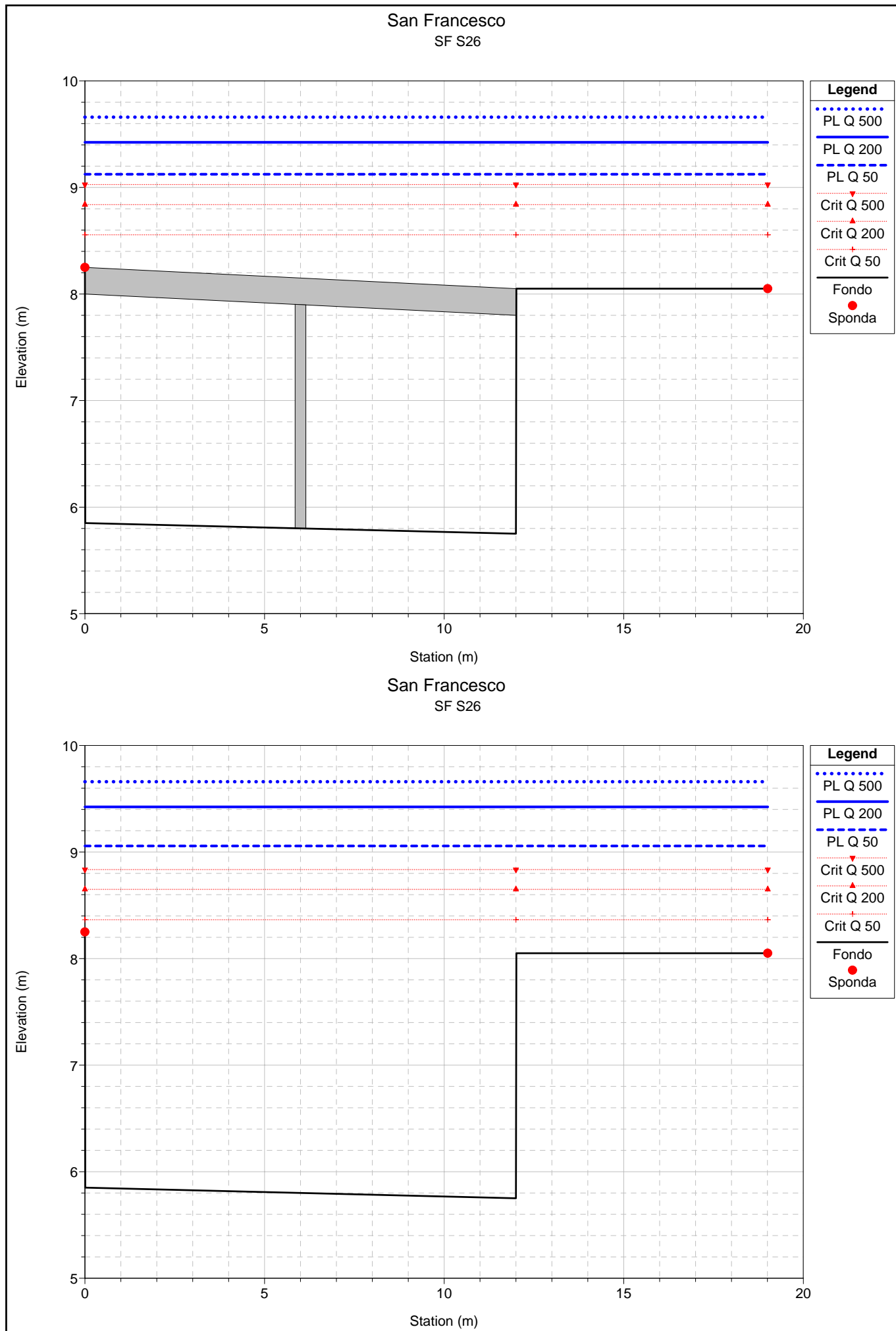


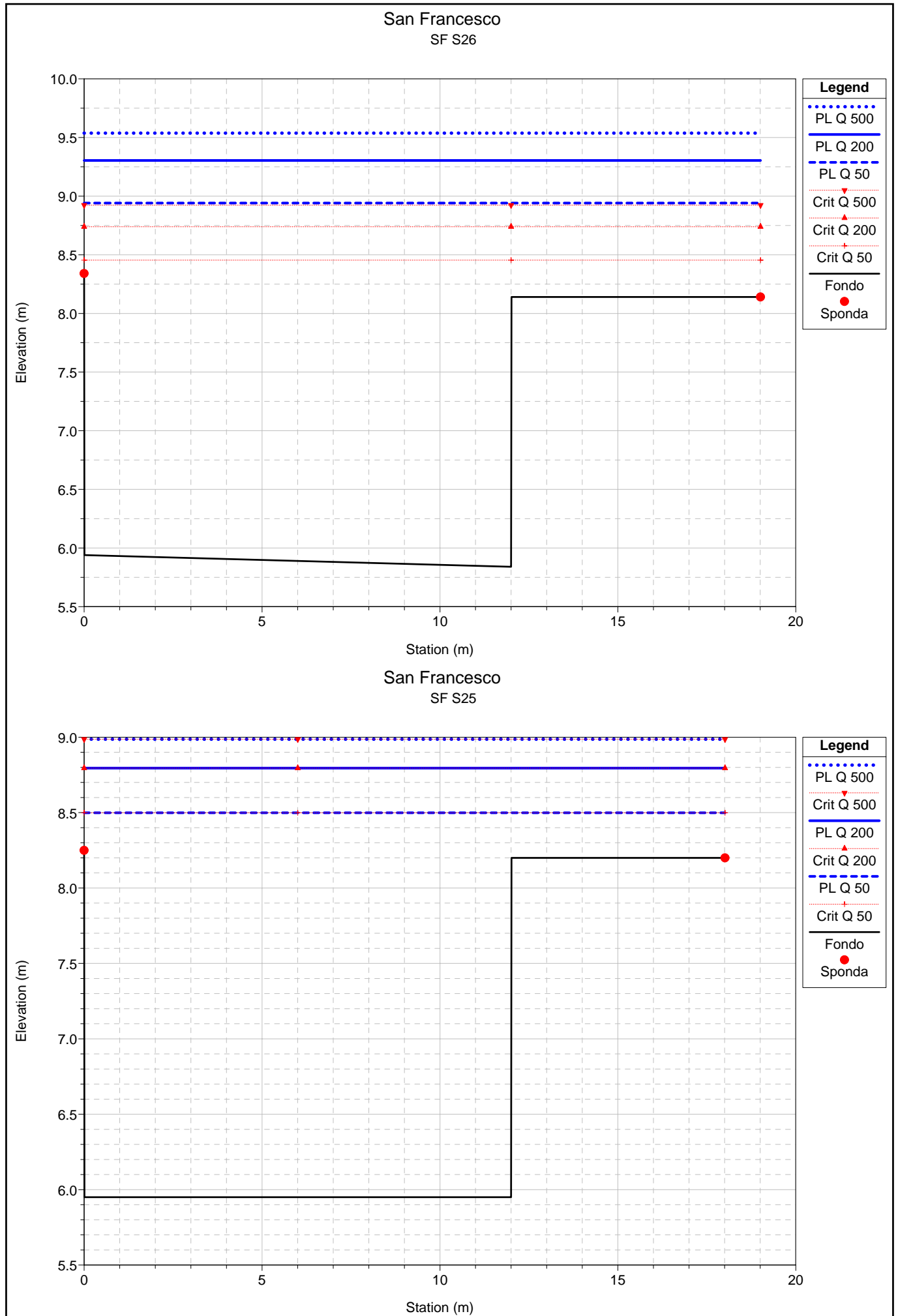




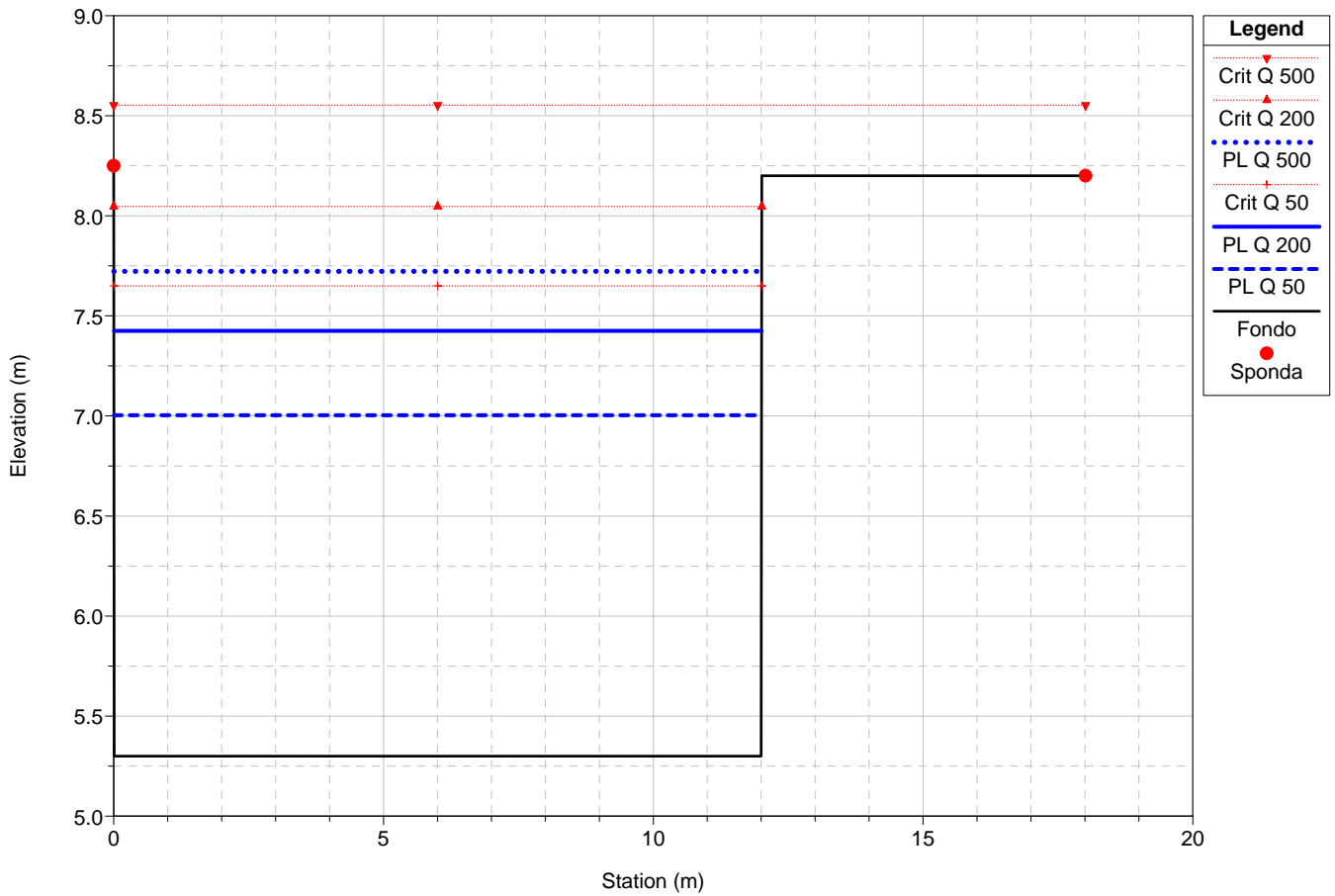




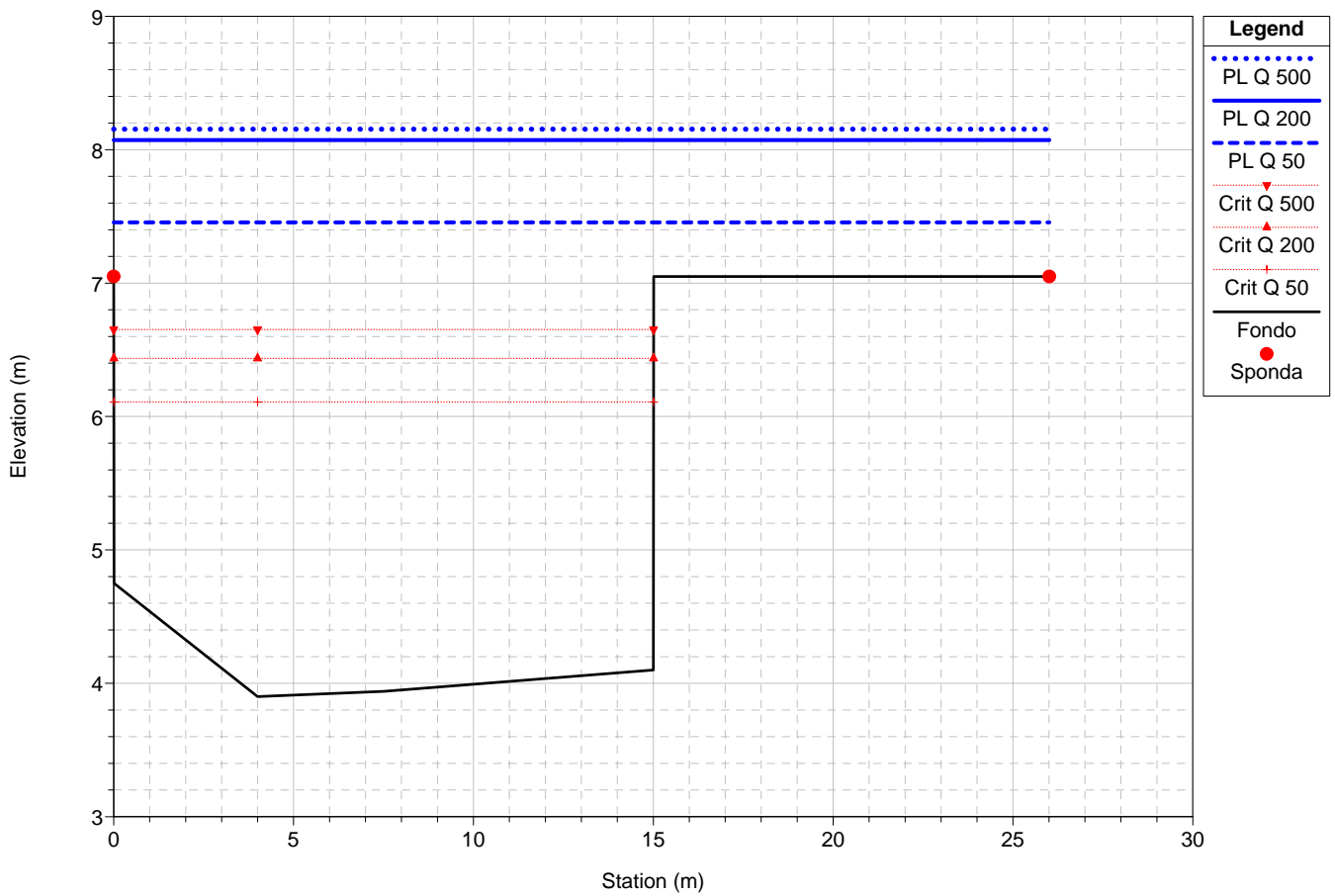




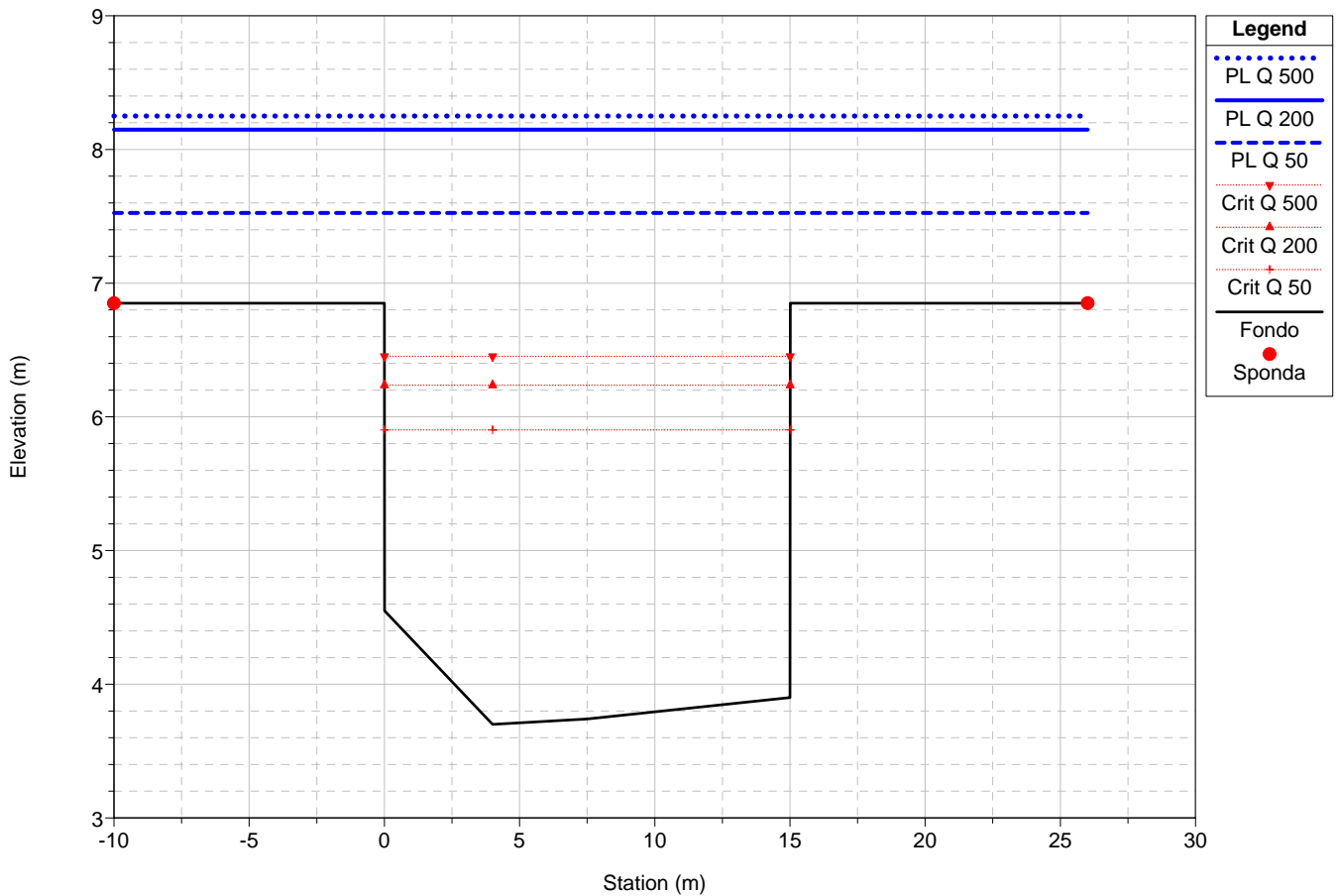
San Francesco
SF S25



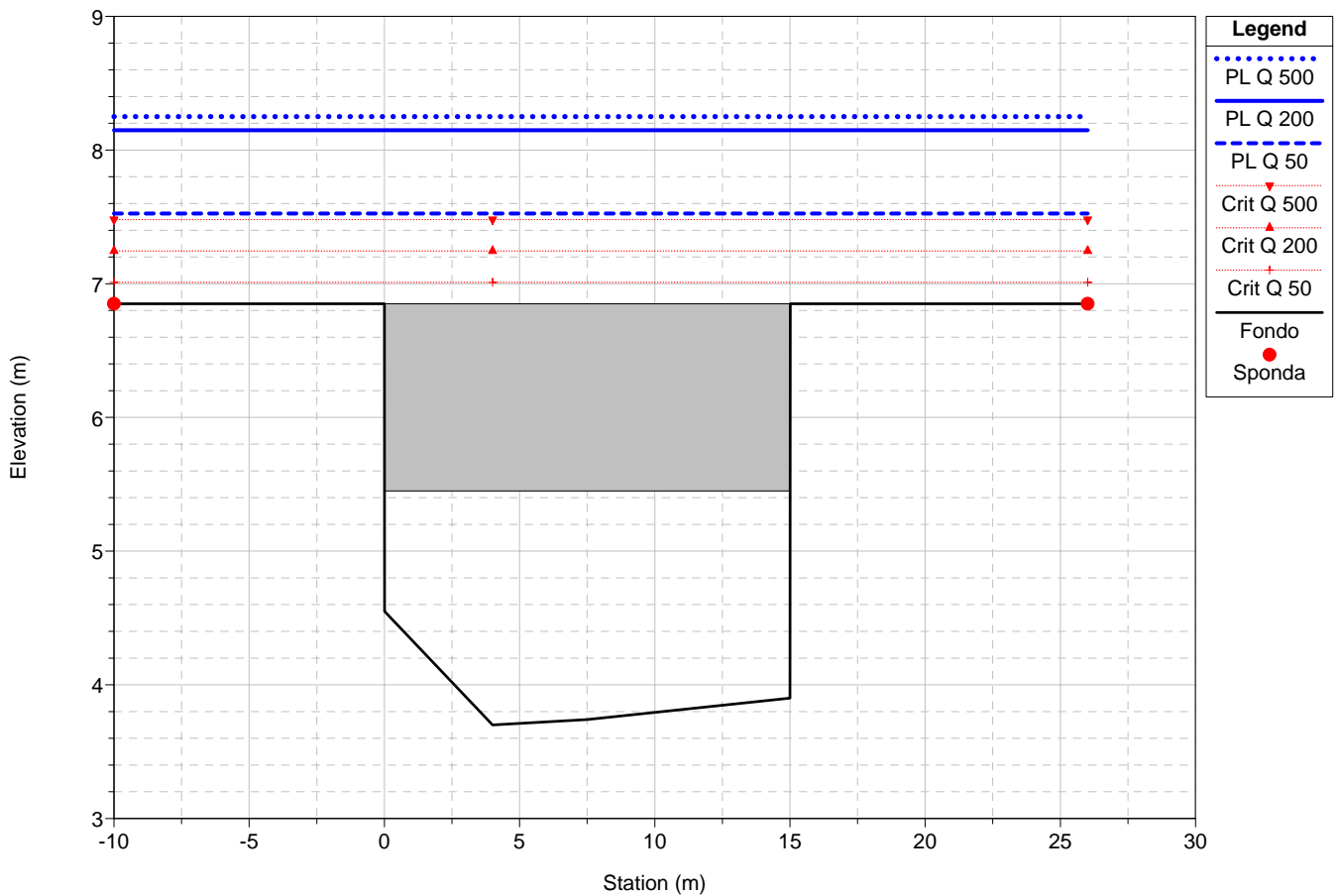
San Francesco
SF S24



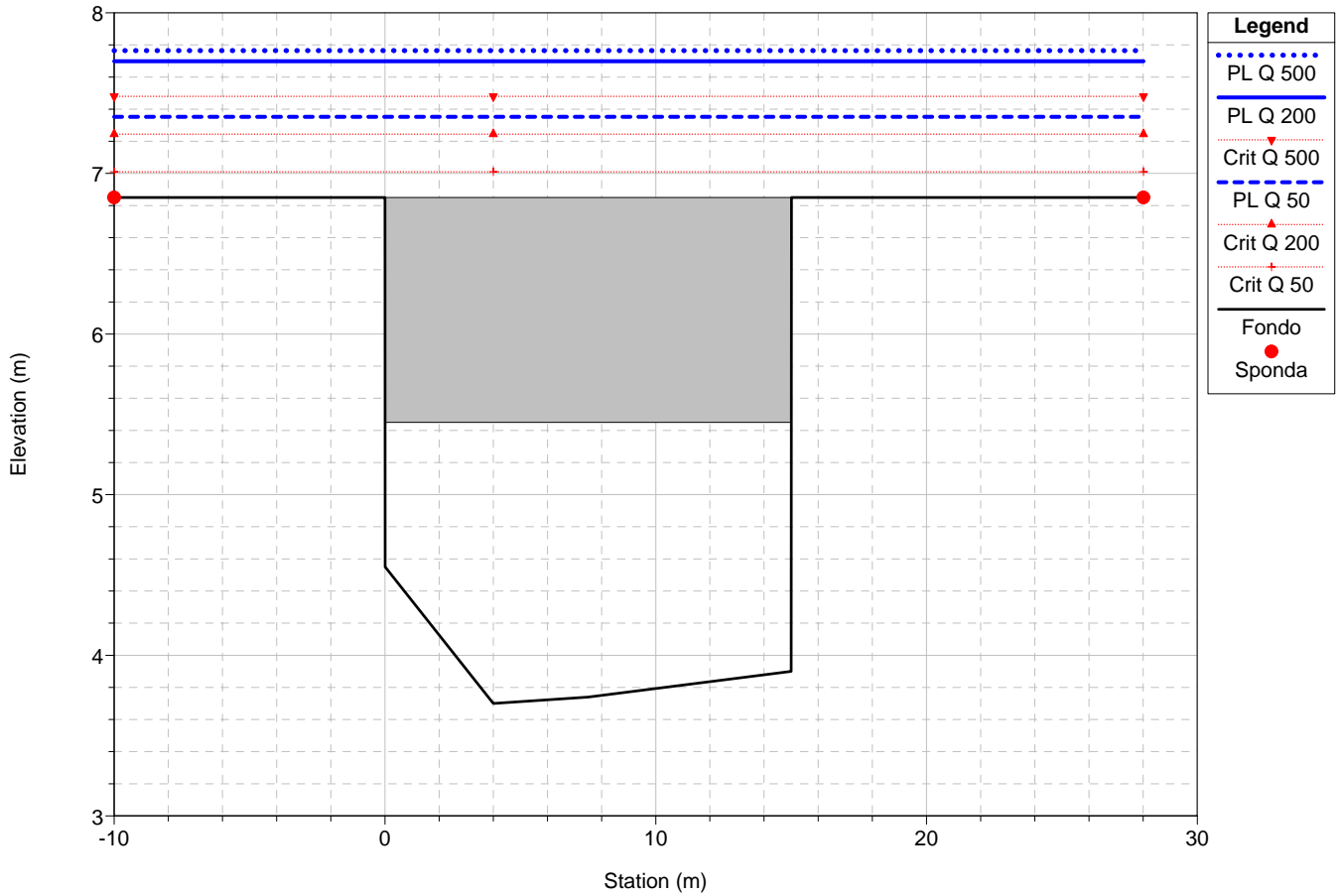
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SF S24



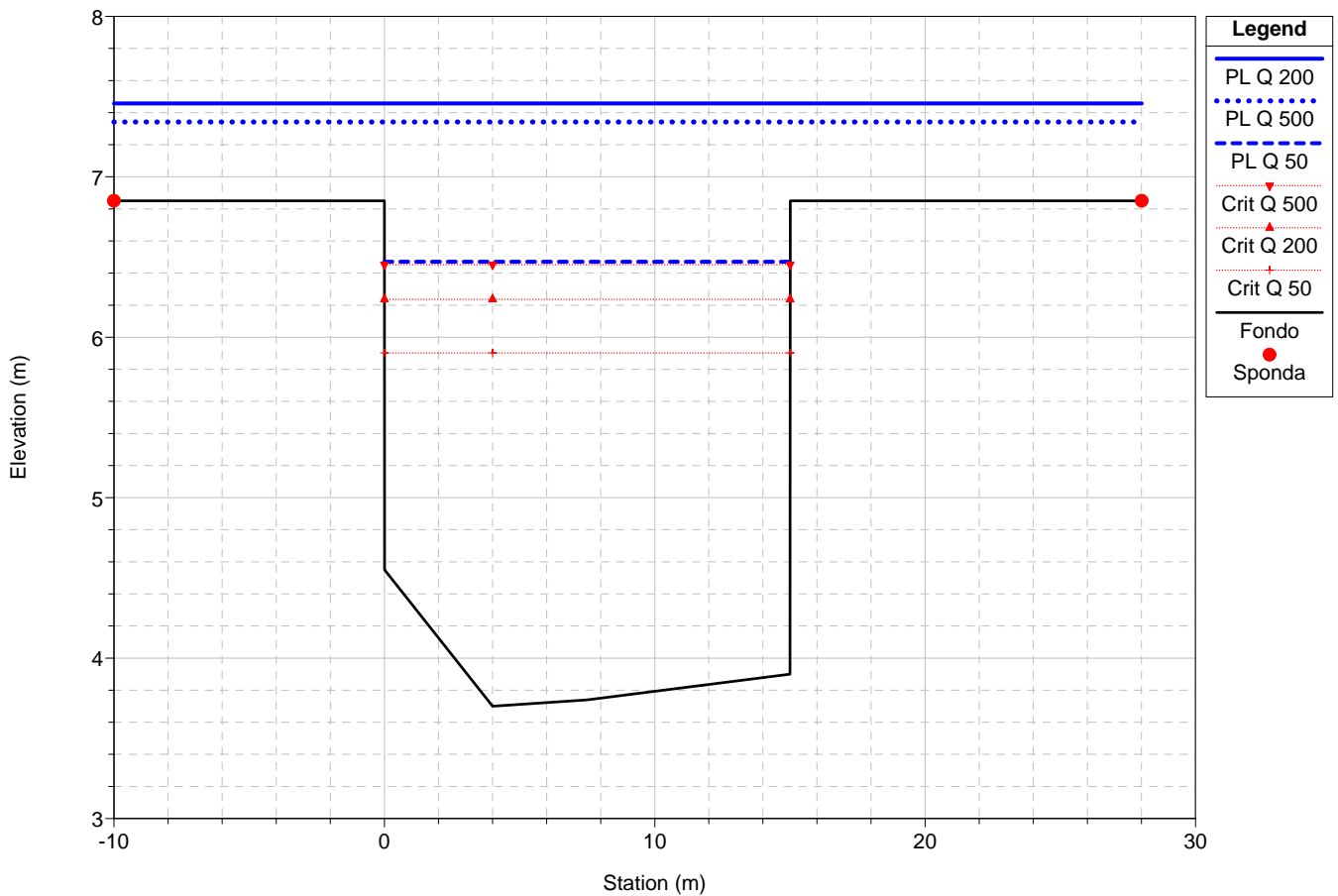
San Francesco
SF S24

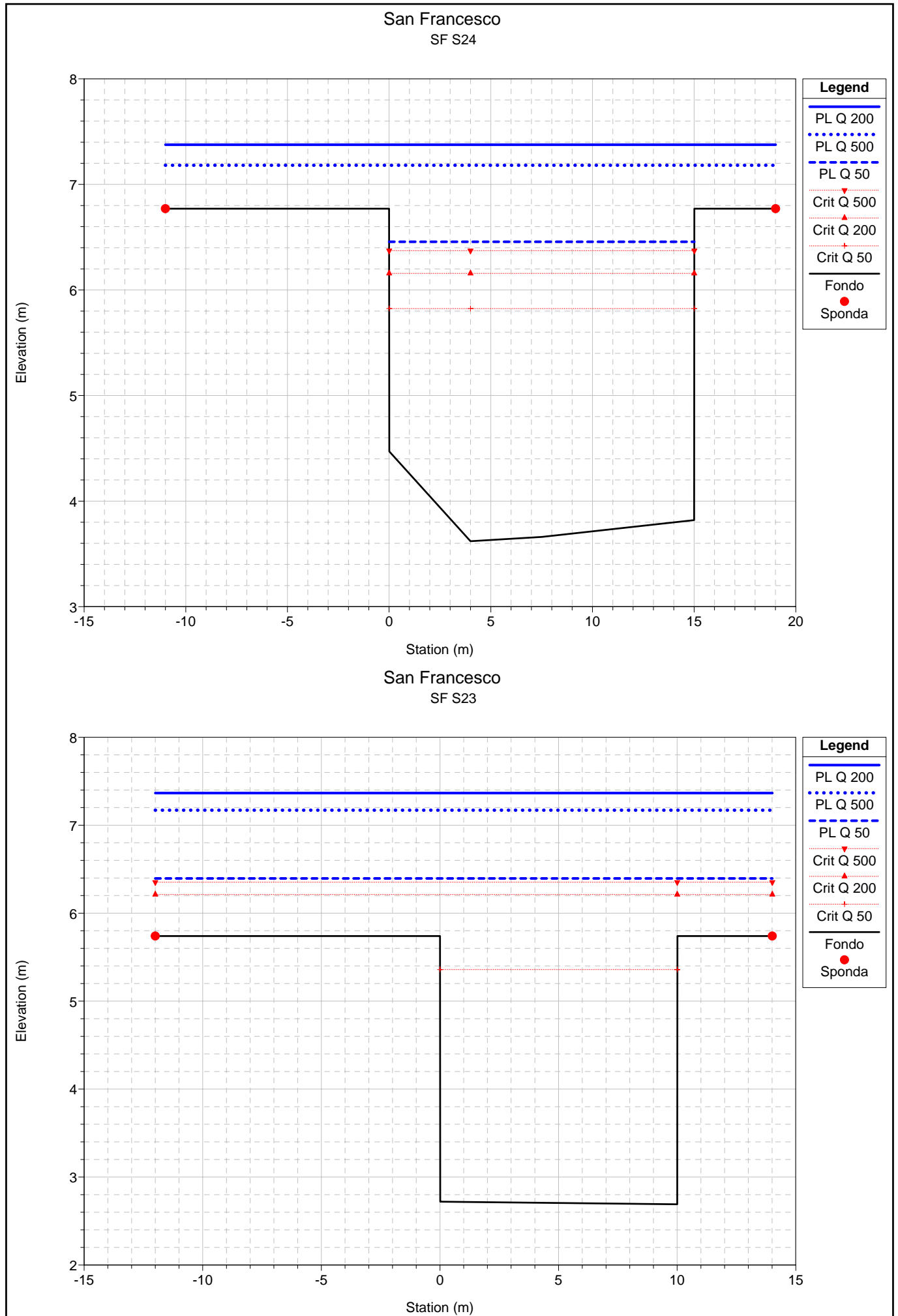


San Francesco
SF S24

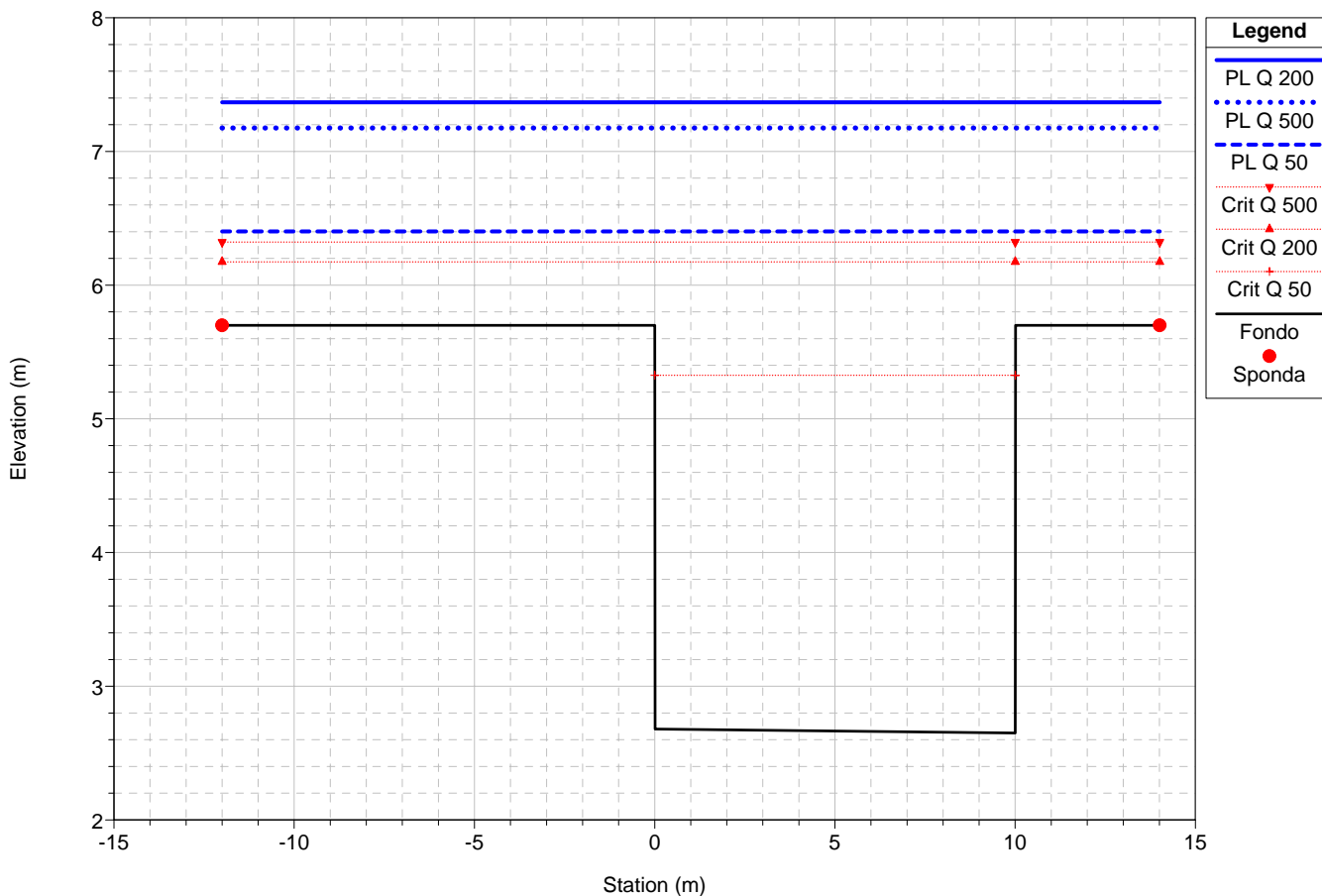


San Francesco
SF S24

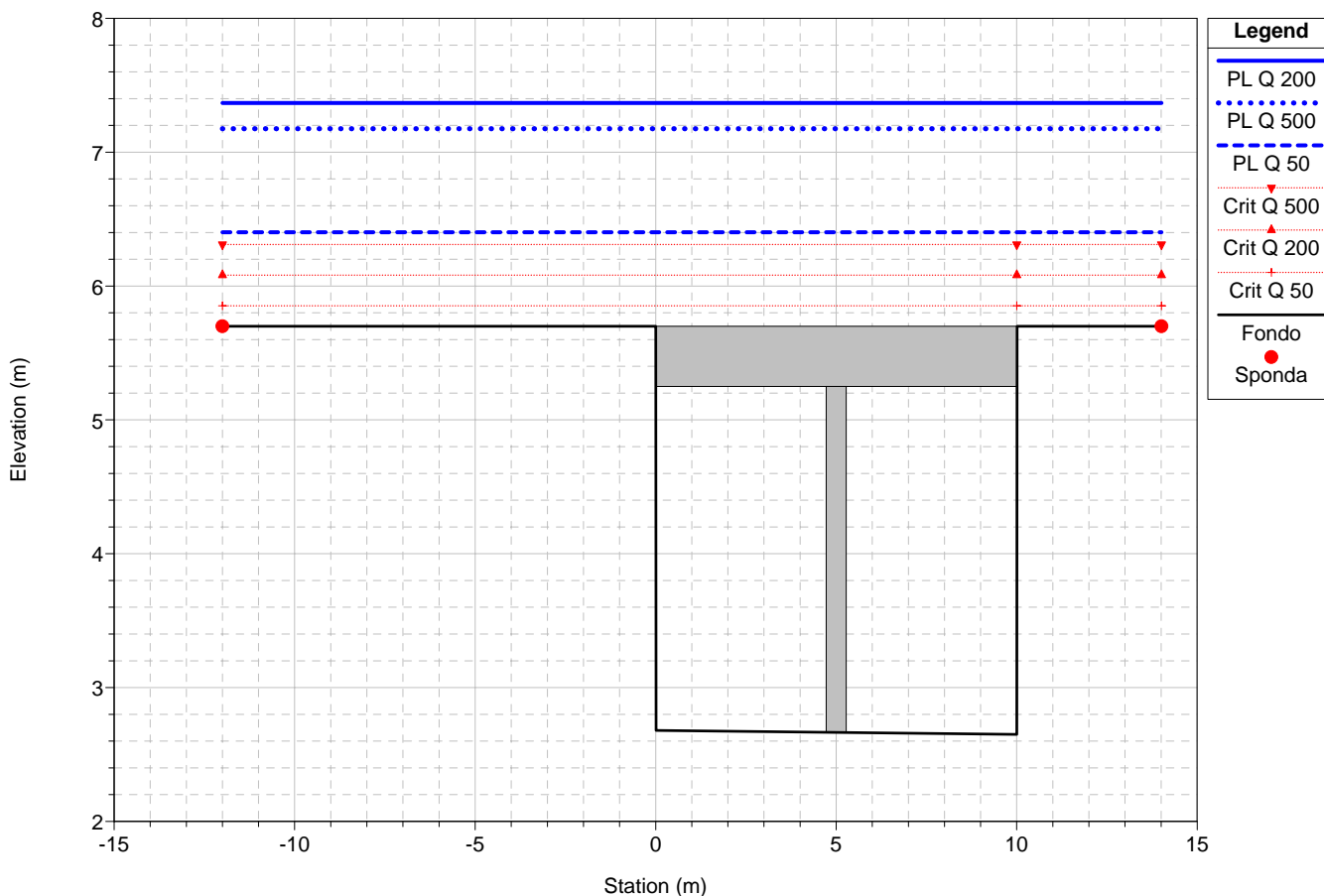


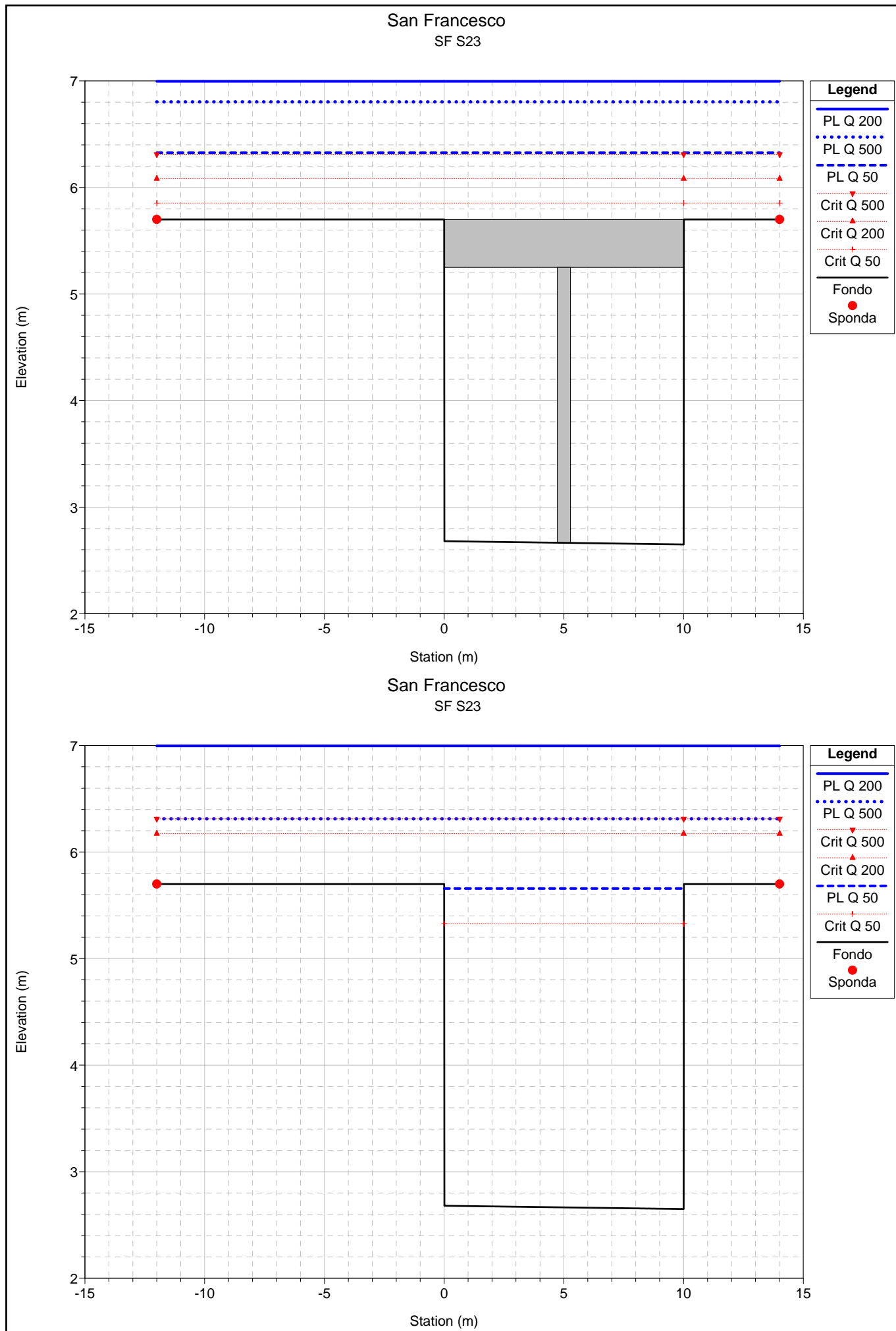


San Francesco
SF S23

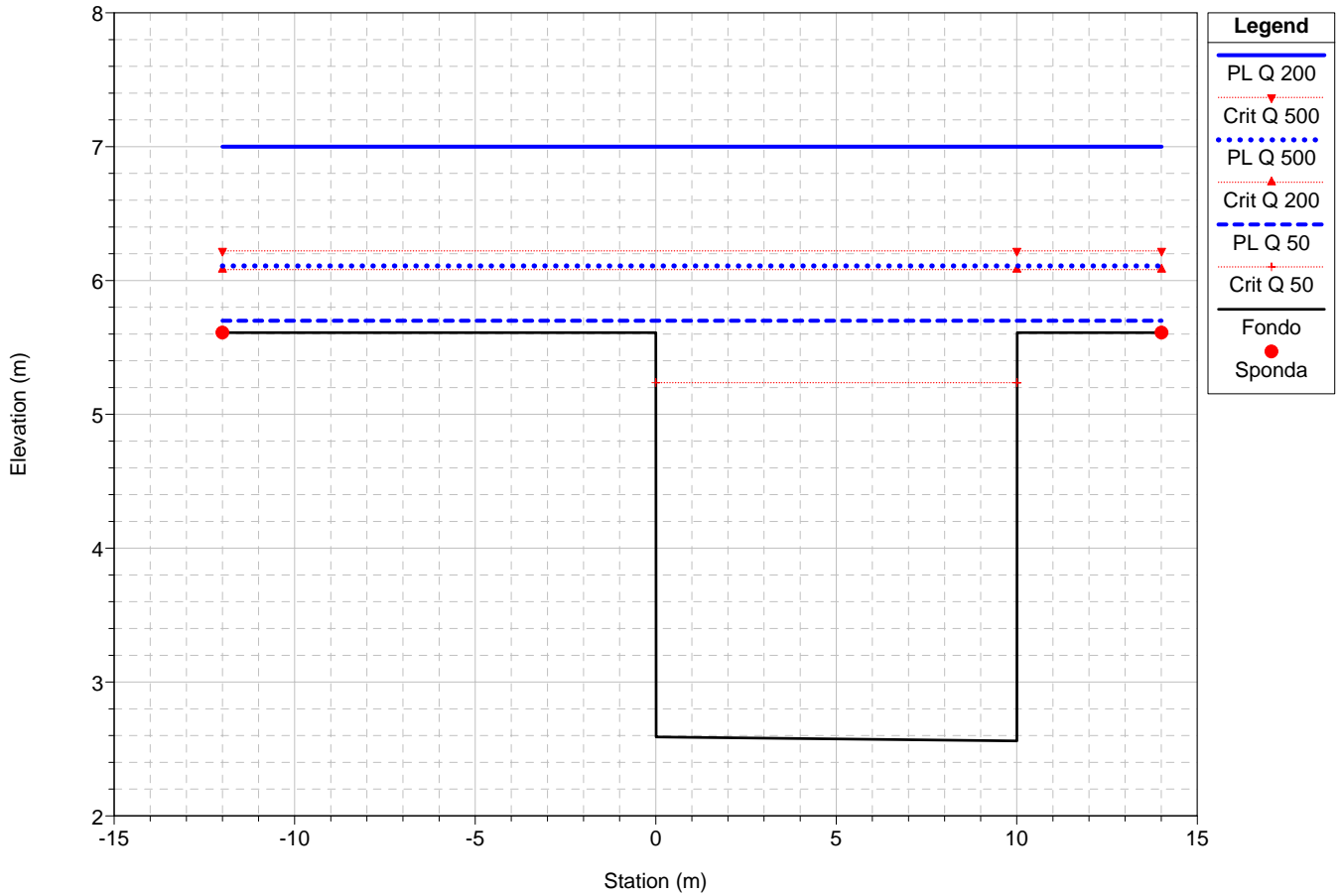


San Francesco
SF S23

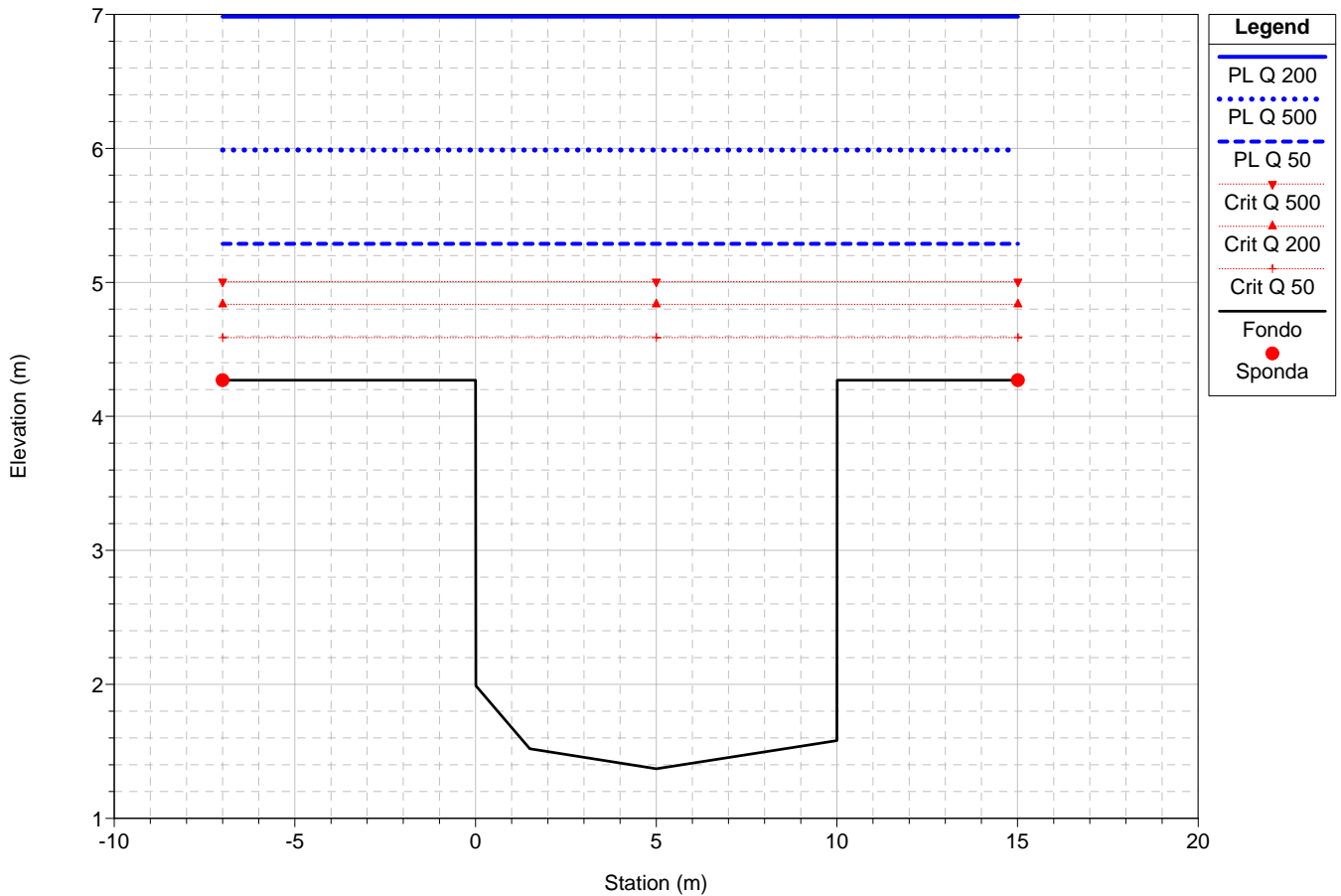


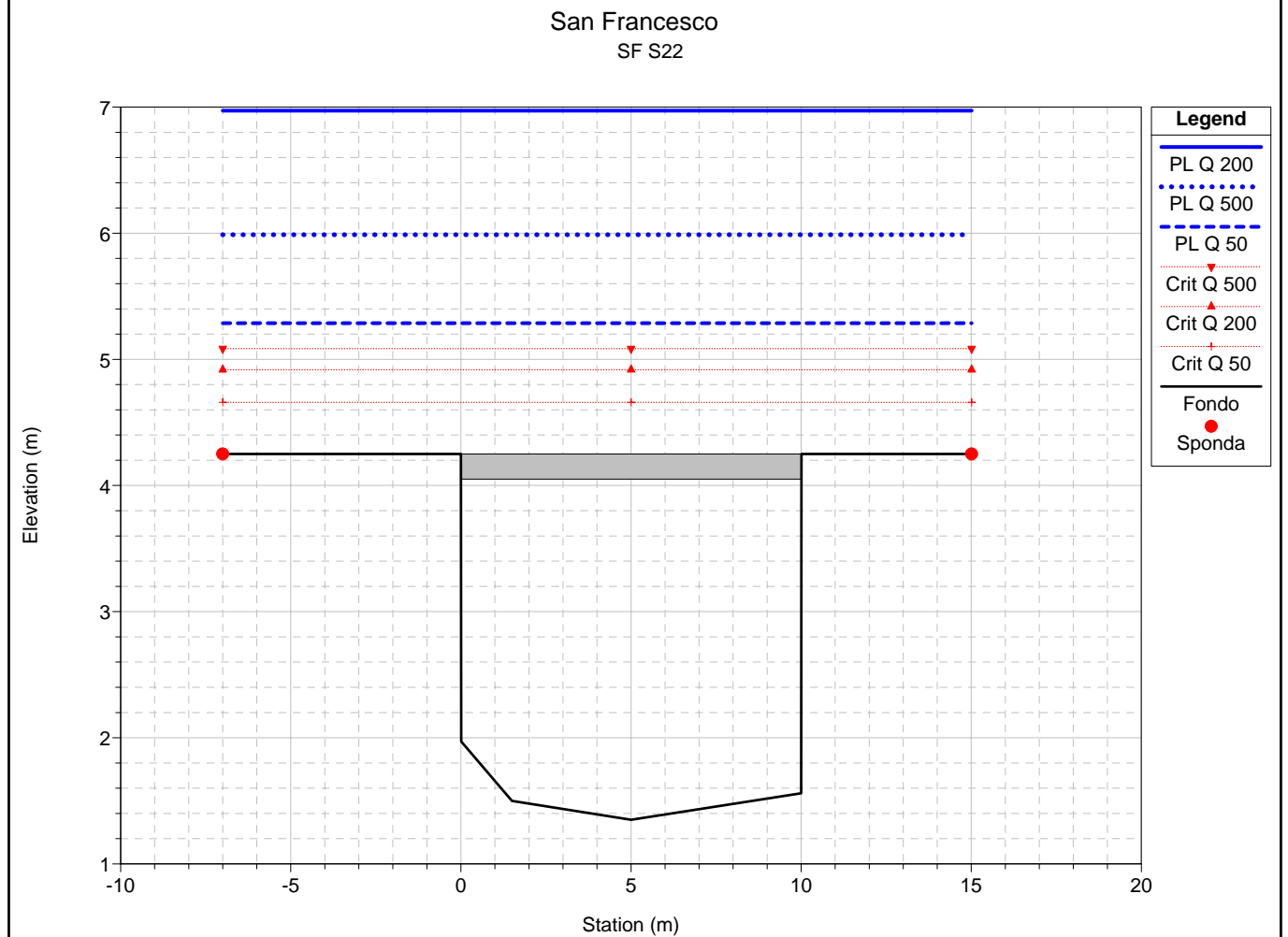
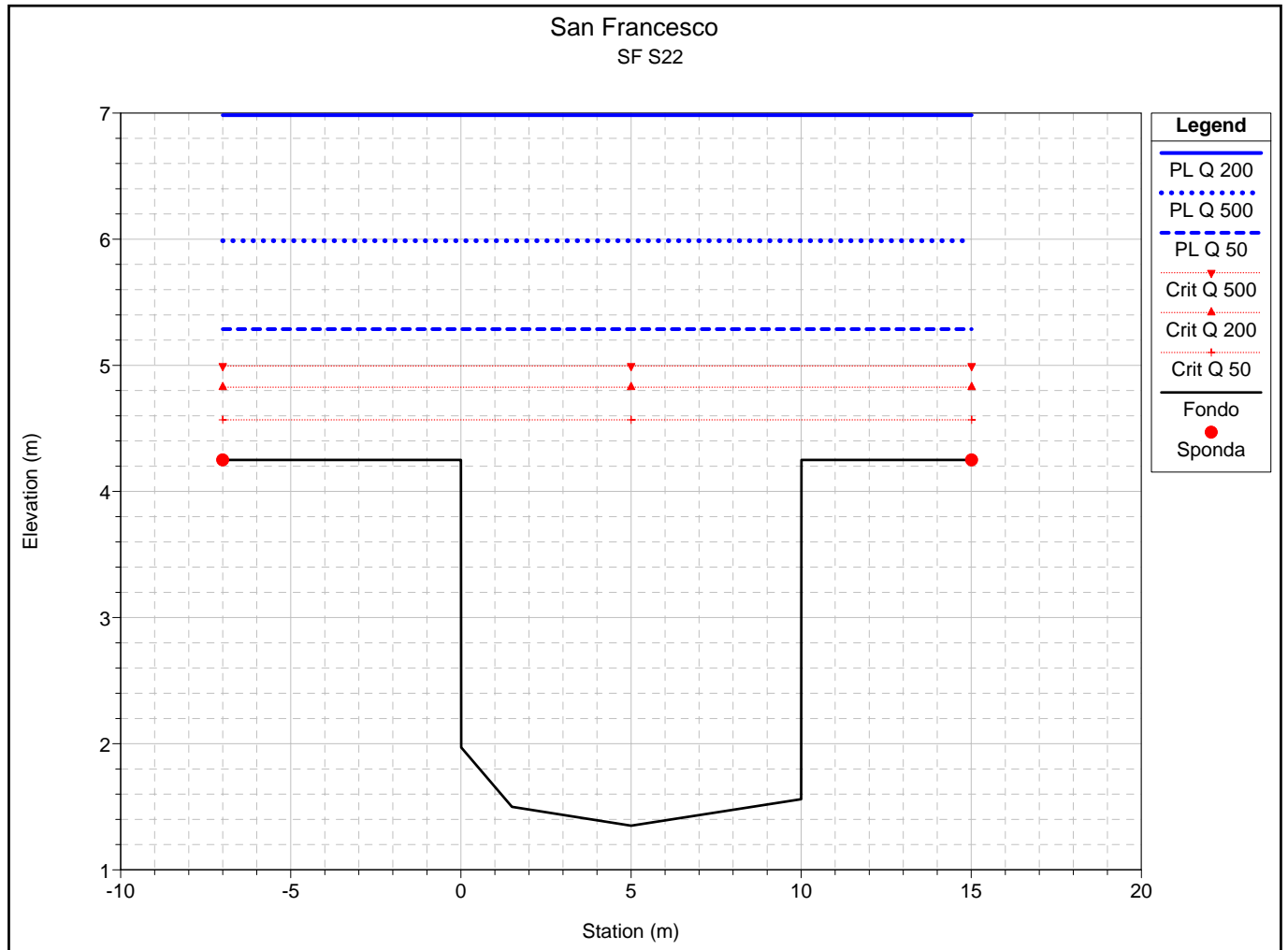


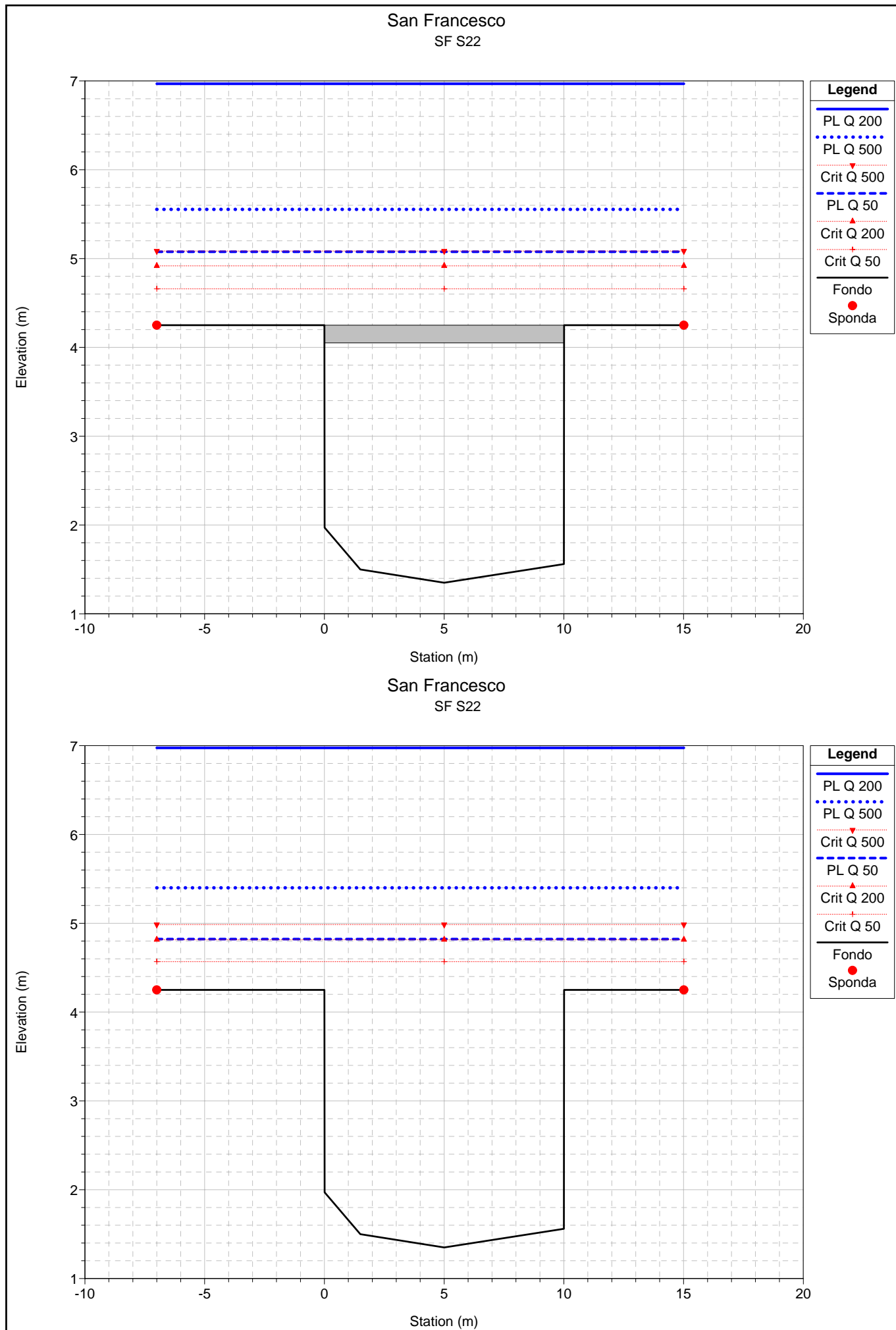
San Francesco
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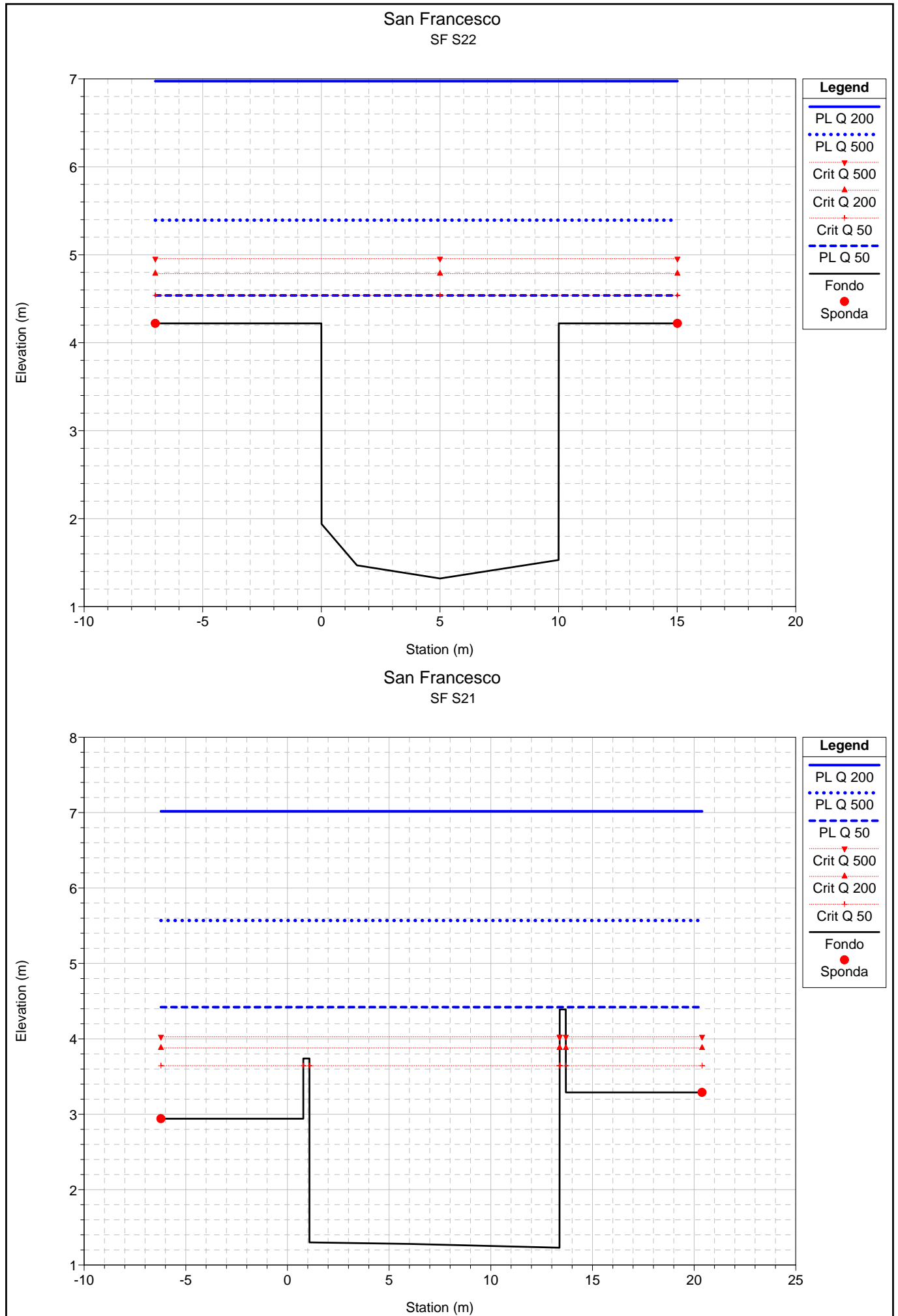


San Francesco
SF S22

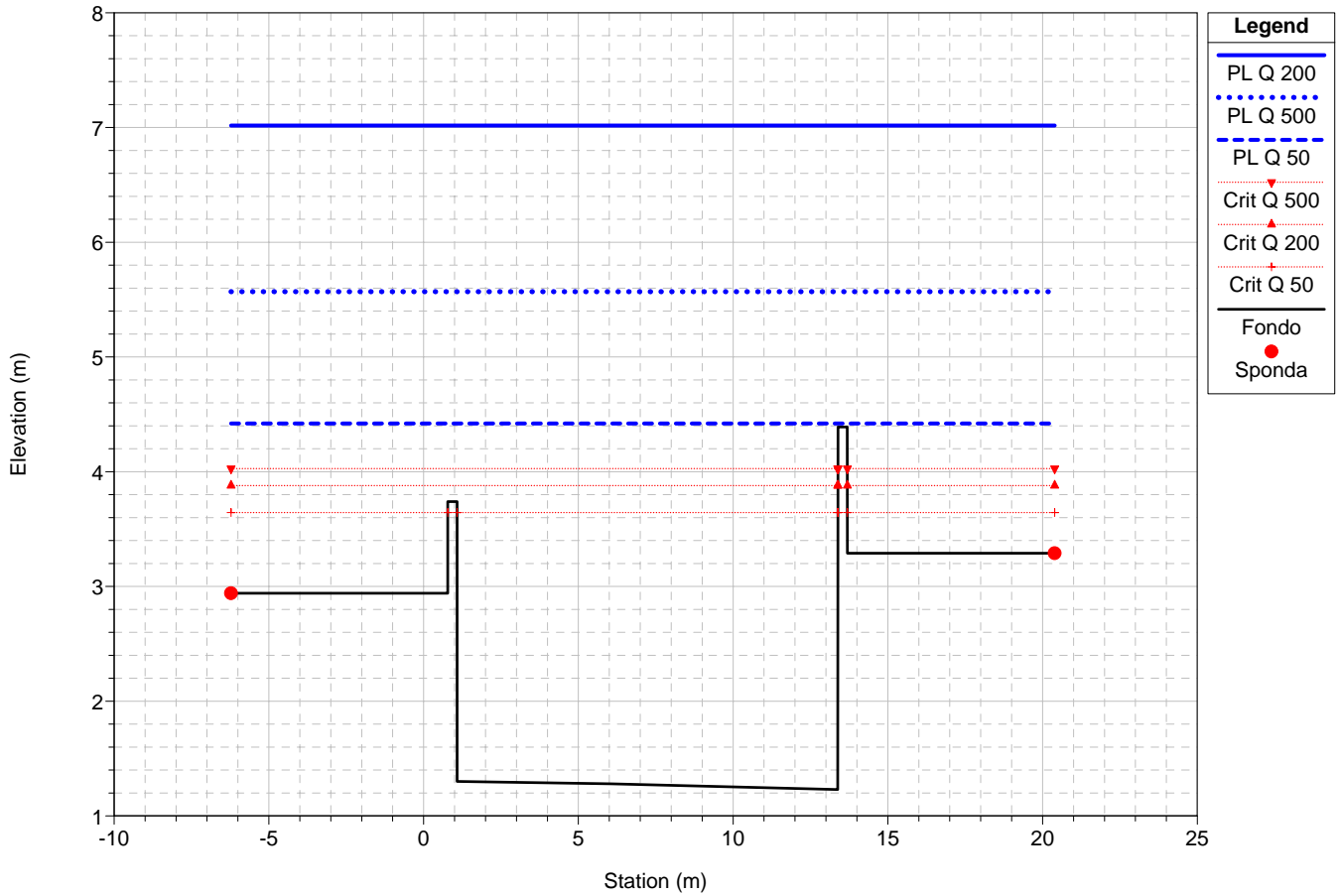




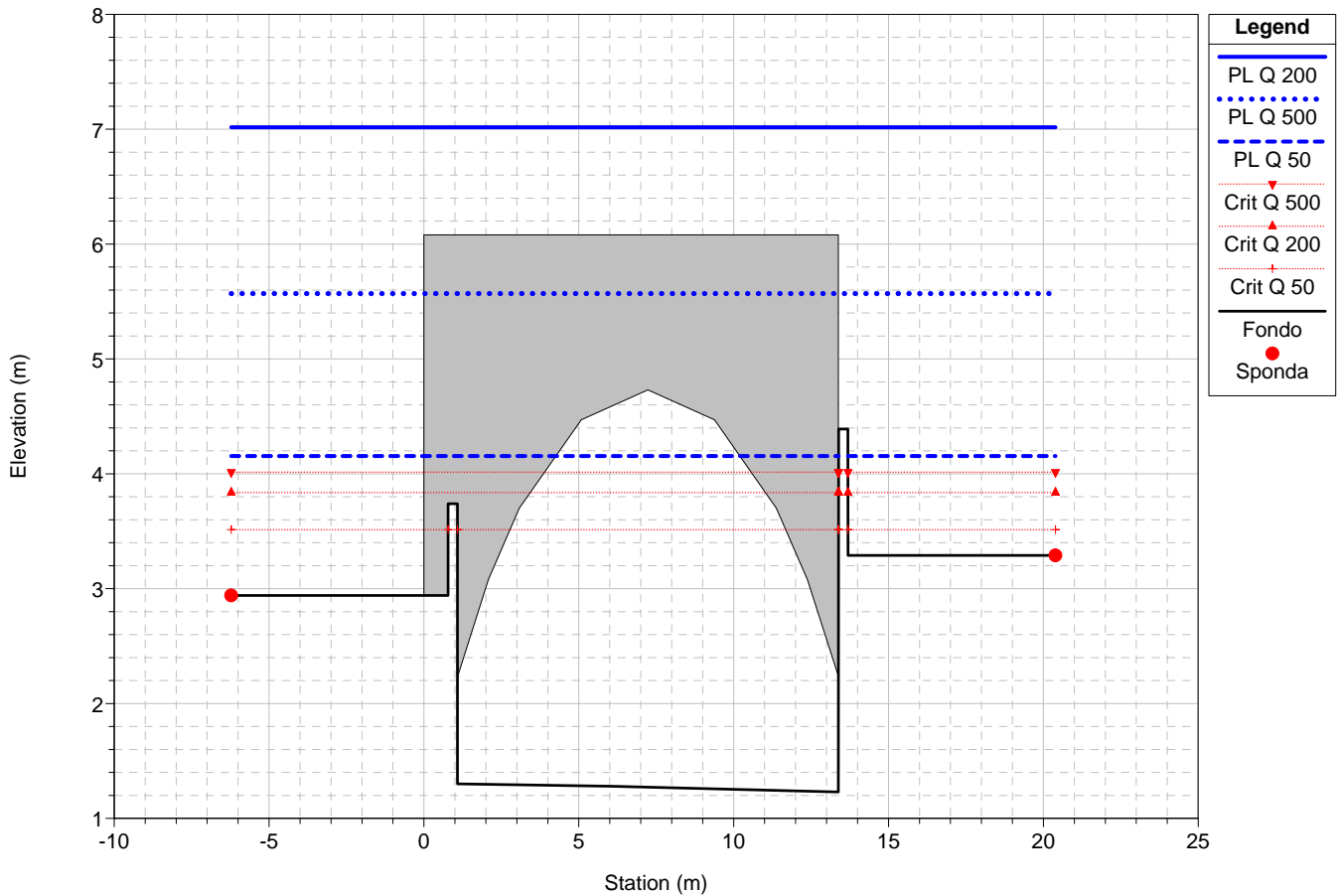




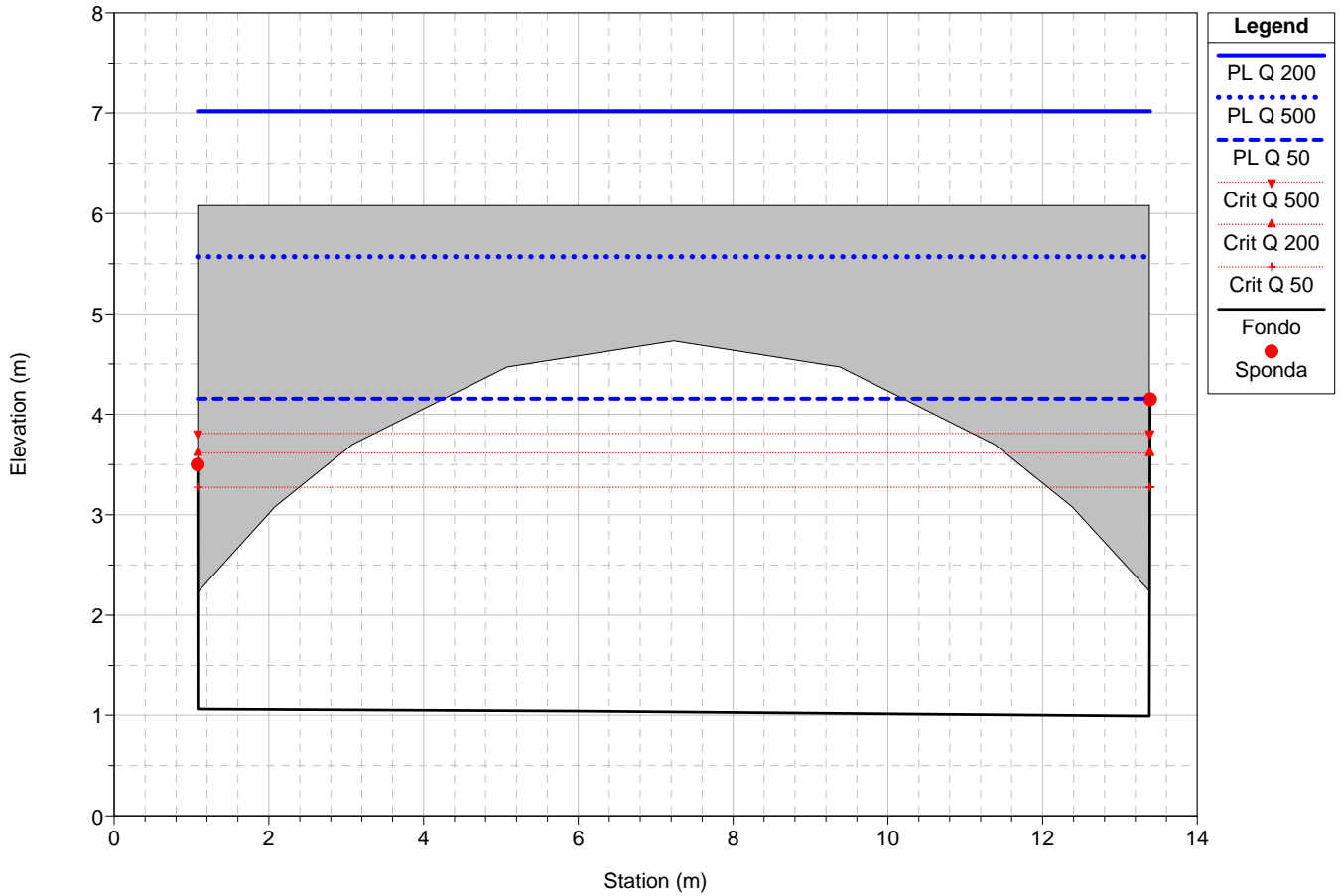
San Francesco
SF S21



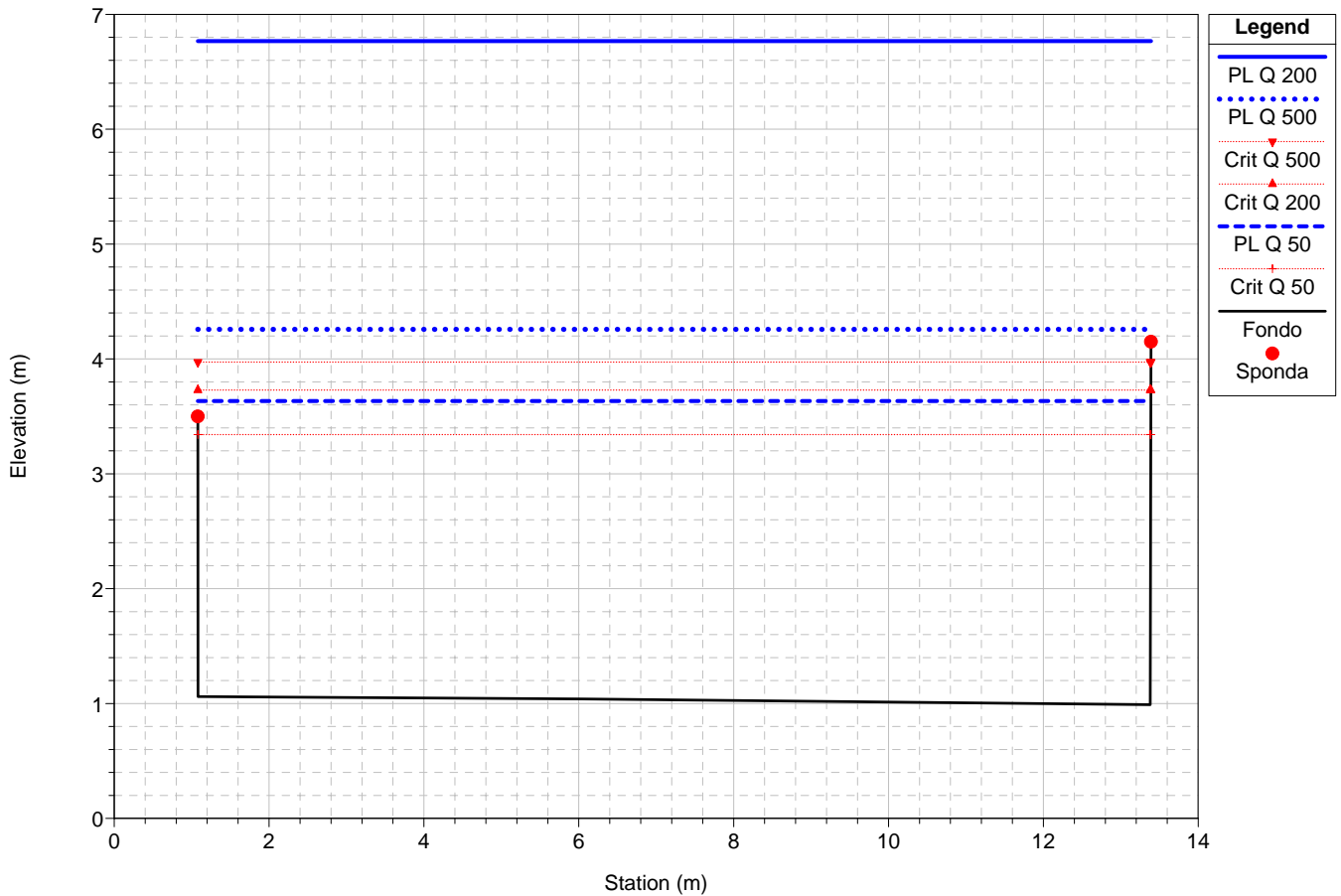
San Francesco
SF S21



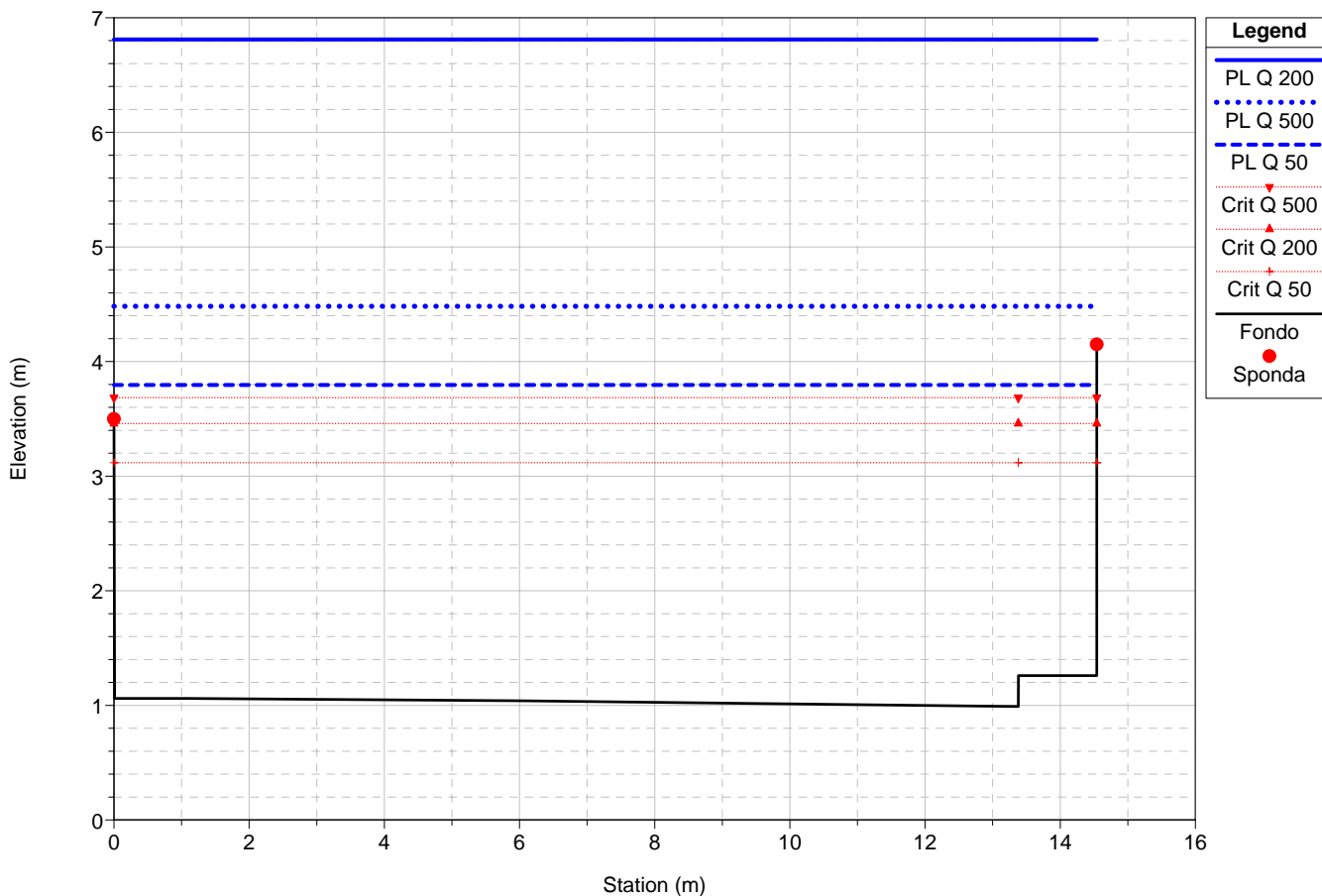
San Francesco
SF S21



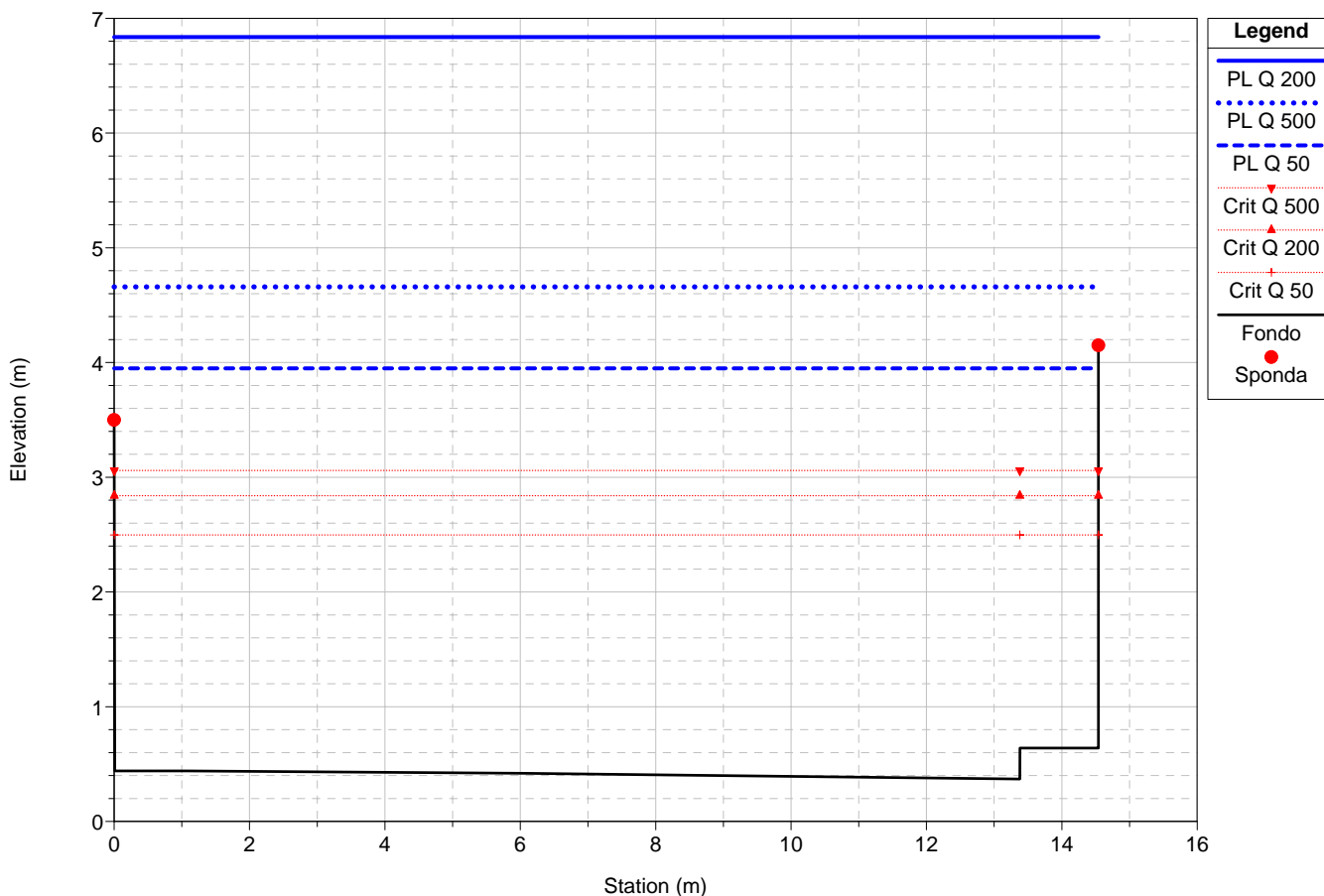
San Francesco
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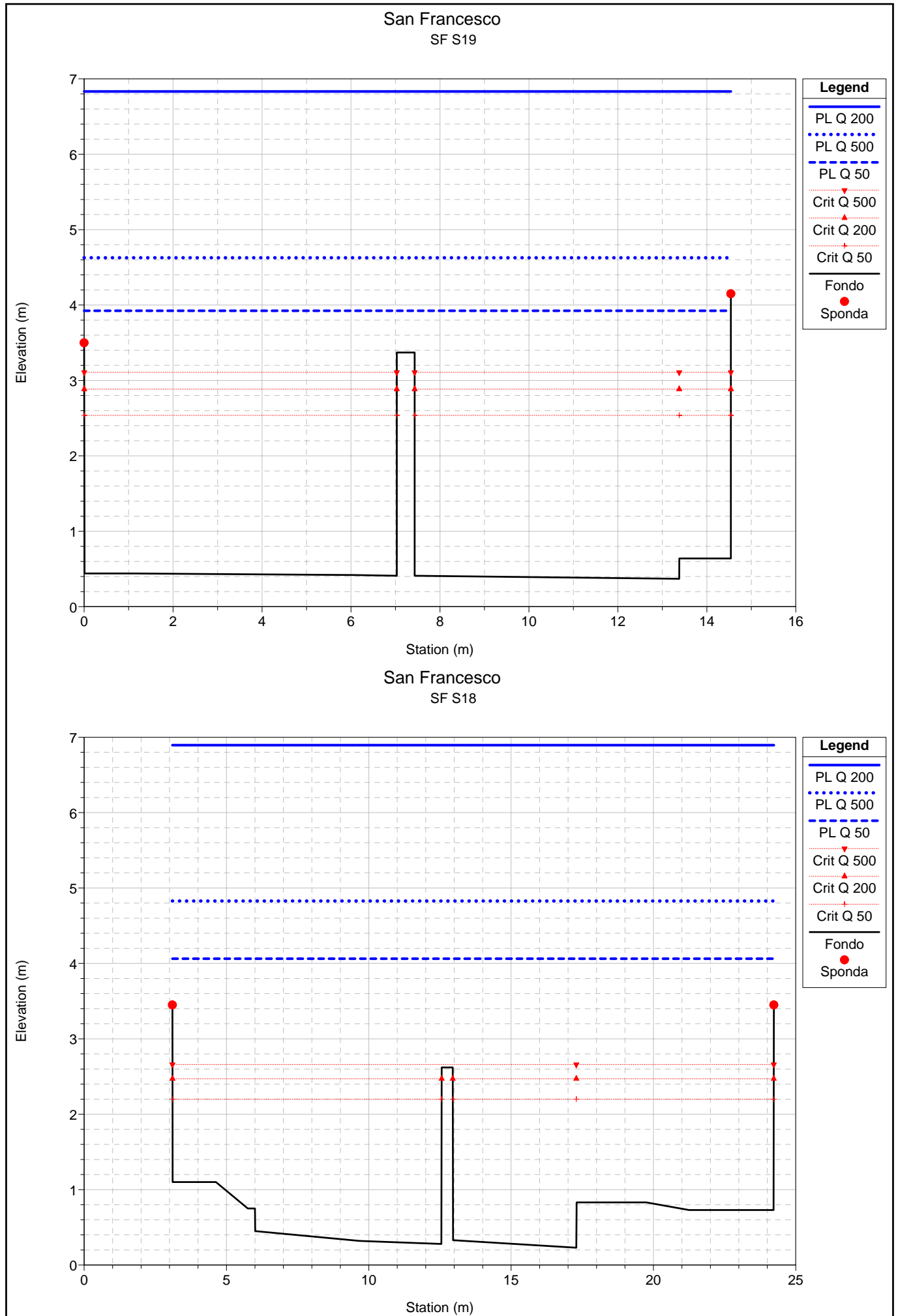


San Francesco
SF S21

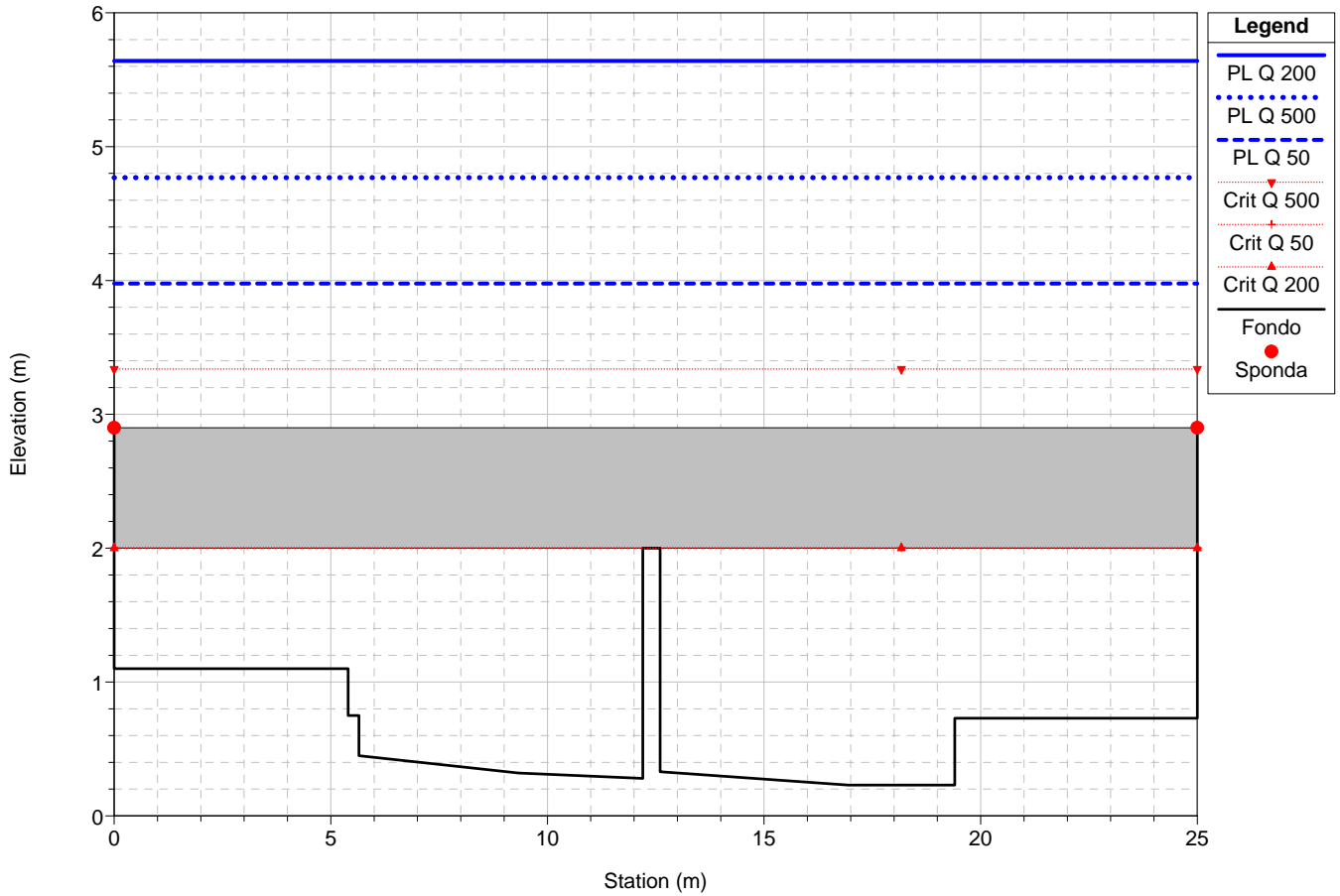


San Francesco
SF S20

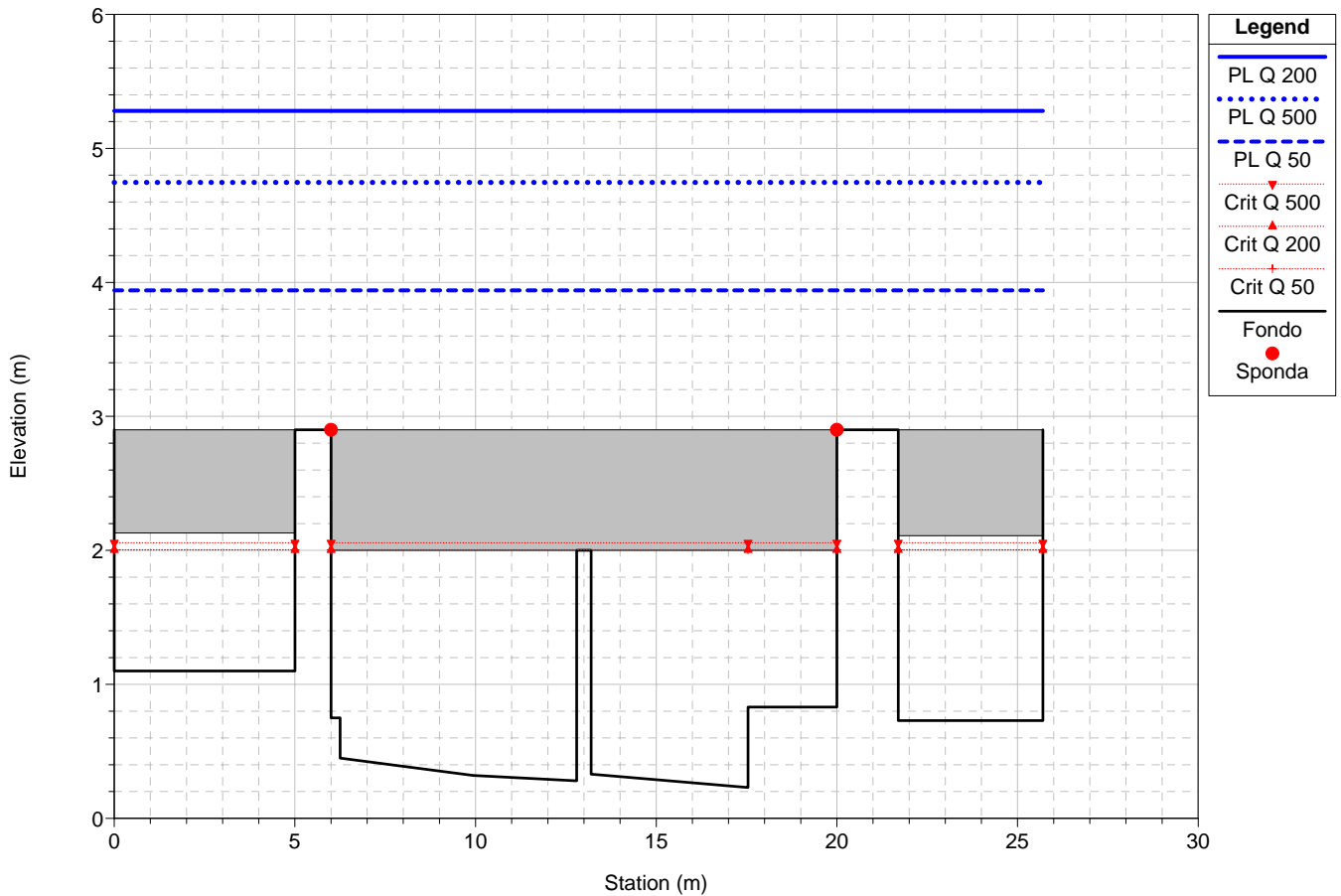




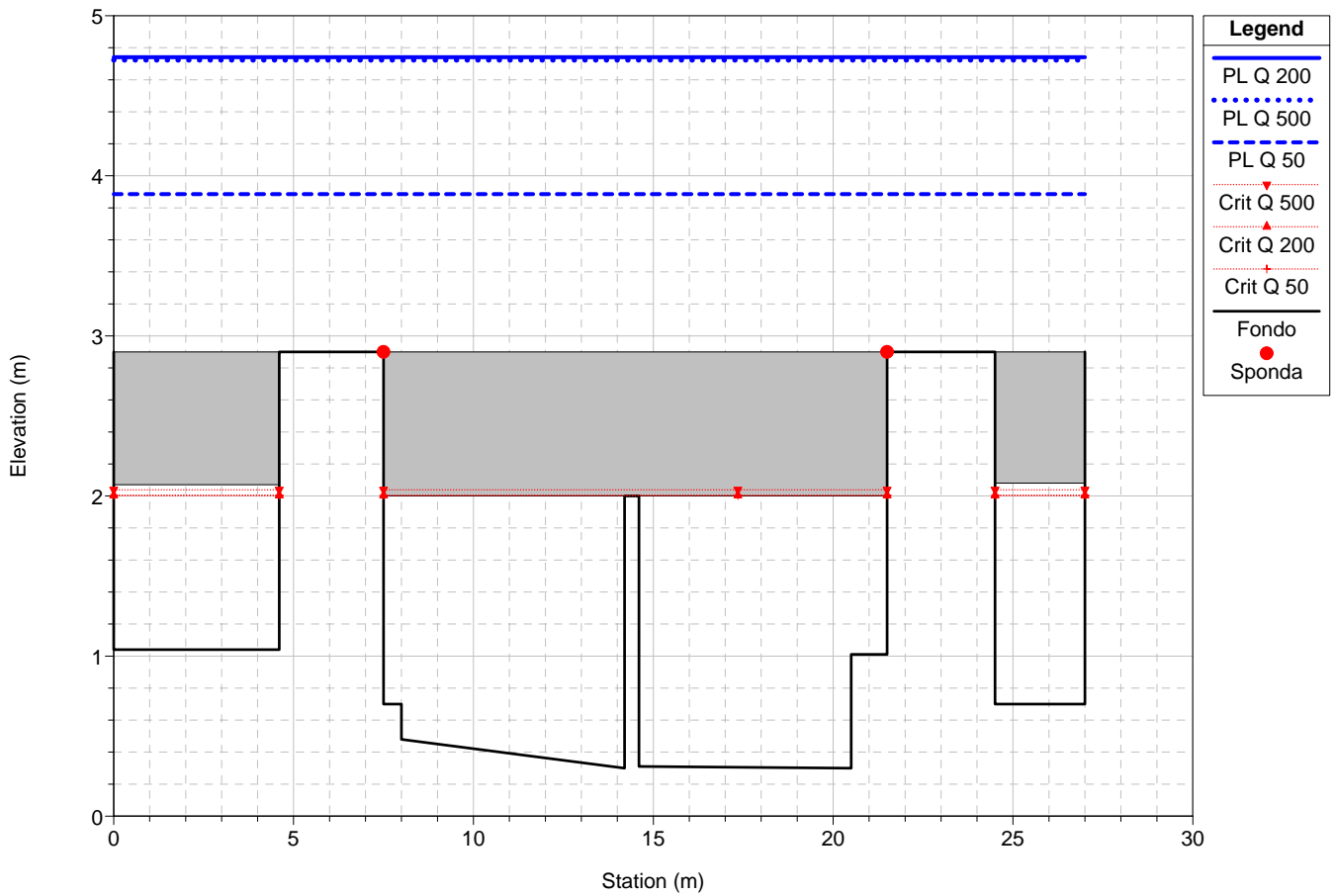
San Francesco
SF S17



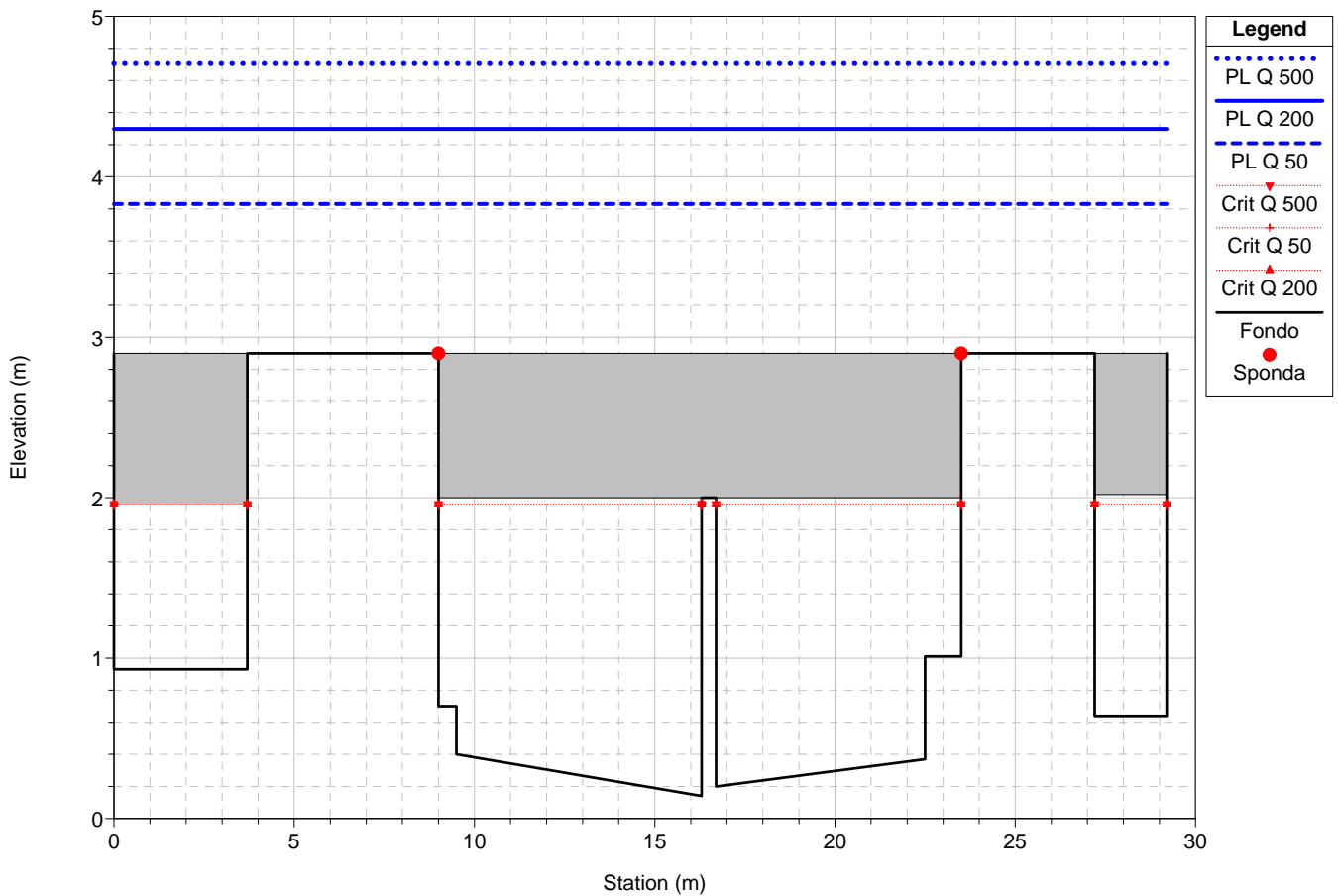
San Francesco
SF S17



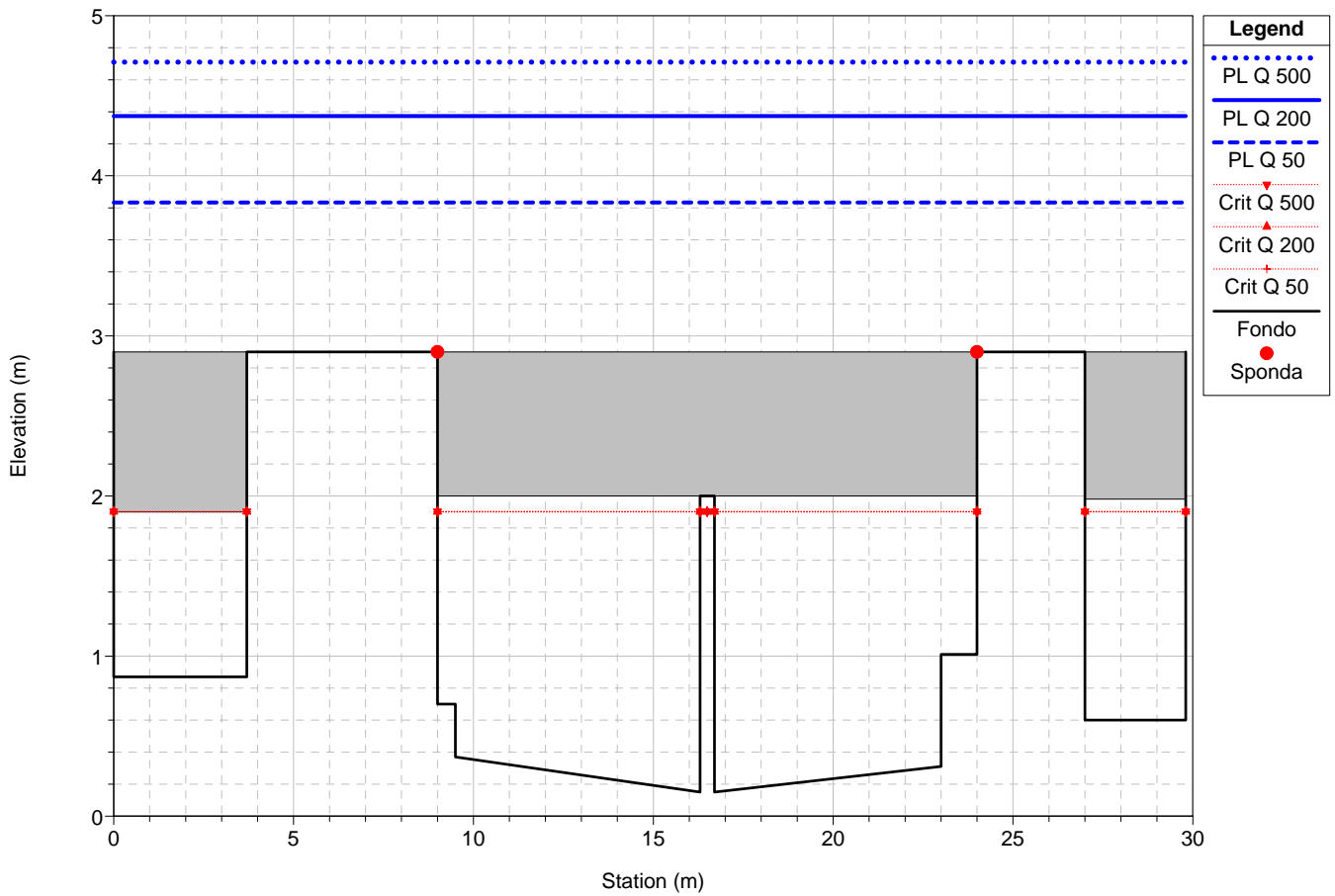
San Francesco
SF S16



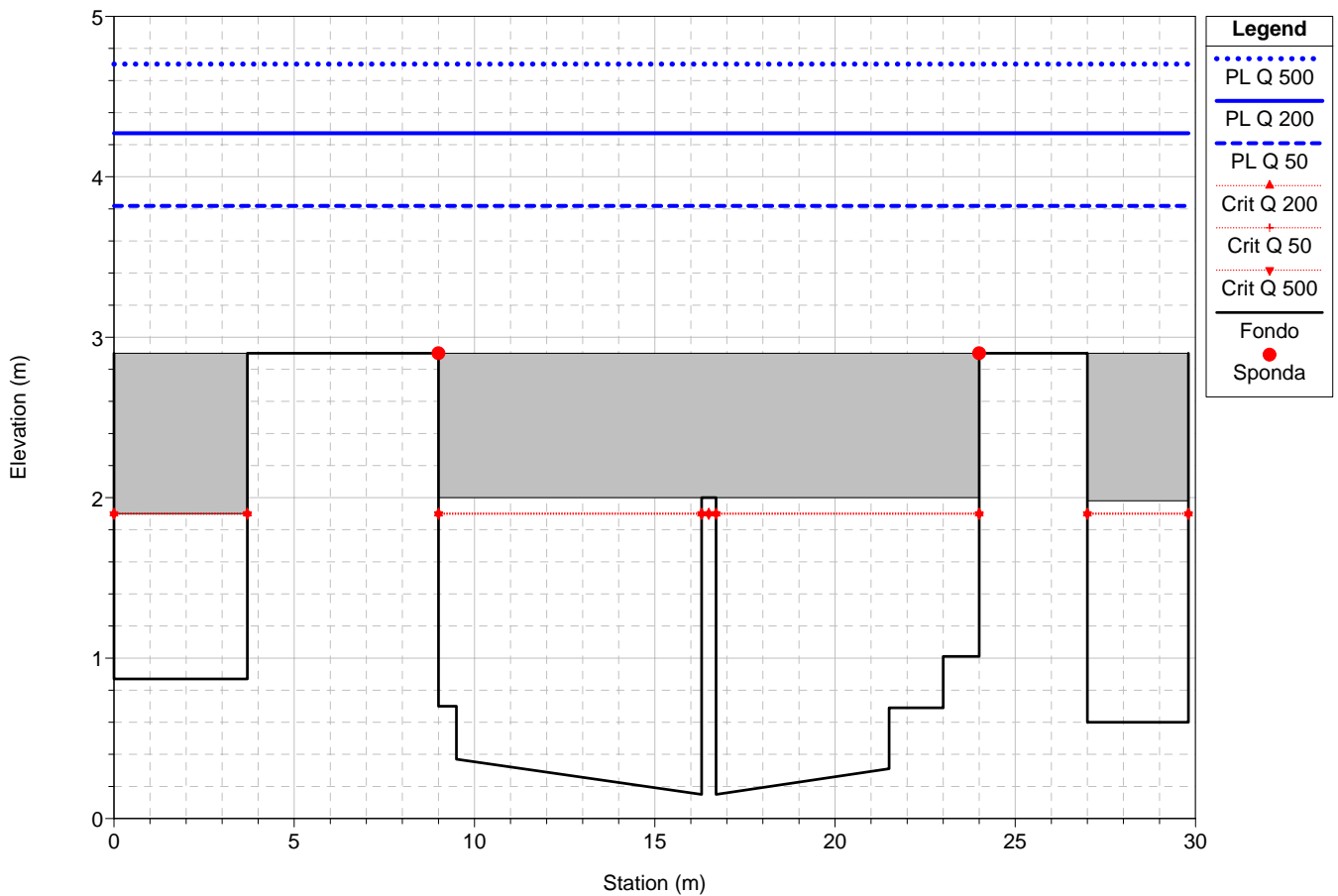
San Francesco
SF S15



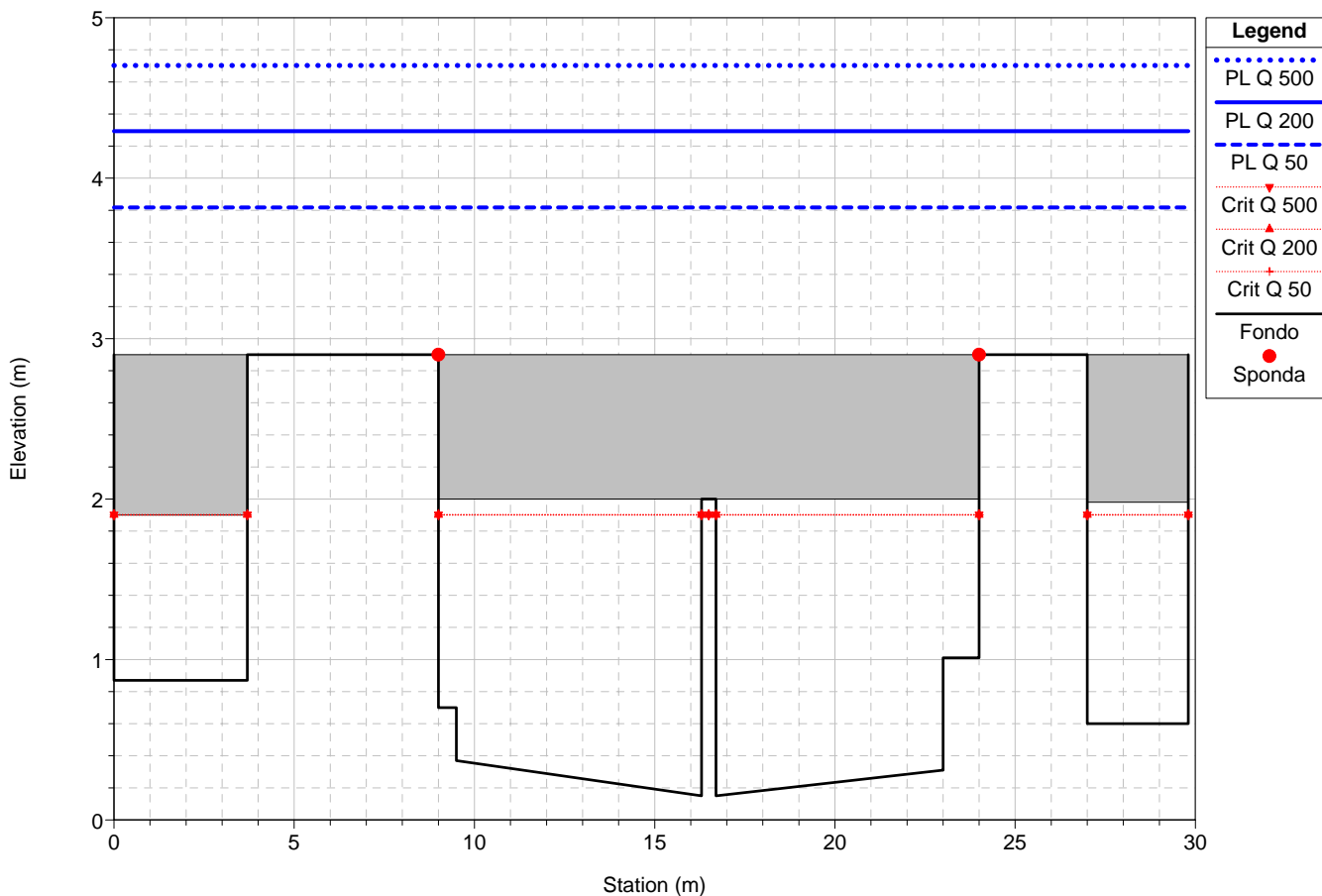
San Francesco
SF S14



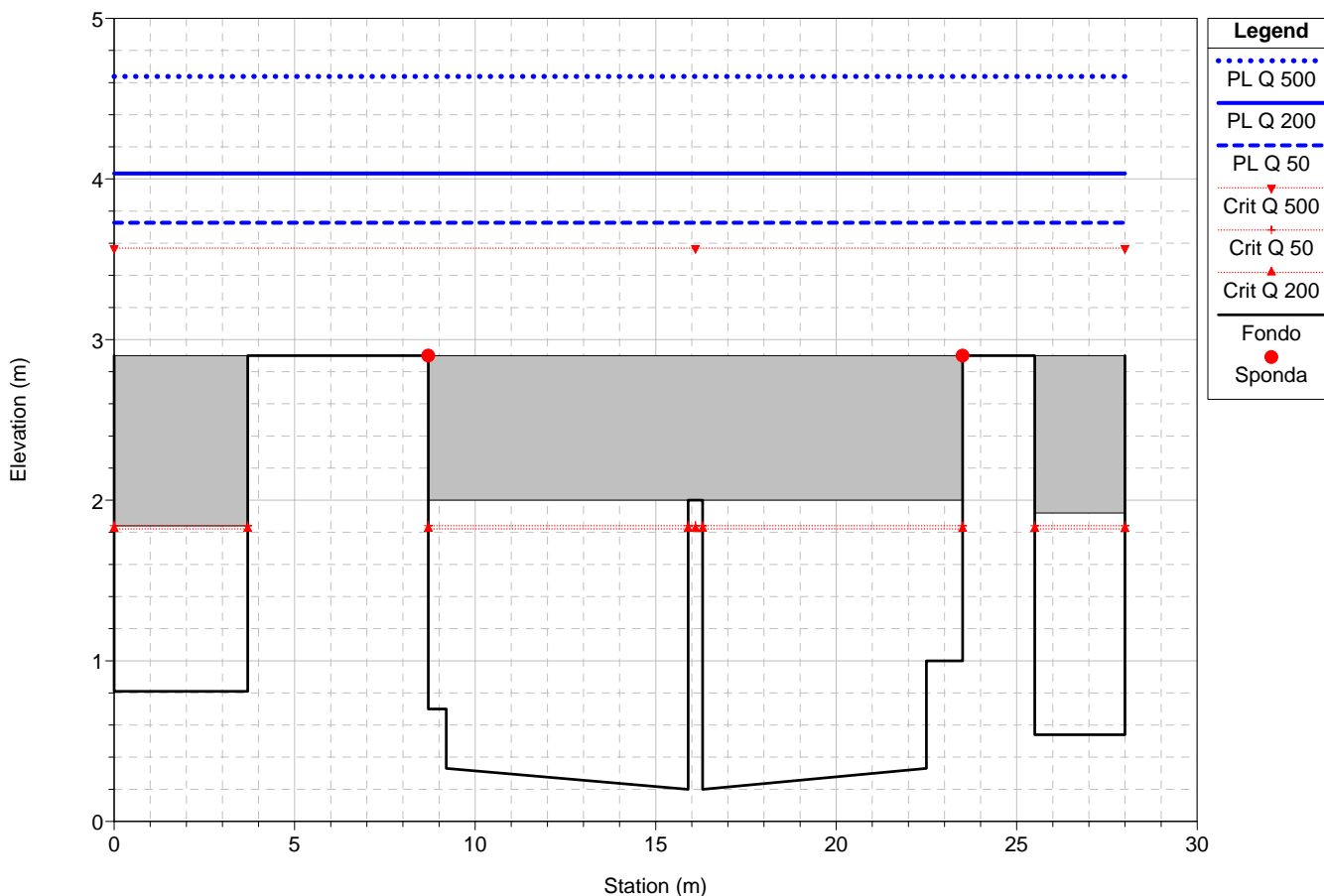
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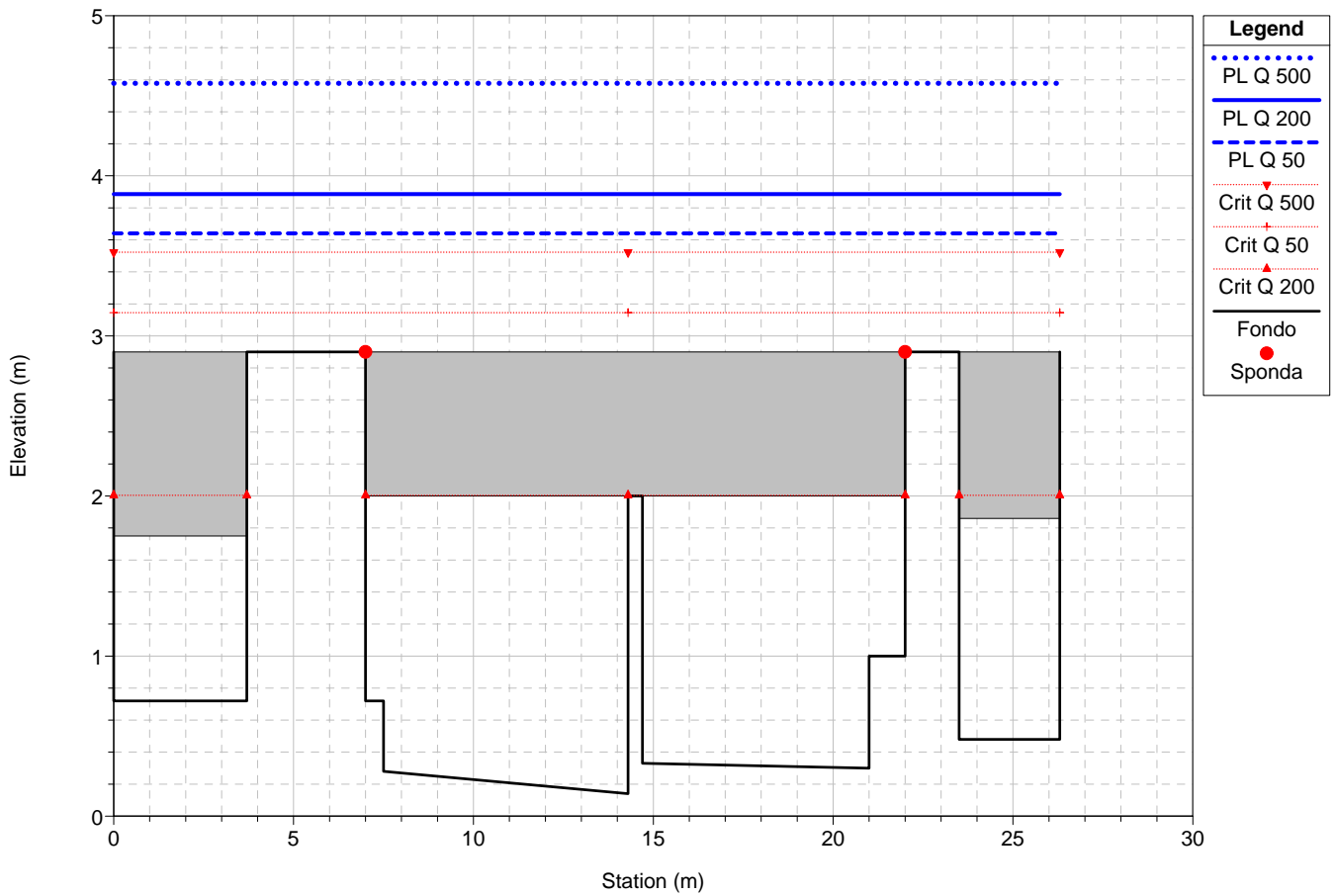
San Francesco
SF S14



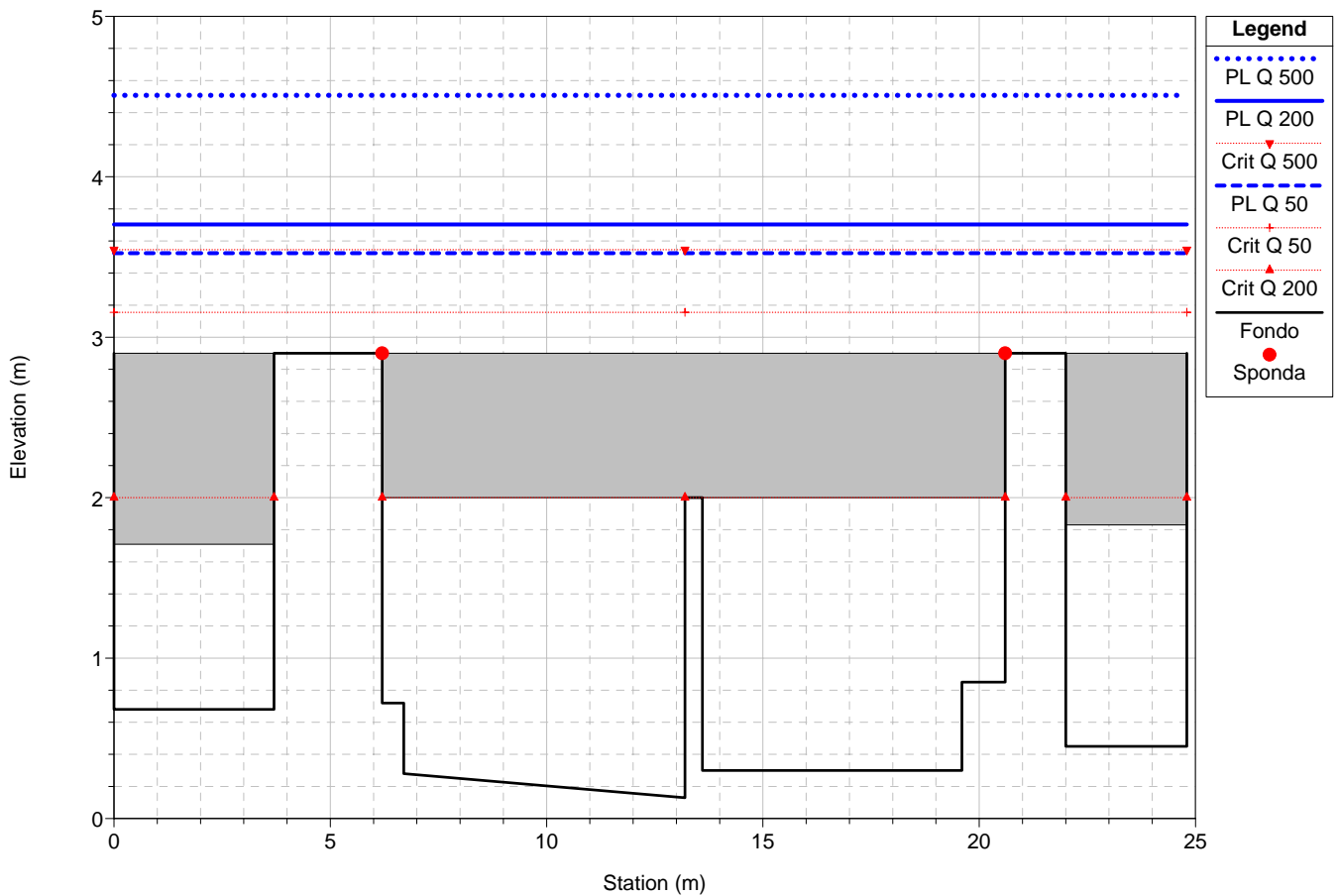
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SF S13



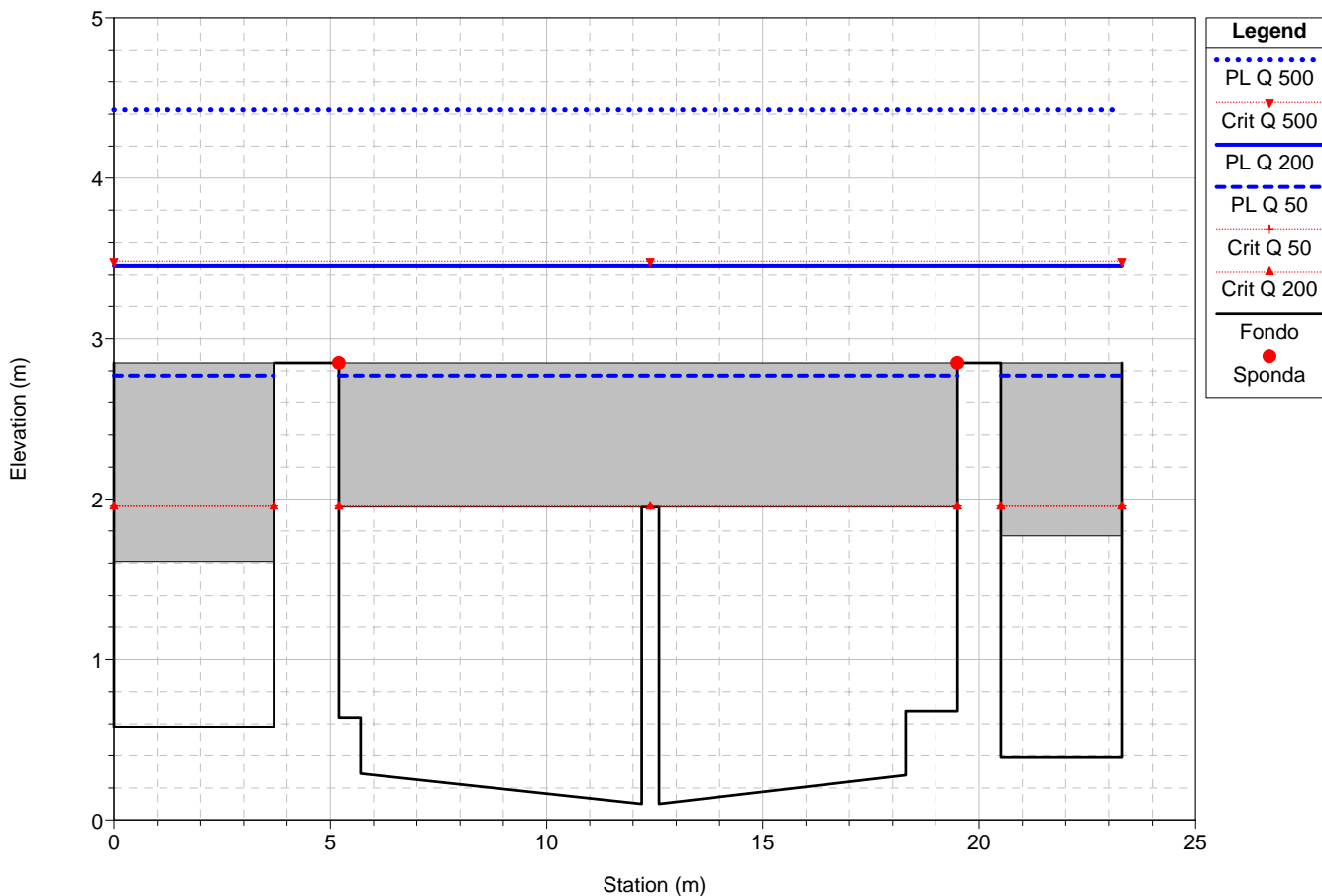
San Francesco
SF S12



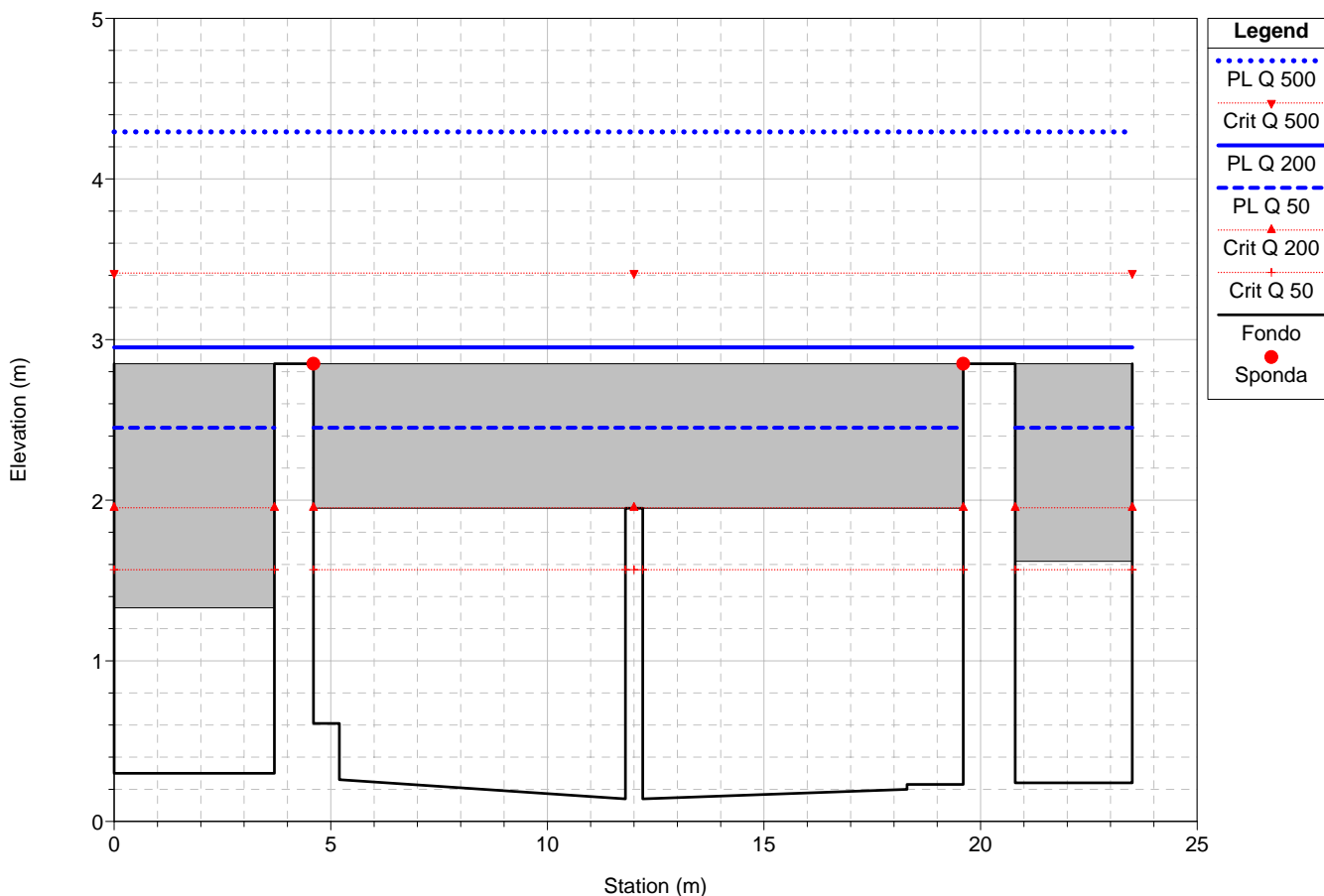
San Francesco
SF S12



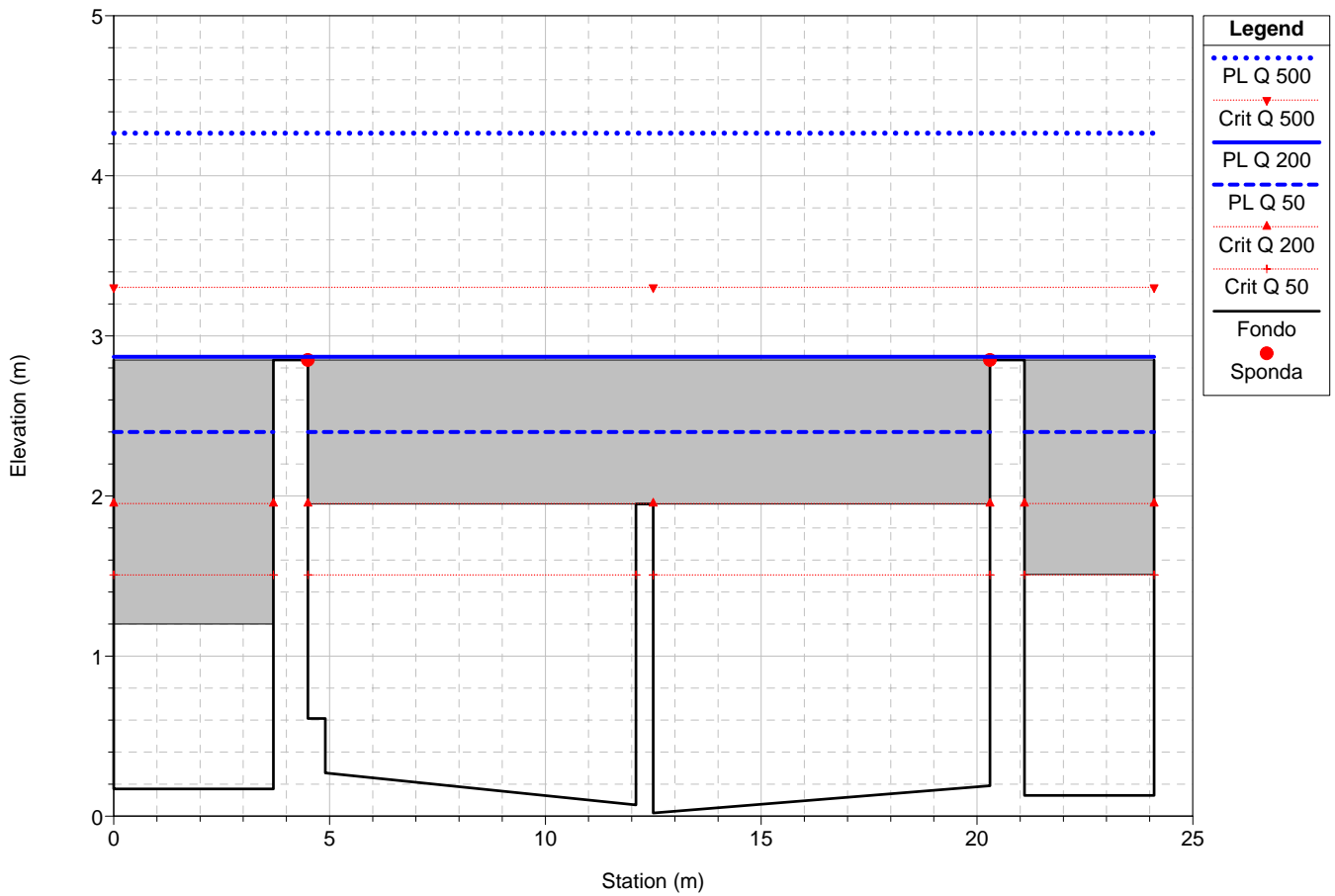
San Francesco
SF S11



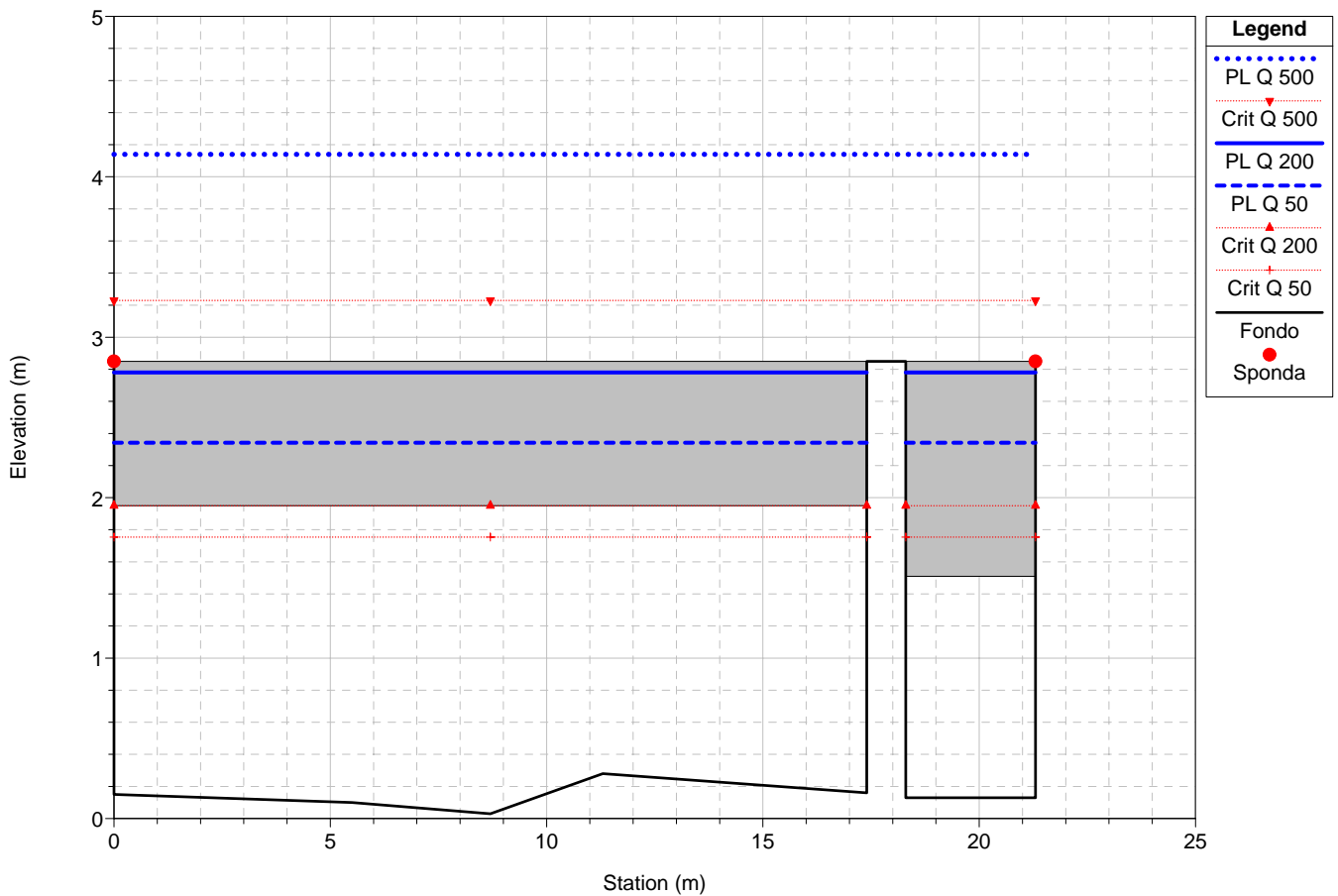
San Francesco
SF S10



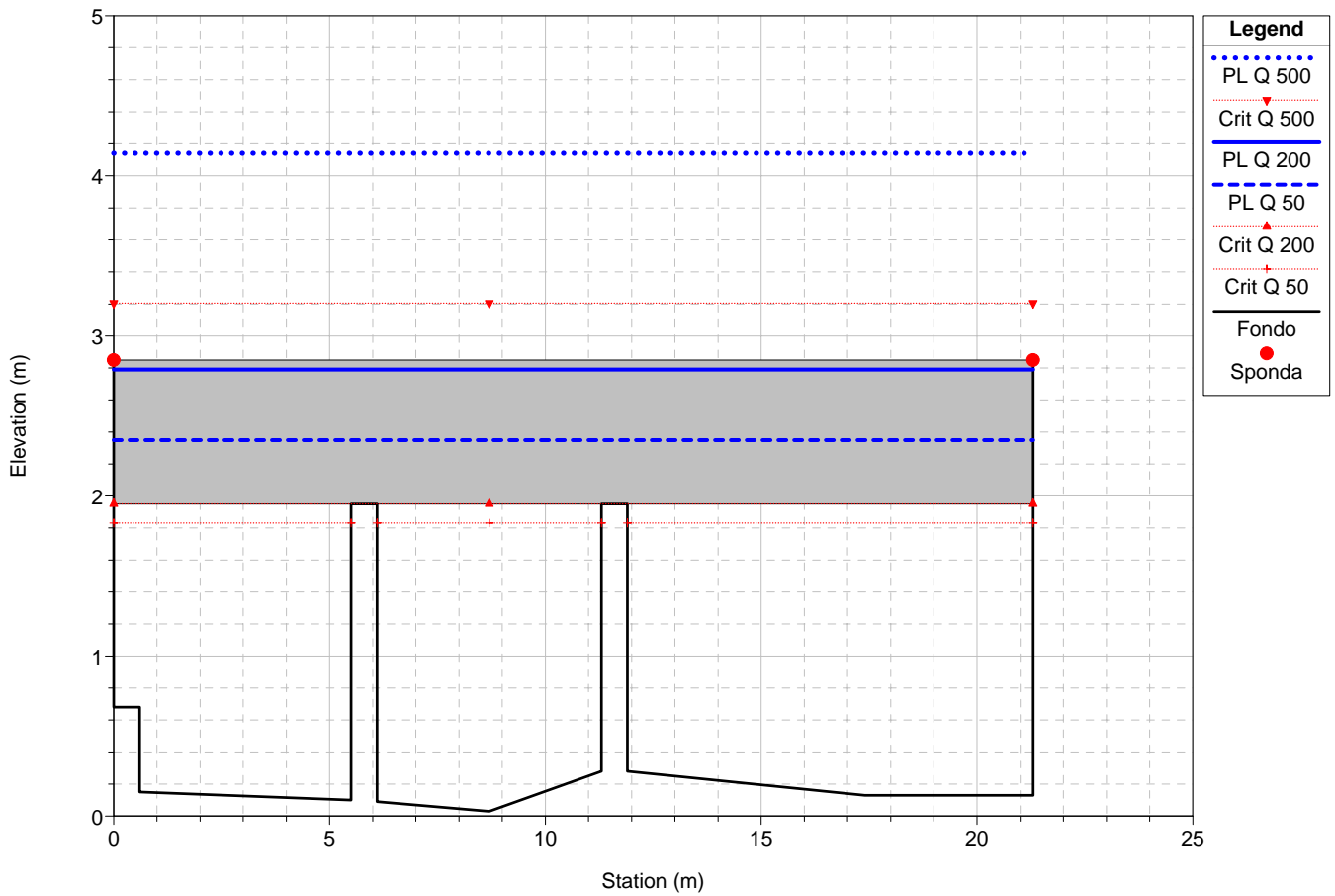
San Francesco
SF S9



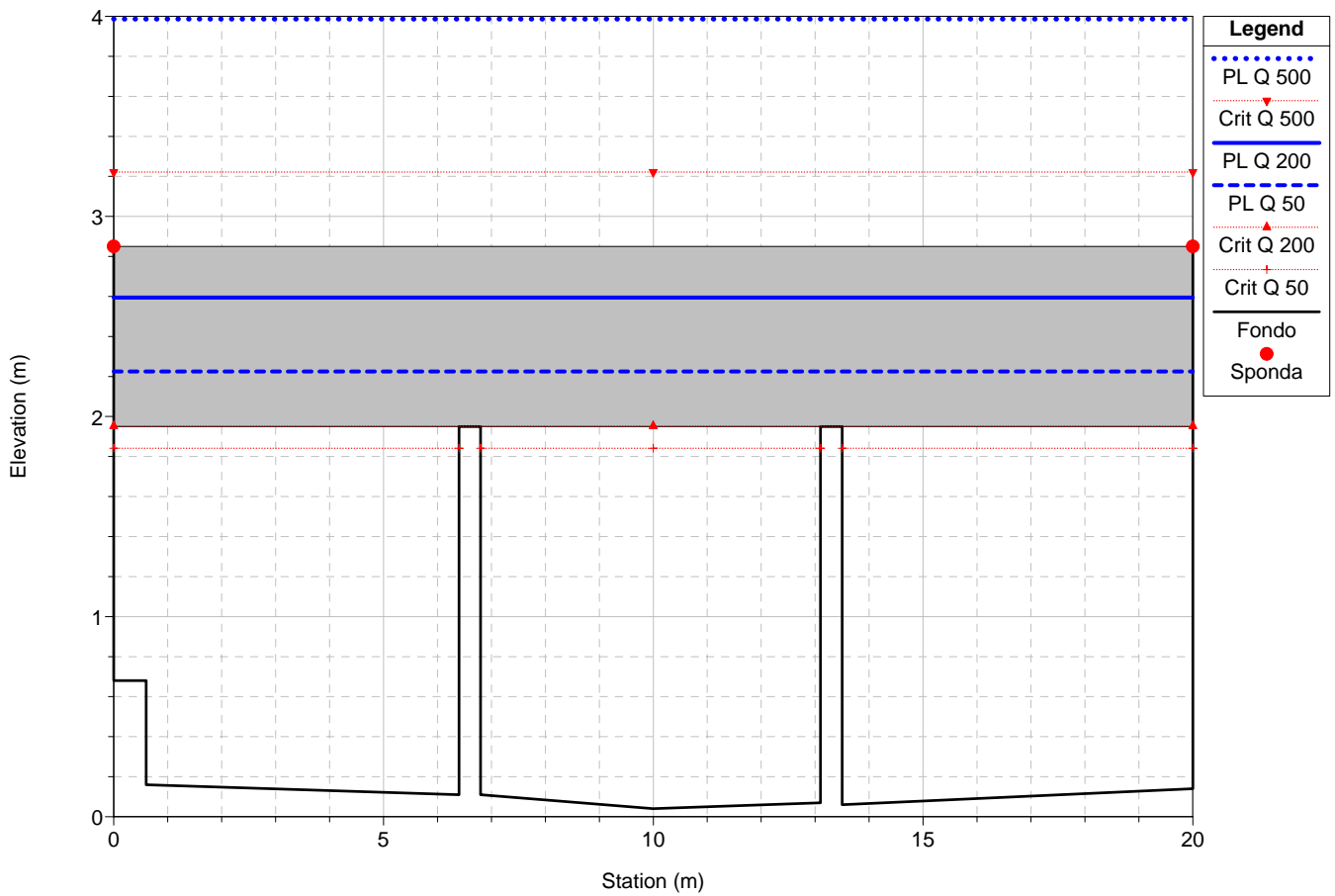
San Francesco
SF S8

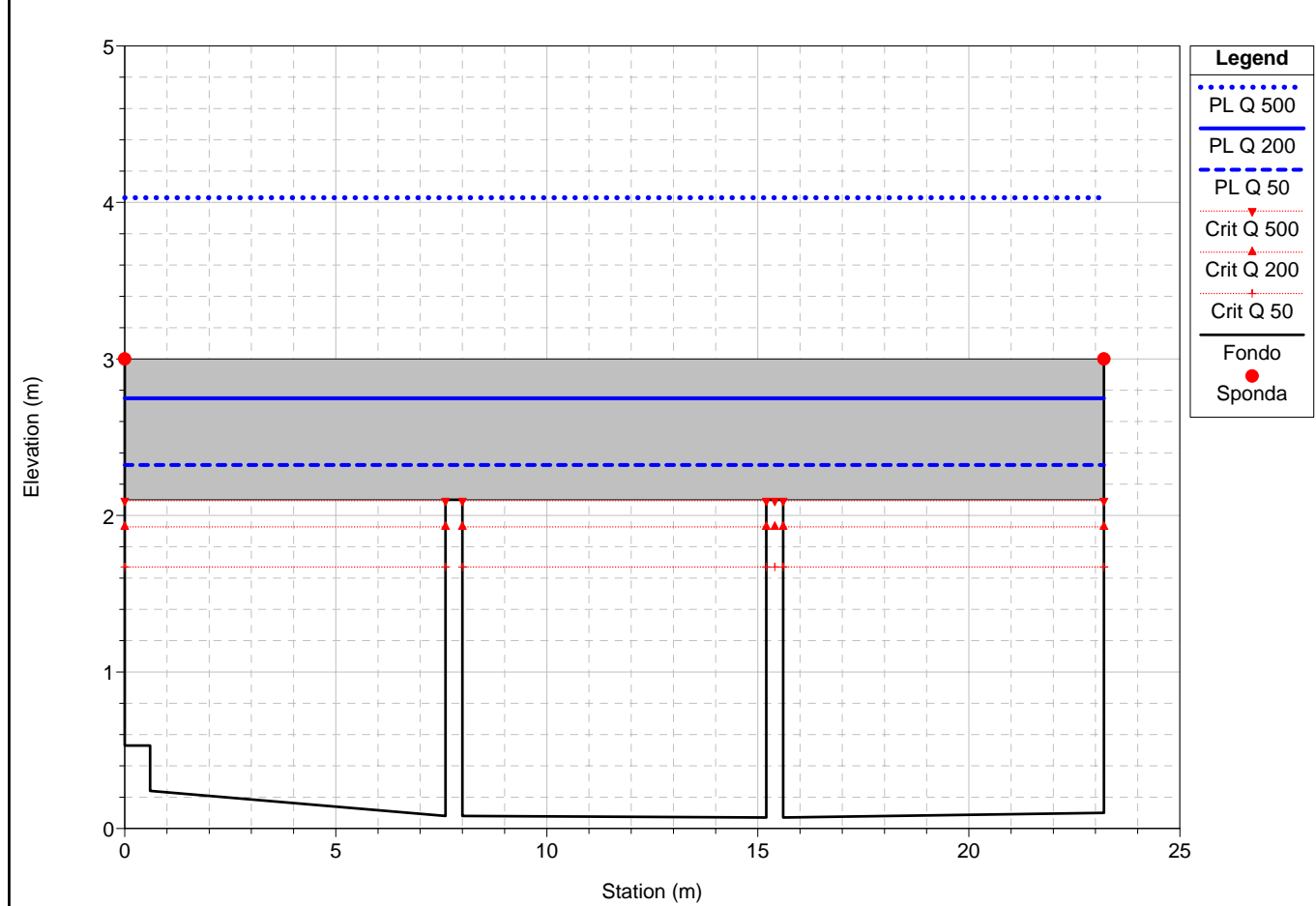
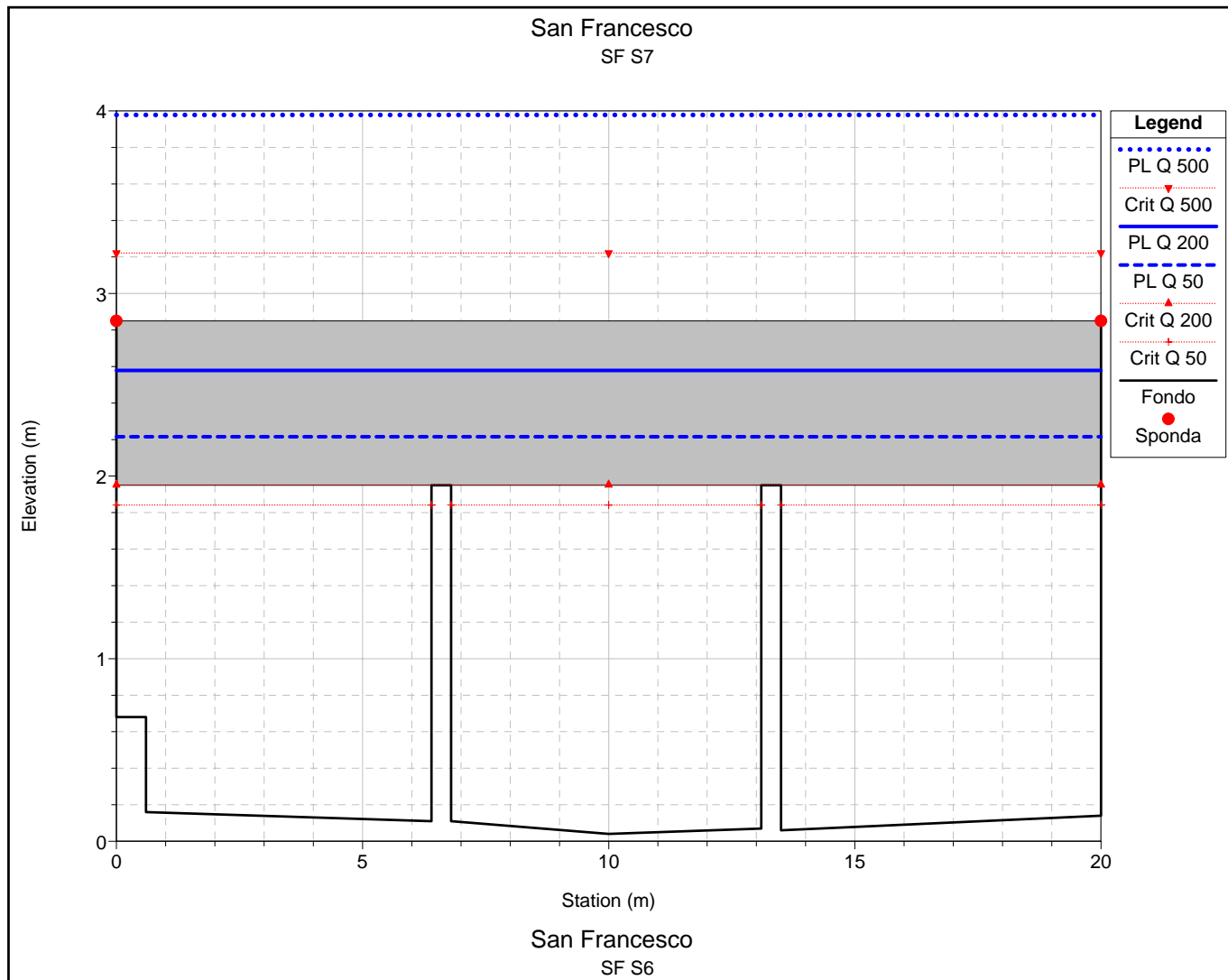


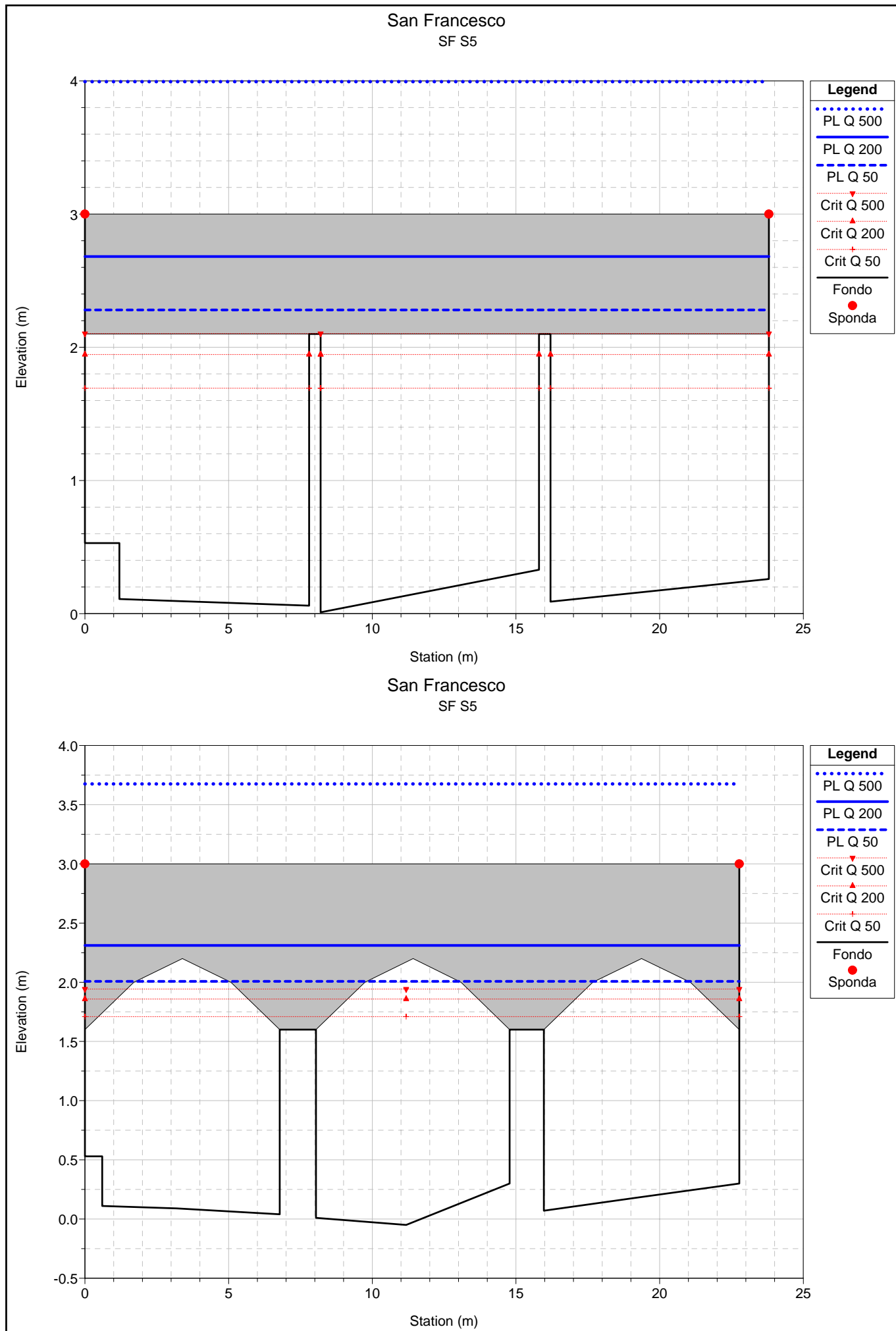
San Francesco
SF S8

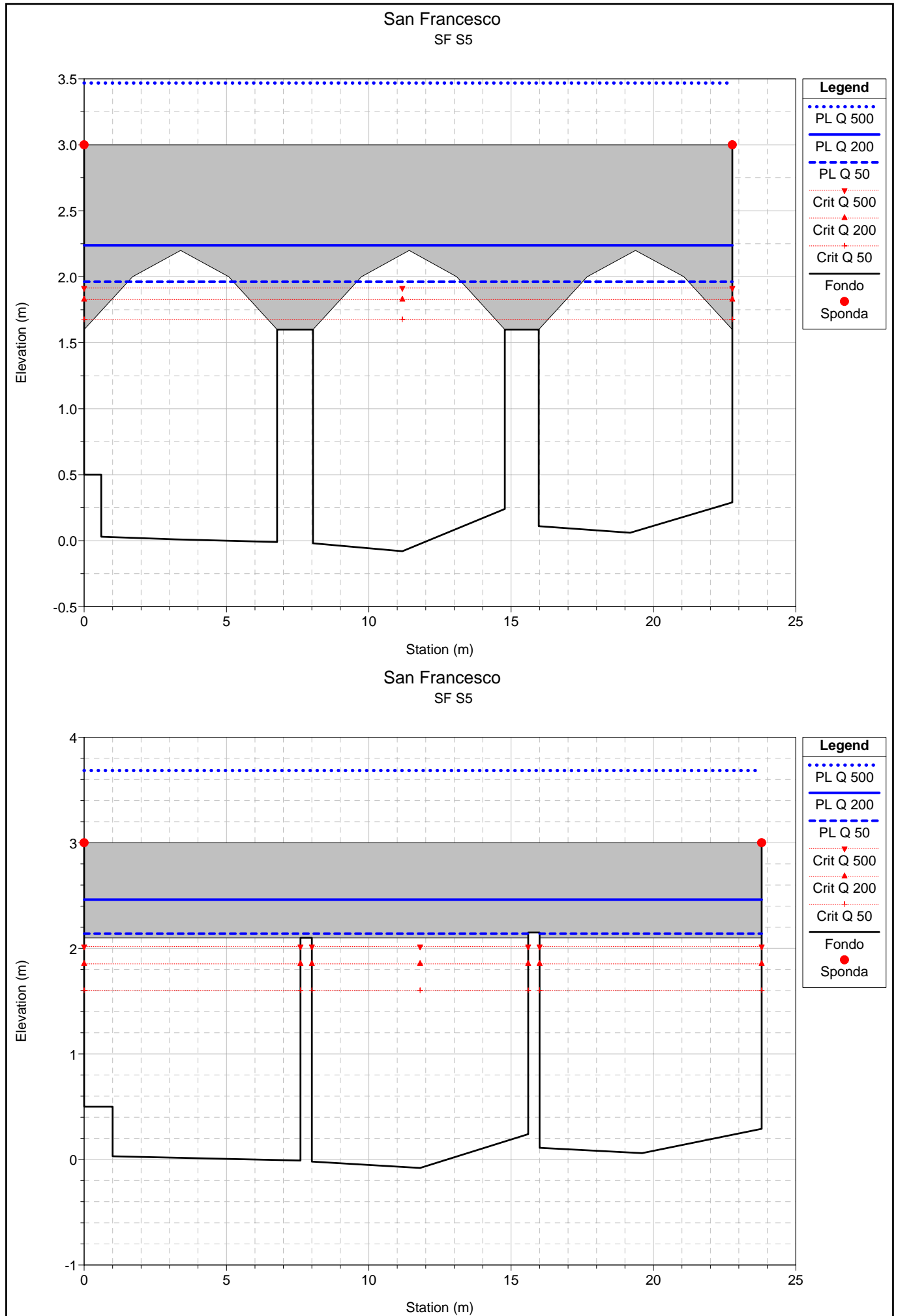


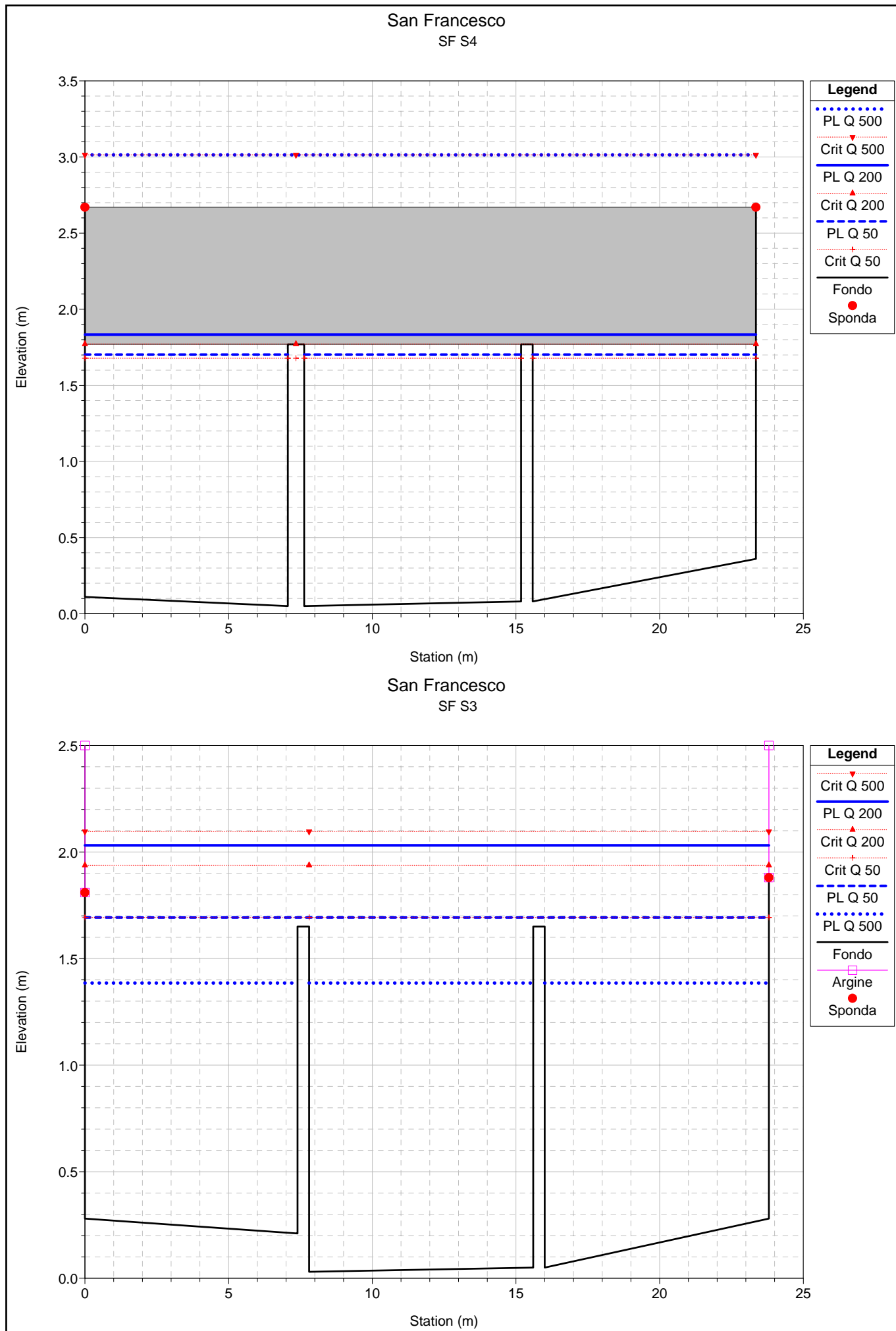
San Francesco
SF S7

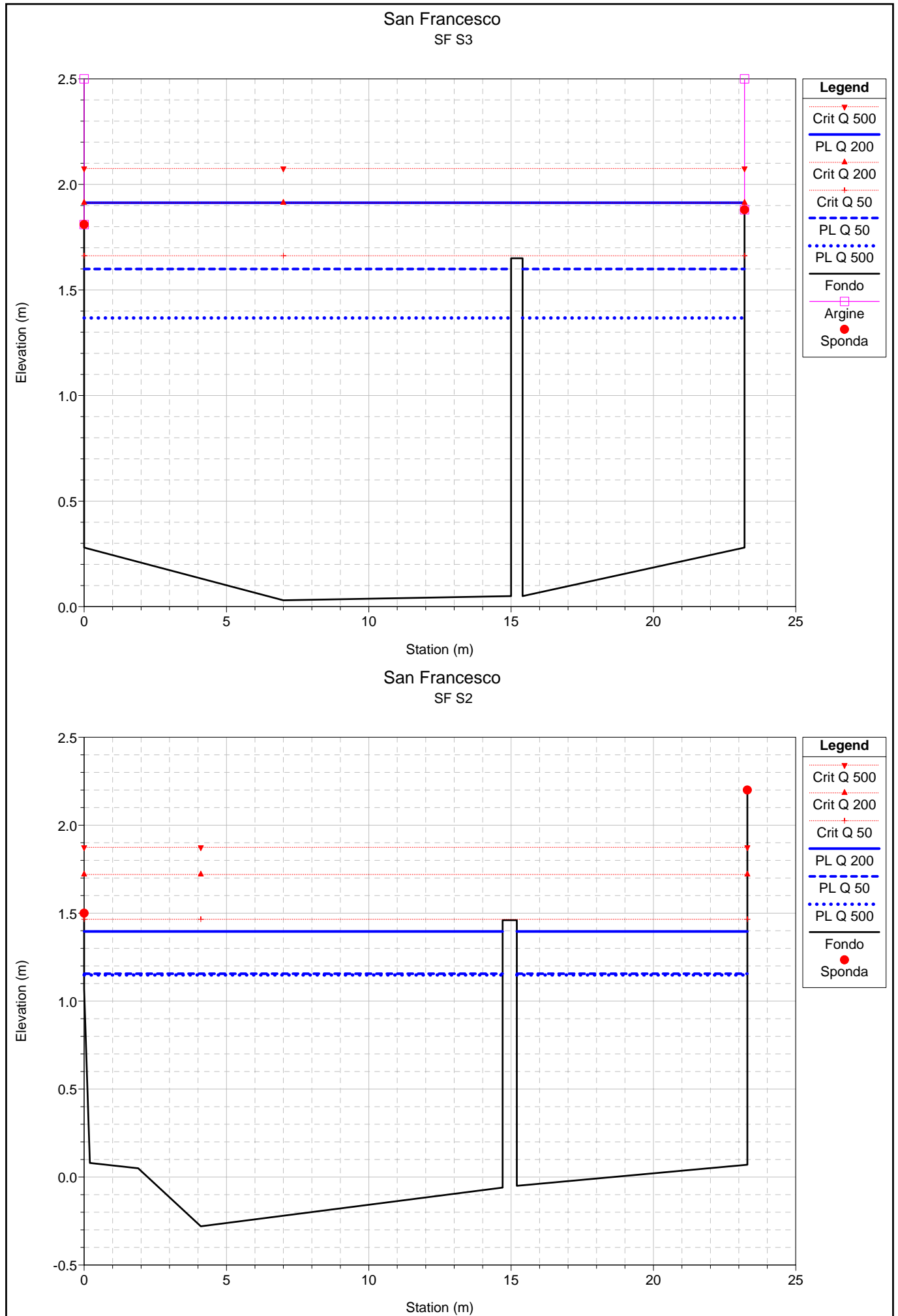


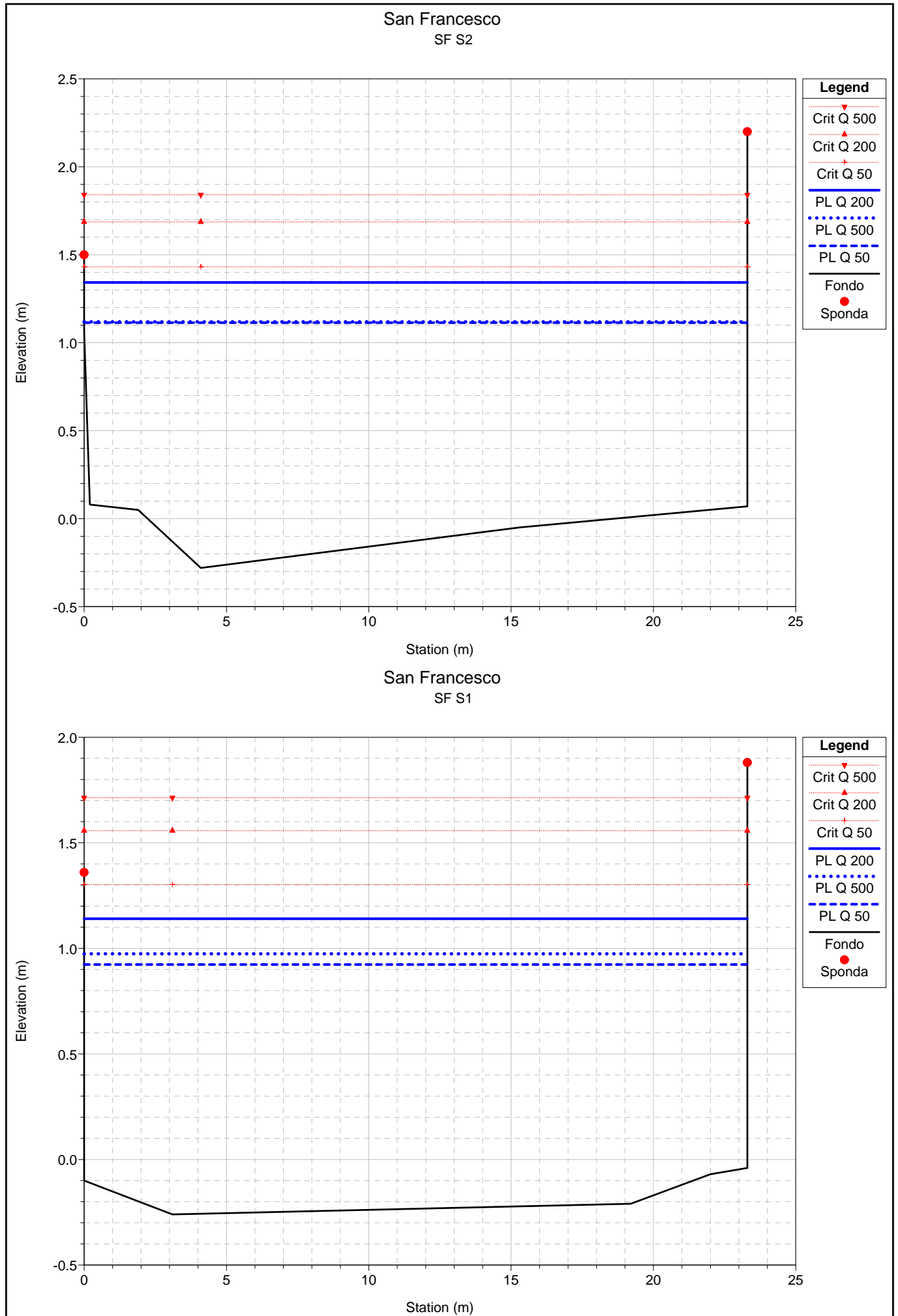












HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|-------------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 50. SF S50 | Q 50 | 136.00 | 31.86 | 33.96 | 35.31 | 1.35 | 36.04 | 2.08 | 34.56 | 36.03 | 0.020700 | 6.38 | 21.33 | 13.42 | 1.61 |
| Rapallo | 50. SF S50 | Q 200 | 171.00 | 31.86 | 34.24 | 35.31 | 1.07 | 36.04 | 1.80 | 34.92 | 36.62 | 0.020202 | 6.84 | 25.00 | 13.48 | 1.60 |
| Rapallo | 50. SF S50 | Q 500 | 195.00 | 31.86 | 34.42 | 35.31 | 0.89 | 36.04 | 1.62 | 35.15 | 36.99 | 0.019864 | 7.11 | 27.43 | 13.52 | 1.59 |
| Rapallo | 49. SF S49 | Q 50 | 136.00 | 31.09 | 32.78 | 34.30 | 1.52 | 33.93 | 1.15 | 33.49 | 35.16 | 0.027100 | 6.84 | 19.90 | 14.06 | 1.83 |
| Rapallo | 49. SF S49 | Q 200 | 171.00 | 31.09 | 33.02 | 34.30 | 1.28 | 33.93 | 0.91 | 33.84 | 35.77 | 0.026380 | 7.34 | 23.29 | 14.09 | 1.82 |
| Rapallo | 49. SF S49 | Q 500 | 195.00 | 31.09 | 33.18 | 34.30 | 1.12 | 33.93 | 0.75 | 34.06 | 36.15 | 0.025867 | 7.63 | 25.55 | 14.11 | 1.81 |
| Rapallo | 48.1 SF S48 | Q 50 | 136.00 | 30.96 | 32.09 | 30.96 | -1.13 | 31.00 | -1.09 | 32.79 | 34.54 | 0.035418 | 7.21 | 20.15 | 19.60 | 2.18 |
| Rapallo | 48.1 SF S48 | Q 200 | 171.00 | 30.96 | 32.25 | 30.96 | -1.29 | 31.00 | -1.25 | 33.08 | 35.15 | 0.035161 | 7.86 | 23.28 | 19.65 | 2.23 |
| Rapallo | 48.1 SF S48 | Q 500 | 195.00 | 30.96 | 32.36 | 30.96 | -1.40 | 31.00 | -1.36 | 33.39 | 35.54 | 0.034700 | 8.24 | 25.36 | 19.68 | 2.24 |
| Rapallo | 48. SF S48 | Q 50 | 136.00 | 27.52 | 33.67 | 30.96 | -2.71 | 31.00 | -2.67 | 30.15 | 33.79 | 0.000275 | 1.56 | 97.50 | 28.44 | 0.21 |
| Rapallo | 48. SF S48 | Q 200 | 171.00 | 27.52 | 34.29 | 30.96 | -3.33 | 31.00 | -3.29 | 30.53 | 34.42 | 0.000285 | 1.70 | 115.04 | 28.44 | 0.22 |
| Rapallo | 48. SF S48 | Q 500 | 195.00 | 27.52 | 34.28 | 30.96 | -3.32 | 31.00 | -3.28 | 30.77 | 34.46 | 0.000371 | 1.95 | 114.94 | 28.44 | 0.25 |
| Rapallo | 47.1 SF S47 | Q 50 | 136.00 | 26.95 | 33.29 | 32.56 | -0.73 | 32.56 | -0.73 | 30.61 | 33.73 | 0.002058 | 2.97 | 48.98 | 16.49 | 0.39 |
| Rapallo | 47.1 SF S47 | Q 200 | 171.00 | 26.95 | 33.89 | 32.56 | -1.33 | 32.56 | -1.33 | 31.16 | 34.36 | 0.002149 | 3.17 | 58.75 | 16.49 | 0.40 |
| Rapallo | 47.1 SF S47 | Q 500 | 195.00 | 26.95 | 33.66 | 32.56 | -1.10 | 32.56 | -1.10 | 31.51 | 34.37 | 0.003273 | 3.85 | 54.99 | 16.49 | 0.49 |
| Rapallo | 47. SF S47 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 46.9 SF S47 | Q 50 | 136.00 | 26.95 | 30.61 | 32.56 | 1.95 | 32.56 | 1.95 | 30.61 | 32.26 | 0.011188 | 5.68 | 23.96 | 7.33 | 1.00 |
| Rapallo | 46.9 SF S47 | Q 200 | 171.00 | 26.95 | 31.16 | 32.56 | 1.40 | 32.56 | 1.40 | 31.16 | 33.06 | 0.011752 | 6.11 | 27.98 | 7.38 | 1.00 |
| Rapallo | 46.9 SF S47 | Q 500 | 195.00 | 26.95 | 31.51 | 32.56 | 1.05 | 32.56 | 1.05 | 31.51 | 33.58 | 0.012125 | 6.38 | 30.58 | 7.41 | 1.00 |
| Rapallo | 46.8 SF S47 | Q 50 | 136.00 | 26.93 | 28.75 | 30.56 | 1.81 | 30.25 | 1.50 | 29.93 | 32.05 | 0.035635 | 8.06 | 16.88 | 9.96 | 1.98 |
| Rapallo | 46.8 SF S47 | Q 200 | 171.00 | 26.93 | 29.03 | 30.56 | 1.53 | 30.25 | 1.22 | 30.35 | 32.84 | 0.036560 | 8.65 | 19.77 | 10.49 | 2.01 |
| Rapallo | 46.8 SF S47 | Q 500 | 195.00 | 26.93 | 29.20 | 30.56 | 1.36 | 30.25 | 1.05 | 30.57 | 33.34 | 0.036457 | 9.01 | 21.64 | 10.60 | 2.01 |
| Rapallo | 46. SF S46 | Q 50 | 136.00 | 26.75 | 29.56 | 30.38 | 0.82 | 30.07 | 0.51 | 29.56 | 30.81 | 0.008923 | 4.96 | 27.43 | 10.93 | 1.00 |
| Rapallo | 46. SF S46 | Q 200 | 171.00 | 26.75 | 30.18 | 30.38 | 0.20 | 30.07 | -0.11 | 30.18 | 31.28 | 0.006731 | 4.75 | 38.42 | 17.53 | 0.87 |
| Rapallo | 46. SF S46 | Q 500 | 195.00 | 26.75 | 30.26 | 30.38 | 0.12 | 30.07 | -0.19 | 30.39 | 31.59 | 0.007911 | 5.23 | 39.93 | 17.57 | 0.95 |
| Rapallo | 45.1 SF S45 | Q 50 | 136.00 | 25.25 | 27.22 | 29.40 | 2.18 | 28.37 | 1.15 | 27.95 | 29.69 | 0.027942 | 6.97 | 19.52 | 13.10 | 1.82 |
| Rapallo | 45.1 SF S45 | Q 200 | 171.00 | 25.25 | 27.50 | 29.40 | 1.90 | 28.37 | 0.87 | 28.60 | 30.26 | 0.025886 | 7.36 | 23.25 | 13.12 | 1.76 |
| Rapallo | 45.1 SF S45 | Q 500 | 195.00 | 25.25 | 28.04 | 29.40 | 1.36 | 28.37 | 0.33 | 28.80 | 30.15 | 0.015143 | 6.43 | 30.32 | 13.18 | 1.35 |
| Rapallo | 45. SF S45 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 44.9 SF S45 | Q 50 | 136.00 | 25.25 | 27.36 | 29.40 | 2.04 | 28.37 | 1.01 | 27.95 | 29.43 | 0.021241 | 6.37 | 21.34 | 13.11 | 1.59 |
| Rapallo | 44.9 SF S45 | Q 200 | 171.00 | 25.25 | 27.65 | 29.40 | 1.75 | 28.37 | 0.72 | 28.60 | 30.00 | 0.020395 | 6.80 | 25.15 | 13.14 | 1.57 |
| Rapallo | 44.9 SF S45 | Q 500 | 195.00 | 25.25 | 28.53 | 29.40 | 0.87 | 28.37 | -0.16 | 28.80 | 29.81 | 0.007838 | 5.10 | 41.34 | 24.69 | 0.98 |
| Rapallo | 44.1 SF S44 | Q 50 | 136.00 | 22.66 | 24.39 | 24.54 | 0.15 | 25.02 | 0.63 | 25.11 | 26.69 | 0.023916 | 6.71 | 20.25 | 11.89 | 1.64 |
| Rapallo | 44.1 SF S44 | Q 200 | 171.00 | 22.66 | 24.68 | 24.54 | -0.14 | 25.02 | 0.34 | 25.37 | 27.34 | 0.023423 | 7.23 | 23.86 | 15.26 | 1.64 |
| Rapallo | 44.1 SF S44 | Q 500 | 195.00 | 22.66 | 25.12 | 24.54 | -0.58 | 25.02 | -0.10 | 25.52 | 26.59 | 0.011450 | 5.70 | 39.26 | 26.08 | 1.17 |
| Rapallo | 44. SF S44 | Q 50 | 136.00 | 21.63 | 23.04 | 24.54 | 1.50 | 24.82 | 1.78 | 24.04 | 26.55 | 0.045765 | 8.30 | 16.38 | 11.79 | 2.25 |
| Rapallo | 44. SF S44 | Q 200 | 171.00 | 21.63 | 23.31 | 24.54 | 1.23 | 24.82 | 1.51 | 24.43 | 27.20 | 0.041910 | 8.73 | 19.58 | 11.82 | 2.17 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|-------------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 44. SF S44 | Q 500 | 195.00 | 21.63 | 24.03 | 24.54 | 0.51 | 24.82 | 0.79 | 25.00 | 26.49 | 0.018508 | 6.94 | 28.08 | 11.89 | 1.44 |
| Rapallo | 43. SF S43 | Q 50 | 136.00 | 21.03 | 22.57 | 23.46 | 0.89 | 23.93 | 1.36 | 23.31 | 25.07 | 0.030487 | 7.00 | 19.42 | 14.18 | 1.91 |
| Rapallo | 43. SF S43 | Q 200 | 171.00 | 21.03 | 22.77 | 23.46 | 0.69 | 23.93 | 1.16 | 23.76 | 25.78 | 0.031677 | 7.69 | 22.25 | 14.25 | 1.96 |
| Rapallo | 43. SF S43 | Q 500 | 195.00 | 21.03 | 23.08 | 23.46 | 0.38 | 23.93 | 0.85 | 24.09 | 25.80 | 0.023578 | 7.30 | 26.70 | 14.37 | 1.71 |
| Rapallo | 42. SF S42 | Q 50 | 136.00 | 19.26 | 21.99 | 23.49 | 1.50 | 22.08 | 0.09 | 22.68 | 23.79 | 0.018125 | 5.96 | 22.83 | 12.64 | 1.41 |
| Rapallo | 42. SF S42 | Q 200 | 171.00 | 19.26 | 22.23 | 23.49 | 1.26 | 22.08 | -0.15 | 22.94 | 24.42 | 0.019090 | 6.56 | 26.92 | 25.95 | 1.46 |
| Rapallo | 42. SF S42 | Q 500 | 195.00 | 19.26 | 22.38 | 23.49 | 1.11 | 22.08 | -0.30 | 23.10 | 24.70 | 0.019169 | 6.84 | 30.65 | 25.96 | 1.48 |
| Rapallo | 41.1 SF S41 | Q 50 | 136.00 | 18.90 | 22.89 | 22.17 | -0.72 | 21.50 | -1.39 | 22.38 | 23.28 | 0.002556 | 3.03 | 51.49 | 25.88 | 0.55 |
| Rapallo | 41.1 SF S41 | Q 200 | 171.00 | 18.90 | 23.19 | 22.17 | -1.02 | 21.50 | -1.69 | 22.63 | 23.65 | 0.002655 | 3.29 | 59.38 | 25.88 | 0.57 |
| Rapallo | 41.1 SF S41 | Q 500 | 195.00 | 18.90 | 23.39 | 22.17 | -1.22 | 21.50 | -1.89 | 22.79 | 23.89 | 0.002700 | 3.44 | 64.48 | 25.88 | 0.58 |
| Rapallo | 41. SF S41 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 40.9 SF S41 | Q 50 | 136.00 | 18.90 | 22.08 | 22.17 | 0.09 | 21.50 | -0.58 | 22.38 | 23.19 | 0.010087 | 4.95 | 31.19 | 22.01 | 1.04 |
| Rapallo | 40.9 SF S41 | Q 200 | 171.00 | 18.90 | 22.33 | 22.17 | -0.16 | 21.50 | -0.83 | 22.63 | 23.56 | 0.010071 | 5.27 | 37.08 | 25.88 | 1.05 |
| Rapallo | 40.9 SF S41 | Q 500 | 195.00 | 18.90 | 22.47 | 22.17 | -0.30 | 21.50 | -0.97 | 22.79 | 23.80 | 0.010243 | 5.50 | 40.66 | 25.88 | 1.07 |
| Rapallo | 40.1 SF S40 | Q 50 | 136.00 | 18.83 | 20.38 | 21.76 | 1.38 | 21.33 | 0.95 | 21.00 | 22.51 | 0.023401 | 6.46 | 21.04 | 13.86 | 1.67 |
| Rapallo | 40.1 SF S40 | Q 200 | 171.00 | 18.83 | 20.70 | 21.76 | 1.06 | 21.33 | 0.63 | 21.45 | 22.98 | 0.020372 | 6.69 | 25.57 | 13.93 | 1.58 |
| Rapallo | 40.1 SF S40 | Q 500 | 195.00 | 18.83 | 20.93 | 21.76 | 0.83 | 21.33 | 0.40 | 21.63 | 23.28 | 0.018617 | 6.79 | 28.72 | 13.98 | 1.51 |
| Rapallo | 40. SF S40 | Q 50 | 136.00 | 17.37 | 18.84 | 21.76 | 2.92 | 21.33 | 2.49 | 19.82 | 22.35 | 0.048394 | 8.30 | 16.38 | 13.19 | 2.38 |
| Rapallo | 40. SF S40 | Q 200 | 171.00 | 17.37 | 19.12 | 21.76 | 2.64 | 21.33 | 2.21 | 20.18 | 22.83 | 0.041213 | 8.53 | 20.04 | 13.40 | 2.23 |
| Rapallo | 40. SF S40 | Q 500 | 195.00 | 17.37 | 19.30 | 21.76 | 2.46 | 21.33 | 2.03 | 20.41 | 23.12 | 0.037553 | 8.66 | 22.53 | 13.55 | 2.14 |
| Rapallo | 39. SF S39 | Q 50 | 136.00 | 15.88 | 19.15 | 19.42 | 0.27 | 19.72 | 0.57 | 18.45 | 19.83 | 0.003765 | 3.65 | 37.22 | 12.49 | 0.68 |
| Rapallo | 39. SF S39 | Q 200 | 171.00 | 15.88 | 18.22 | 19.42 | 1.20 | 19.72 | 1.50 | 18.84 | 20.48 | 0.017636 | 6.66 | 25.67 | 12.33 | 1.47 |
| Rapallo | 39. SF S39 | Q 500 | 195.00 | 15.88 | 18.42 | 19.42 | 1.00 | 19.72 | 1.30 | 19.09 | 20.87 | 0.017461 | 6.93 | 28.14 | 12.37 | 1.47 |
| Rapallo | 38.1 SF S38 | Q 50 | 136.00 | 14.17 | 19.35 | 18.36 | -0.99 | 17.68 | -1.67 | 17.18 | 19.59 | 0.000835 | 2.24 | 67.46 | 22.55 | 0.34 |
| Rapallo | 38.1 SF S38 | Q 200 | 171.00 | 14.17 | 19.67 | 18.36 | -1.31 | 17.68 | -1.99 | 17.58 | 19.98 | 0.000999 | 2.57 | 74.64 | 22.57 | 0.37 |
| Rapallo | 38.1 SF S38 | Q 500 | 195.00 | 14.17 | 19.87 | 18.36 | -1.51 | 17.68 | -2.19 | 18.03 | 20.23 | 0.001100 | 2.77 | 79.21 | 22.57 | 0.39 |
| Rapallo | 38. SF S38 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 37.9 SF S38 | Q 50 | 136.00 | 14.17 | 16.29 | 18.36 | 2.07 | 17.68 | 1.39 | 17.18 | 19.29 | 0.031660 | 7.67 | 17.73 | 11.53 | 1.97 |
| Rapallo | 37.9 SF S38 | Q 200 | 171.00 | 14.17 | 16.69 | 18.36 | 1.67 | 17.68 | 0.99 | 17.58 | 19.69 | 0.025236 | 7.67 | 22.29 | 11.65 | 1.77 |
| Rapallo | 37.9 SF S38 | Q 500 | 195.00 | 14.17 | 16.96 | 18.36 | 1.40 | 17.68 | 0.72 | 18.03 | 19.94 | 0.022080 | 7.65 | 25.49 | 11.73 | 1.66 |
| Rapallo | 37. SF S37 | Q 50 | 136.00 | 14.45 | 17.50 | 17.21 | -0.29 | 16.96 | -0.54 | 17.50 | 18.38 | 0.005231 | 4.22 | 35.13 | 24.79 | 0.81 |
| Rapallo | 37. SF S37 | Q 200 | 171.00 | 14.45 | 17.66 | 17.21 | -0.45 | 16.96 | -0.70 | 17.93 | 18.81 | 0.006505 | 4.89 | 39.35 | 27.84 | 0.91 |
| Rapallo | 37. SF S37 | Q 500 | 195.00 | 14.45 | 17.66 | 17.21 | -0.45 | 16.96 | -0.70 | 18.10 | 19.16 | 0.008468 | 5.58 | 39.33 | 27.82 | 1.03 |
| Rapallo | 36. SF S36 | Q 50 | 136.00 | 13.15 | 15.75 | 15.94 | 0.19 | 15.83 | 0.08 | 16.27 | 17.37 | 0.013618 | 5.64 | 24.12 | 12.15 | 1.28 |
| Rapallo | 36. SF S36 | Q 200 | 171.00 | 13.15 | 16.03 | 15.94 | -0.09 | 15.83 | -0.20 | 16.62 | 17.98 | 0.014050 | 6.18 | 28.16 | 17.40 | 1.31 |
| Rapallo | 36. SF S36 | Q 500 | 195.00 | 13.15 | 16.22 | 15.94 | -0.28 | 15.83 | -0.39 | 16.83 | 18.31 | 0.013758 | 6.45 | 31.45 | 18.21 | 1.31 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|--------------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 35. SF S35 | Q 50 | 136.00 | 12.27 | 14.90 | 15.34 | 0.44 | 15.73 | 0.83 | 15.33 | 16.62 | 0.016587 | 5.81 | 23.40 | 12.68 | 1.37 |
| Rapallo | 35. SF S35 | Q 200 | 171.00 | 12.27 | 15.19 | 15.34 | 0.15 | 15.73 | 0.54 | 15.85 | 17.21 | 0.016738 | 6.30 | 27.16 | 12.76 | 1.38 |
| Rapallo | 35. SF S35 | Q 500 | 195.00 | 12.27 | 15.43 | 15.34 | -0.09 | 15.73 | 0.30 | 16.09 | 17.55 | 0.015711 | 6.45 | 30.22 | 12.82 | 1.34 |
| Rapallo | 34. SF S34 | Q 50 | 136.00 | 12.40 | 14.39 | 14.72 | 0.33 | 15.25 | 0.86 | 14.81 | 15.99 | 0.018089 | 5.61 | 24.24 | 15.60 | 1.44 |
| Rapallo | 34. SF S34 | Q 200 | 171.00 | 12.40 | 14.60 | 14.72 | 0.12 | 15.25 | 0.65 | 15.14 | 16.57 | 0.019320 | 6.22 | 27.50 | 15.63 | 1.50 |
| Rapallo | 34. SF S34 | Q 500 | 195.00 | 12.40 | 14.74 | 14.72 | -0.02 | 15.25 | 0.51 | 15.48 | 16.93 | 0.019659 | 6.55 | 29.76 | 15.66 | 1.52 |
| Rapallo | 33.1 SF S33 | Q 50 | 136.00 | 12.20 | 13.88 | 14.30 | 0.42 | 13.70 | -0.18 | 14.18 | 15.00 | 0.015874 | 4.69 | 29.01 | 28.00 | 1.47 |
| Rapallo | 33.1 SF S33 | Q 200 | 171.00 | 12.20 | 13.97 | 14.30 | 0.33 | 13.70 | -0.27 | 14.41 | 15.46 | 0.019039 | 5.41 | 31.63 | 28.01 | 1.62 |
| Rapallo | 33.1 SF S33 | Q 500 | 195.00 | 12.20 | 14.03 | 14.30 | 0.27 | 13.70 | -0.33 | 14.55 | 15.78 | 0.020984 | 5.86 | 33.30 | 28.01 | 1.71 |
| Rapallo | 33. SF S33 | Q 50 | 136.00 | 10.20 | 10.95 | 14.30 | 3.35 | 13.70 | 2.75 | 11.82 | 14.73 | 0.093327 | 8.61 | 15.80 | 20.99 | 3.17 |
| Rapallo | 33. SF S33 | Q 200 | 171.00 | 10.20 | 11.11 | 14.30 | 3.19 | 13.70 | 2.59 | 12.09 | 15.20 | 0.079450 | 8.96 | 19.09 | 20.99 | 3.00 |
| Rapallo | 33. SF S33 | Q 500 | 195.00 | 10.20 | 11.21 | 14.30 | 3.09 | 13.70 | 2.49 | 12.26 | 15.52 | 0.073286 | 9.20 | 21.20 | 20.99 | 2.92 |
| Rapallo | 32.3 SF S32 | Q 50 | 136.00 | 9.40 | 10.42 | 14.25 | 3.83 | 13.05 | 2.63 | 11.13 | 12.93 | 0.042351 | 7.01 | 19.39 | 18.99 | 2.22 |
| Rapallo | 32.3 SF S32 | Q 200 | 171.00 | 9.40 | 10.58 | 14.25 | 3.67 | 13.05 | 2.47 | 11.42 | 13.56 | 0.042104 | 7.64 | 22.37 | 19.00 | 2.25 |
| Rapallo | 32.3 SF S32 | Q 500 | 195.00 | 9.40 | 10.68 | 14.25 | 3.57 | 13.05 | 2.37 | 11.61 | 13.95 | 0.041556 | 8.01 | 24.36 | 19.00 | 2.26 |
| Rapallo | 32.2 SF S32 | Q 50 | 136.00 | 9.15 | 10.23 | 14.00 | 3.77 | 12.80 | 2.57 | 10.88 | 12.46 | 0.035023 | 6.62 | 20.56 | 19.00 | 2.03 |
| Rapallo | 32.2 SF S32 | Q 200 | 171.00 | 9.15 | 12.30 | 14.00 | 1.70 | 12.80 | 0.50 | 11.17 | 12.72 | 0.001819 | 2.85 | 59.93 | 19.01 | 0.51 |
| Rapallo | 32.2 SF S32 | Q 500 | 195.00 | 9.15 | 12.58 | 14.00 | 1.42 | 12.80 | 0.22 | 11.35 | 13.04 | 0.001826 | 2.99 | 65.14 | 19.01 | 0.52 |
| Rapallo | 32.11 SF S32 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 32.1 SF S32 | Q 50 | 136.00 | 9.15 | 10.48 | 14.00 | 3.52 | 12.80 | 2.32 | 10.88 | 11.96 | 0.017954 | 5.38 | 25.27 | 19.00 | 1.49 |
| Rapallo | 32.1 SF S32 | Q 200 | 171.00 | 9.15 | 12.24 | 14.00 | 1.76 | 12.80 | 0.56 | 11.17 | 12.68 | 0.001934 | 2.91 | 58.77 | 19.00 | 0.53 |
| Rapallo | 32.1 SF S32 | Q 500 | 195.00 | 9.15 | 12.49 | 14.00 | 1.51 | 12.80 | 0.31 | 11.36 | 12.97 | 0.001975 | 3.07 | 63.52 | 19.01 | 0.54 |
| Rapallo | 32. SF S32 | Q 50 | 136.00 | 8.21 | 11.31 | 13.06 | 1.75 | 11.86 | 0.55 | 9.94 | 11.58 | 0.001218 | 2.31 | 58.85 | 19.00 | 0.42 |
| Rapallo | 32. SF S32 | Q 200 | 171.00 | 8.21 | 12.37 | 13.06 | 0.69 | 11.86 | -0.51 | 10.23 | 12.58 | 0.000833 | 2.06 | 83.06 | 27.01 | 0.37 |
| Rapallo | 32. SF S32 | Q 500 | 195.00 | 8.21 | 12.63 | 13.06 | 0.43 | 11.86 | -0.77 | 10.41 | 12.87 | 0.000833 | 2.16 | 90.27 | 27.01 | 0.38 |
| Rapallo | 31.3 SF S31 | Q 50 | 136.00 | 7.32 | 11.22 | 12.27 | 1.05 | 10.67 | -0.55 | 9.78 | 11.53 | 0.001462 | 2.46 | 55.28 | 21.01 | 0.48 |
| Rapallo | 31.3 SF S31 | Q 200 | 171.00 | 7.32 | 12.31 | 12.27 | -0.04 | 10.67 | -1.64 | 10.12 | 12.55 | 0.000783 | 2.19 | 78.21 | 21.01 | 0.36 |
| Rapallo | 31.3 SF S31 | Q 500 | 195.00 | 7.32 | 12.56 | 12.27 | -0.29 | 10.67 | -1.89 | 10.33 | 12.84 | 0.000832 | 2.33 | 83.51 | 21.01 | 0.37 |
| Rapallo | 31.2 SF S31 | Q 50 | 136.00 | 7.25 | 11.23 | 12.20 | 0.97 | 10.60 | -0.63 | 9.70 | 11.52 | 0.001332 | 2.19 | 56.94 | 21.01 | 0.42 |
| Rapallo | 31.2 SF S31 | Q 200 | 171.00 | 7.25 | 12.32 | 12.20 | -0.12 | 10.60 | -1.72 | 10.05 | 12.55 | 0.000737 | 2.14 | 79.78 | 21.01 | 0.35 |
| Rapallo | 31.2 SF S31 | Q 500 | 195.00 | 7.25 | 12.57 | 12.20 | -0.37 | 10.60 | -1.97 | 10.26 | 12.84 | 0.000786 | 2.29 | 85.09 | 21.01 | 0.36 |
| Rapallo | 31.11 SF S31 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 31.1 SF S31 | Q 50 | 136.00 | 7.25 | 11.15 | 12.20 | 1.05 | 10.60 | -0.55 | 9.70 | 11.46 | 0.001461 | 2.46 | 55.29 | 21.01 | 0.48 |
| Rapallo | 31.1 SF S31 | Q 200 | 171.00 | 7.25 | 11.99 | 12.20 | 0.21 | 10.60 | -1.39 | 10.05 | 12.27 | 0.000972 | 2.34 | 72.94 | 21.01 | 0.40 |
| Rapallo | 31.1 SF S31 | Q 500 | 195.00 | 7.25 | 12.20 | 12.20 | 0.00 | 10.60 | -1.60 | 10.26 | 12.52 | 0.001056 | 2.52 | 77.29 | 21.01 | 0.42 |
| Rapallo | 31. SF S31 | Q 50 | 136.00 | 7.24 | 11.14 | 12.19 | 1.05 | 10.59 | -0.55 | 9.70 | 11.45 | 0.001456 | 2.46 | 55.35 | 21.01 | 0.48 |
| Rapallo | 31. SF S31 | Q 200 | 171.00 | 7.24 | 11.99 | 12.19 | 0.20 | 10.59 | -1.40 | 10.04 | 12.26 | 0.000967 | 2.34 | 73.06 | 21.01 | 0.40 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|--------------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 31. SF S31 | Q 500 | 195.00 | 7.24 | 12.19 | 12.19 | 0.00 | 10.59 | -1.60 | 10.25 | 12.52 | 0.001052 | 2.52 | 77.40 | 21.01 | 0.42 |
| Rapallo | 30.3 SF S30 | Q 50 | 136.00 | 7.20 | 11.13 | 10.50 | -0.63 | 9.60 | -1.53 | 9.91 | 11.39 | 0.001066 | 2.23 | 60.98 | 21.91 | 0.43 |
| Rapallo | 30.3 SF S30 | Q 200 | 171.00 | 7.20 | 11.98 | 10.50 | -1.48 | 9.60 | -2.38 | 10.18 | 12.22 | 0.000733 | 2.15 | 79.65 | 21.91 | 0.36 |
| Rapallo | 30.3 SF S30 | Q 500 | 195.00 | 7.20 | 12.19 | 10.50 | -1.69 | 9.60 | -2.59 | 10.35 | 12.47 | 0.000803 | 2.32 | 84.20 | 21.91 | 0.38 |
| Rapallo | 30.2 SF S30 | Q 50 | 136.00 | 7.20 | 11.13 | 10.50 | -0.63 | 9.60 | -1.53 | 9.91 | 11.38 | 0.001071 | 2.23 | 60.90 | 21.91 | 0.43 |
| Rapallo | 30.2 SF S30 | Q 200 | 171.00 | 7.20 | 11.98 | 10.50 | -1.48 | 9.60 | -2.38 | 10.18 | 12.22 | 0.000735 | 2.15 | 79.59 | 21.91 | 0.36 |
| Rapallo | 30.2 SF S30 | Q 500 | 195.00 | 7.20 | 12.19 | 10.50 | -1.69 | 9.60 | -2.59 | 10.35 | 12.46 | 0.000806 | 2.32 | 84.13 | 21.91 | 0.38 |
| Rapallo | 30.11 SF S30 | Bridge | | | | | | | | | | | | | | |
| Rapallo | 30.1 SF S30 | Q 50 | 136.00 | 7.20 | 10.64 | 10.50 | -0.14 | 9.60 | -1.04 | 9.91 | 11.01 | 0.001973 | 2.71 | 50.17 | 21.91 | 0.57 |
| Rapallo | 30.1 SF S30 | Q 200 | 171.00 | 7.20 | 11.78 | 10.50 | -1.28 | 9.60 | -2.18 | 10.18 | 12.05 | 0.000876 | 2.27 | 75.20 | 21.91 | 0.39 |
| Rapallo | 30.1 SF S30 | Q 500 | 195.00 | 7.20 | 11.94 | 10.50 | -1.44 | 9.60 | -2.34 | 10.35 | 12.25 | 0.000991 | 2.48 | 78.67 | 21.91 | 0.42 |
| Rapallo | 30. SF S30 | Q 50 | 136.00 | 7.24 | 10.59 | 10.54 | -0.05 | 9.64 | -0.95 | 9.95 | 11.00 | 0.002224 | 2.81 | 48.31 | 21.91 | 0.61 |
| Rapallo | 30. SF S30 | Q 200 | 171.00 | 7.24 | 11.77 | 10.54 | -1.23 | 9.64 | -2.13 | 10.22 | 12.04 | 0.000921 | 2.31 | 73.99 | 21.91 | 0.40 |
| Rapallo | 30. SF S30 | Q 500 | 195.00 | 7.24 | 11.92 | 10.54 | -1.38 | 9.64 | -2.28 | 10.39 | 12.25 | 0.001042 | 2.52 | 77.41 | 21.91 | 0.43 |
| Rapallo | 29.3 SF S29 | Q 50 | 136.00 | 7.34 | 10.50 | 11.55 | 1.05 | 9.39 | -1.11 | 9.96 | 10.96 | 0.002655 | 3.01 | 45.16 | 21.31 | 0.66 |
| Rapallo | 29.3 SF S29 | Q 200 | 171.00 | 7.34 | 11.74 | 11.55 | -0.19 | 9.39 | -2.35 | 10.24 | 12.03 | 0.000990 | 2.37 | 72.16 | 21.91 | 0.42 |
| Rapallo | 29.3 SF S29 | Q 500 | 195.00 | 7.34 | 11.89 | 11.55 | -0.34 | 9.39 | -2.50 | 10.42 | 12.23 | 0.001120 | 2.58 | 75.47 | 21.91 | 0.44 |
| Rapallo | 29.2 SF S29 | Q 50 | 136.00 | 7.35 | 10.48 | 11.56 | 1.08 | 9.40 | -1.08 | 9.97 | 10.96 | 0.002762 | 2.32 | 44.57 | 21.28 | 0.51 |
| Rapallo | 29.2 SF S29 | Q 200 | 171.00 | 7.35 | 11.74 | 11.56 | -0.18 | 9.40 | -2.34 | 10.25 | 12.02 | 0.001004 | 2.38 | 71.84 | 21.91 | 0.42 |
| Rapallo | 29.2 SF S29 | Q 500 | 195.00 | 7.35 | 11.89 | 11.56 | -0.33 | 9.40 | -2.49 | 10.43 | 12.23 | 0.001135 | 2.60 | 75.13 | 21.91 | 0.45 |
| Rapallo | 29.11 SF S29 | Bridge | | | | | | | | | | | | | | |
| Rapallo | 29.1 SF S29 | Q 50 | 136.00 | 7.35 | 9.97 | 11.56 | 1.59 | 9.40 | -0.57 | 9.97 | 10.80 | 0.006472 | 4.02 | 33.81 | 20.73 | 1.01 |
| Rapallo | 29.1 SF S29 | Q 200 | 171.00 | 7.35 | 10.45 | 11.56 | 1.11 | 9.40 | -1.05 | 10.25 | 11.22 | 0.004609 | 3.90 | 43.80 | 21.24 | 0.87 |
| Rapallo | 29.1 SF S29 | Q 500 | 195.00 | 7.35 | 10.80 | 11.56 | 0.76 | 9.40 | -1.40 | 10.43 | 11.53 | 0.003698 | 3.80 | 51.32 | 21.63 | 0.79 |
| Rapallo | 29. SF S29 | Q 50 | 136.00 | 7.23 | 9.62 | 11.44 | 1.82 | 9.28 | -0.34 | 9.85 | 10.74 | 0.010480 | 4.69 | 28.97 | 20.47 | 1.26 |
| Rapallo | 29. SF S29 | Q 200 | 171.00 | 7.23 | 10.52 | 11.44 | 0.92 | 9.28 | -1.24 | 10.13 | 11.17 | 0.003487 | 3.56 | 47.99 | 21.46 | 0.76 |
| Rapallo | 29. SF S29 | Q 500 | 195.00 | 7.23 | 10.86 | 11.44 | 0.58 | 9.28 | -1.58 | 10.31 | 11.49 | 0.002970 | 3.53 | 55.18 | 21.82 | 0.71 |
| Rapallo | 28.3 SF S28 | Q 50 | 136.00 | 6.84 | 10.02 | 9.82 | -0.20 | 9.42 | -0.60 | 8.95 | 10.37 | 0.002001 | 2.65 | 51.24 | 23.01 | 0.57 |
| Rapallo | 28.3 SF S28 | Q 200 | 171.00 | 6.84 | 10.70 | 9.82 | -0.88 | 9.42 | -1.28 | 9.29 | 11.03 | 0.001350 | 2.55 | 67.06 | 23.01 | 0.48 |
| Rapallo | 28.3 SF S28 | Q 500 | 195.00 | 6.84 | 11.02 | 9.82 | -1.20 | 9.42 | -1.60 | 9.72 | 11.37 | 0.001273 | 2.62 | 74.30 | 23.01 | 0.47 |
| Rapallo | 28.2 SF S28 | Q 50 | 136.00 | 6.72 | 10.04 | 9.70 | -0.34 | 9.30 | -0.74 | 8.83 | 10.35 | 0.001649 | 2.50 | 54.45 | 23.01 | 0.52 |
| Rapallo | 28.2 SF S28 | Q 200 | 171.00 | 6.72 | 10.72 | 9.70 | -1.02 | 9.30 | -1.42 | 9.17 | 11.02 | 0.001173 | 2.44 | 70.13 | 23.01 | 0.45 |
| Rapallo | 28.2 SF S28 | Q 500 | 195.00 | 6.72 | 11.03 | 9.70 | -1.33 | 9.30 | -1.73 | 9.60 | 11.35 | 0.001122 | 2.52 | 77.37 | 23.01 | 0.44 |
| Rapallo | 28.11 | Bridge | | | | | | | | | | | | | | |
| Rapallo | 28.1 SF S28 | Q 50 | 136.00 | 6.72 | 9.64 | 9.70 | 0.06 | 9.30 | -0.34 | 8.83 | 10.10 | 0.002973 | 3.00 | 45.26 | 23.01 | 0.68 |
| Rapallo | 28.1 SF S28 | Q 200 | 171.00 | 6.72 | 10.33 | 9.70 | -0.63 | 9.30 | -1.03 | 9.17 | 10.73 | 0.001796 | 2.79 | 61.26 | 23.01 | 0.55 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | | Profile | Q Total | Min Ch El | W.S. Elev | LOB Elev | L. Freeboard | ROB Elev | R. Freeboard | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---------|-----------|--------|---------|---------|-----------|-----------|----------|--------------|----------|--------------|-----------|-----------|------------|----------|-----------|-----------|--------------|
| | | | | (m3/s) | (m) | (m) | (m) | (m) | (m) | (m) | (m) | (m) | (m/m) | (m/s) | (m2) | (m) | |
| Rapallo | 28.1 | SF S28 | Q 500 | 195.00 | 6.72 | 10.64 | 9.70 | -0.94 | 9.30 | -1.34 | 9.60 | 11.05 | 0.001655 | 2.85 | 68.33 | 23.01 | 0.53 |
| Rapallo | 28. | SF S28 | Q 50 | 136.00 | 6.60 | 9.65 | 9.58 | -0.07 | 9.18 | -0.47 | 8.71 | 10.05 | 0.002416 | 2.82 | 48.30 | 23.01 | 0.62 |
| Rapallo | 28. | SF S28 | Q 200 | 171.00 | 6.60 | 10.34 | 9.58 | -0.76 | 9.18 | -1.16 | 9.05 | 10.70 | 0.001548 | 2.66 | 64.21 | 23.01 | 0.51 |
| Rapallo | 28. | SF S28 | Q 500 | 195.00 | 6.60 | 10.65 | 9.58 | -1.07 | 9.18 | -1.47 | 9.48 | 11.03 | 0.001450 | 2.74 | 71.27 | 23.01 | 0.50 |
| Rapallo | 27.3 | SF S27 | Q 500 | 195.00 | 6.39 | 10.69 | 10.44 | -0.25 | 8.64 | -2.05 | 9.02 | 10.96 | 0.000862 | 2.29 | 85.30 | 24.01 | 0.39 |
| Rapallo | 27.3 | SF S27 | Q 200 | 171.00 | 6.39 | 10.39 | 10.44 | 0.05 | 8.64 | -1.75 | 8.86 | 10.63 | 0.000880 | 2.19 | 77.91 | 24.01 | 0.39 |
| Rapallo | 27.3 | SF S27 | Q 50 | 136.00 | 6.39 | 9.71 | 10.44 | 0.73 | 8.64 | -1.07 | 8.33 | 9.96 | 0.001166 | 2.21 | 61.62 | 24.01 | 0.44 |
| Rapallo | 27.2 | SF S27 | Q 50 | 136.00 | 6.35 | 9.71 | 10.40 | 0.69 | 8.60 | -1.11 | 8.29 | 9.95 | 0.001111 | 1.73 | 62.57 | 24.01 | 0.34 |
| Rapallo | 27.2 | SF S27 | Q 200 | 171.00 | 6.35 | 10.39 | 10.40 | 0.01 | 8.60 | -1.79 | 8.82 | 10.63 | 0.000847 | 2.17 | 78.87 | 24.01 | 0.38 |
| Rapallo | 27.2 | SF S27 | Q 500 | 195.00 | 6.35 | 10.69 | 10.40 | -0.29 | 8.60 | -2.09 | 8.98 | 10.95 | 0.000833 | 2.26 | 86.26 | 24.01 | 0.38 |
| Rapallo | 27.11 | SF S27 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 27.1 | SF S27 | Q 50 | 136.00 | 6.35 | 9.63 | 10.40 | 0.77 | 8.60 | -1.03 | 8.29 | 9.89 | 0.001221 | 2.24 | 60.74 | 24.01 | 0.45 |
| Rapallo | 27.1 | SF S27 | Q 200 | 171.00 | 6.35 | 10.10 | 10.40 | 0.30 | 8.60 | -1.50 | 8.82 | 10.39 | 0.001127 | 2.37 | 72.00 | 24.01 | 0.44 |
| Rapallo | 27.1 | SF S27 | Q 500 | 195.00 | 6.35 | 10.40 | 10.40 | 0.00 | 8.60 | -1.80 | 8.98 | 10.71 | 0.001087 | 2.46 | 79.22 | 24.01 | 0.43 |
| Rapallo | 27. | SF S27 | Q 50 | 136.00 | 6.20 | 9.64 | 10.25 | 0.61 | 8.45 | -1.19 | 8.14 | 9.87 | 0.001006 | 2.11 | 64.57 | 24.01 | 0.41 |
| Rapallo | 27. | SF S27 | Q 200 | 171.00 | 6.20 | 10.11 | 10.25 | 0.14 | 8.45 | -1.66 | 8.67 | 10.37 | 0.000958 | 2.26 | 75.83 | 24.01 | 0.41 |
| Rapallo | 27. | SF S27 | Q 500 | 195.00 | 6.20 | 10.41 | 10.25 | -0.16 | 8.45 | -1.96 | 8.83 | 10.69 | 0.000938 | 2.35 | 83.04 | 24.01 | 0.40 |
| Rapallo | 26.3 | SF S26 | Q 50 | 136.00 | 5.79 | 9.49 | 8.29 | -1.20 | 8.09 | -1.40 | 8.40 | 9.82 | 0.001447 | 2.54 | 53.59 | 19.01 | 0.48 |
| Rapallo | 26.3 | SF S26 | Q 200 | 171.00 | 5.79 | 9.93 | 8.29 | -1.64 | 8.09 | -1.84 | 8.69 | 10.32 | 0.001459 | 2.76 | 61.95 | 19.01 | 0.49 |
| Rapallo | 26.3 | SF S26 | Q 500 | 195.00 | 5.79 | 10.21 | 8.29 | -1.92 | 8.09 | -2.12 | 8.88 | 10.64 | 0.001470 | 2.90 | 67.29 | 19.01 | 0.49 |
| Rapallo | 26.2 | SF S26 | Q 50 | 136.00 | 5.75 | 9.49 | 8.25 | -1.24 | 8.05 | -1.44 | 8.36 | 9.81 | 0.001384 | 2.50 | 54.36 | 19.01 | 0.47 |
| Rapallo | 26.2 | SF S26 | Q 200 | 171.00 | 5.75 | 9.93 | 8.25 | -1.68 | 8.05 | -1.88 | 8.65 | 10.31 | 0.001404 | 2.73 | 62.73 | 19.01 | 0.48 |
| Rapallo | 26.2 | SF S26 | Q 500 | 195.00 | 5.75 | 10.21 | 8.25 | -1.96 | 8.05 | -2.16 | 8.84 | 10.63 | 0.001419 | 2.86 | 68.07 | 19.01 | 0.48 |
| Rapallo | 26.11 | SF S26 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 26.1 | SF S26 | Q 50 | 136.00 | 5.75 | 9.06 | 8.25 | -0.81 | 8.05 | -1.01 | 8.36 | 9.50 | 0.002311 | 2.95 | 46.15 | 19.01 | 0.60 |
| Rapallo | 26.1 | SF S26 | Q 200 | 171.00 | 5.75 | 9.42 | 8.25 | -1.17 | 8.05 | -1.37 | 8.65 | 9.95 | 0.002352 | 3.22 | 53.12 | 19.01 | 0.61 |
| Rapallo | 26.1 | SF S26 | Q 500 | 195.00 | 5.75 | 9.66 | 8.25 | -1.41 | 8.05 | -1.61 | 8.84 | 10.24 | 0.002378 | 3.39 | 57.59 | 19.01 | 0.62 |
| Rapallo | 26. | SF S26 | Q 50 | 136.00 | 5.84 | 8.94 | 8.34 | -0.60 | 8.14 | -0.80 | 8.45 | 9.47 | 0.003056 | 3.22 | 42.23 | 19.01 | 0.69 |
| Rapallo | 26. | SF S26 | Q 200 | 171.00 | 5.84 | 9.30 | 8.34 | -0.96 | 8.14 | -1.16 | 8.74 | 9.92 | 0.003001 | 3.48 | 49.13 | 19.01 | 0.69 |
| Rapallo | 26. | SF S26 | Q 500 | 195.00 | 5.84 | 9.54 | 8.34 | -1.20 | 8.14 | -1.40 | 8.92 | 10.21 | 0.002979 | 3.64 | 53.56 | 19.01 | 0.69 |
| Rapallo | 25.1 | SF S25 | Q 50 | 136.00 | 5.95 | 8.50 | 8.25 | -0.25 | 8.20 | -0.30 | 8.50 | 9.40 | 0.006823 | 4.20 | 32.38 | 18.01 | 1.00 |
| Rapallo | 25.1 | SF S25 | Q 200 | 171.00 | 5.95 | 8.80 | 8.25 | -0.55 | 8.20 | -0.60 | 8.80 | 9.84 | 0.006645 | 4.53 | 37.72 | 18.01 | 1.00 |
| Rapallo | 25.1 | SF S25 | Q 500 | 195.00 | 5.95 | 8.99 | 8.25 | -0.74 | 8.20 | -0.79 | 8.99 | 10.13 | 0.006562 | 4.74 | 41.16 | 18.01 | 1.00 |
| Rapallo | 25. | SF S25 | Q 50 | 136.00 | 5.30 | 7.00 | 8.25 | 1.25 | 8.20 | 1.20 | 7.65 | 9.26 | 0.021812 | 6.66 | 20.43 | 12.00 | 1.63 |
| Rapallo | 25. | SF S25 | Q 200 | 171.00 | 5.30 | 7.43 | 8.25 | 0.82 | 8.20 | 0.77 | 8.05 | 9.72 | 0.017262 | 6.71 | 25.50 | 12.00 | 1.47 |
| Rapallo | 25. | SF S25 | Q 500 | 195.00 | 5.30 | 7.72 | 8.25 | 0.53 | 8.20 | 0.48 | 8.55 | 10.02 | 0.014978 | 6.71 | 29.06 | 12.01 | 1.38 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl | |
|---------|-----------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|------|
| Rapallo | 24.3 | SF S24 | Q 50 | 136.00 | 3.90 | 7.45 | 7.05 | -0.40 | 7.05 | -0.40 | 6.11 | 7.77 | 0.001739 | 2.47 | 55.11 | 26.01 | 0.54 |
| Rapallo | 24.3 | SF S24 | Q 200 | 171.00 | 3.90 | 8.07 | 7.05 | -1.02 | 7.05 | -1.02 | 6.44 | 8.37 | 0.001218 | 2.40 | 71.17 | 26.01 | 0.46 |
| Rapallo | 24.3 | SF S24 | Q 500 | 195.00 | 3.90 | 8.15 | 7.05 | -1.10 | 7.05 | -1.10 | 6.65 | 8.51 | 0.001443 | 2.66 | 73.30 | 26.01 | 0.51 |
| Rapallo | 24.2 | SF S24 | Q 50 | 136.00 | 3.70 | 7.52 | 6.85 | -0.67 | 6.85 | -0.67 | 5.90 | 7.72 | 0.001109 | 1.97 | 68.88 | 36.01 | 0.46 |
| Rapallo | 24.2 | SF S24 | Q 200 | 171.00 | 3.70 | 8.15 | 6.85 | -1.30 | 6.85 | -1.30 | 6.24 | 8.33 | 0.000707 | 1.87 | 91.31 | 36.01 | 0.38 |
| Rapallo | 24.2 | SF S24 | Q 500 | 195.00 | 3.70 | 8.25 | 6.85 | -1.40 | 6.85 | -1.40 | 6.45 | 8.46 | 0.000810 | 2.05 | 94.99 | 36.01 | 0.40 |
| Rapallo | 24.11 | SF S24 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 24.1 | SF S24 | Q 50 | 136.00 | 3.70 | 6.47 | 6.85 | 0.38 | 6.85 | 0.38 | 5.90 | 7.09 | 0.003498 | 3.50 | 38.89 | 15.01 | 0.69 |
| Rapallo | 24.1 | SF S24 | Q 200 | 171.00 | 3.70 | 7.46 | 6.85 | -0.61 | 6.85 | -0.61 | 6.24 | 7.78 | 0.001950 | 2.53 | 67.65 | 38.01 | 0.60 |
| Rapallo | 24.1 | SF S24 | Q 500 | 195.00 | 3.70 | 7.34 | 6.85 | -0.49 | 6.85 | -0.49 | 6.45 | 7.83 | 0.003155 | 3.08 | 63.24 | 38.01 | 0.76 |
| Rapallo | 24. | SF S24 | Q 50 | 136.00 | 3.62 | 6.46 | 6.77 | 0.31 | 6.77 | 0.31 | 5.82 | 7.05 | 0.003238 | 3.41 | 39.87 | 15.01 | 0.67 |
| Rapallo | 24. | SF S24 | Q 200 | 171.00 | 3.62 | 7.38 | 6.77 | -0.61 | 6.77 | -0.61 | 6.16 | 7.75 | 0.002032 | 2.72 | 62.76 | 30.01 | 0.60 |
| Rapallo | 24. | SF S24 | Q 500 | 195.00 | 3.62 | 7.18 | 6.77 | -0.41 | 6.77 | -0.41 | 6.37 | 7.78 | 0.003619 | 3.43 | 56.92 | 30.01 | 0.79 |
| Rapallo | 23.3 | SF S23 | Q 50 | 136.00 | 2.69 | 6.39 | 5.74 | -0.65 | 5.74 | -0.65 | 5.36 | 6.81 | 0.002667 | 2.87 | 47.38 | 26.01 | 0.68 |
| Rapallo | 23.3 | SF S23 | Q 200 | 171.00 | 2.69 | 7.37 | 5.74 | -1.63 | 5.74 | -1.63 | 6.21 | 7.65 | 0.001081 | 2.35 | 72.63 | 26.01 | 0.45 |
| Rapallo | 23.3 | SF S23 | Q 500 | 195.00 | 2.69 | 7.17 | 5.74 | -1.43 | 5.74 | -1.43 | 6.35 | 7.60 | 0.001767 | 2.89 | 67.56 | 26.01 | 0.57 |
| Rapallo | 23.2 | SF S23 | Q 50 | 136.00 | 2.65 | 6.40 | 5.70 | -0.70 | 5.70 | -0.70 | 5.33 | 6.80 | 0.002458 | 2.80 | 48.60 | 26.01 | 0.65 |
| Rapallo | 23.2 | SF S23 | Q 200 | 171.00 | 2.65 | 7.37 | 5.70 | -1.67 | 5.70 | -1.67 | 6.17 | 7.64 | 0.001031 | 2.32 | 73.74 | 26.01 | 0.44 |
| Rapallo | 23.2 | SF S23 | Q 500 | 195.00 | 2.65 | 7.18 | 5.70 | -1.48 | 5.70 | -1.48 | 6.32 | 7.59 | 0.001674 | 2.84 | 68.73 | 26.01 | 0.56 |
| Rapallo | 23.11 | SF S23 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 23.1 | SF S23 | Q 50 | 136.00 | 2.65 | 5.66 | 5.70 | 0.04 | 5.70 | 0.04 | 5.33 | 6.71 | 0.005835 | 4.55 | 29.92 | 10.01 | 0.84 |
| Rapallo | 23.1 | SF S23 | Q 200 | 171.00 | 2.65 | 7.00 | 5.70 | -1.30 | 5.70 | -1.30 | 6.17 | 7.36 | 0.001609 | 2.67 | 64.06 | 26.01 | 0.54 |
| Rapallo | 23.1 | SF S23 | Q 500 | 195.00 | 2.65 | 6.31 | 5.70 | -0.61 | 5.70 | -0.61 | 6.31 | 7.22 | 0.005924 | 4.22 | 46.26 | 26.01 | 1.01 |
| Rapallo | 23. | SF S23 | Q 50 | 136.00 | 2.56 | 5.70 | 5.61 | -0.09 | 5.61 | -0.09 | 5.24 | 6.58 | 0.008869 | 4.16 | 32.67 | 26.01 | 1.19 |
| Rapallo | 23. | SF S23 | Q 200 | 171.00 | 2.56 | 7.00 | 5.61 | -1.39 | 5.61 | -1.39 | 6.08 | 7.34 | 0.001429 | 2.57 | 66.50 | 26.01 | 0.51 |
| Rapallo | 23. | SF S23 | Q 500 | 195.00 | 2.56 | 6.11 | 5.61 | -0.50 | 5.61 | -0.50 | 6.22 | 7.14 | 0.007325 | 4.50 | 43.31 | 26.01 | 1.11 |
| Rapallo | 22.3 | SF S22 | Q 50 | 136.00 | 1.37 | 5.29 | 4.27 | -1.02 | 4.27 | -1.02 | 4.59 | 5.66 | 0.001920 | 2.72 | 50.03 | 22.01 | 0.58 |
| Rapallo | 22.3 | SF S22 | Q 200 | 171.00 | 1.37 | 6.98 | 4.27 | -2.71 | 4.27 | -2.71 | 4.84 | 7.18 | 0.000534 | 1.96 | 87.35 | 22.01 | 0.31 |
| Rapallo | 22.3 | SF S22 | Q 500 | 195.00 | 1.37 | 5.99 | 4.27 | -1.72 | 4.27 | -1.72 | 5.01 | 6.44 | 0.001696 | 2.98 | 65.45 | 22.01 | 0.55 |
| Rapallo | 22.2 | SF S22 | Q 50 | 136.00 | 1.35 | 5.29 | 4.25 | -1.04 | 4.25 | -1.04 | 4.57 | 5.66 | 0.001869 | 2.70 | 50.46 | 22.01 | 0.57 |
| Rapallo | 22.2 | SF S22 | Q 200 | 171.00 | 1.35 | 6.98 | 4.25 | -2.73 | 4.25 | -2.73 | 4.83 | 7.18 | 0.000525 | 1.95 | 87.79 | 22.01 | 0.31 |
| Rapallo | 22.2 | SF S22 | Q 500 | 195.00 | 1.35 | 5.99 | 4.25 | -1.74 | 4.25 | -1.74 | 4.99 | 6.43 | 0.001662 | 2.96 | 65.88 | 22.01 | 0.55 |
| Rapallo | 22.11 | SF S22 | | Bridge | | | | | | | | | | | | | |
| Rapallo | 22.1 | SF S22 | Q 50 | 136.00 | 1.35 | 4.82 | 4.25 | -0.57 | 4.25 | -0.57 | 4.57 | 5.40 | 0.003848 | 3.38 | 40.21 | 22.01 | 0.80 |
| Rapallo | 22.1 | SF S22 | Q 200 | 171.00 | 1.35 | 6.97 | 4.25 | -2.72 | 4.25 | -2.72 | 4.82 | 7.17 | 0.000529 | 1.95 | 87.60 | 22.01 | 0.31 |
| Rapallo | 22.1 | SF S22 | Q 500 | 195.00 | 1.35 | 5.40 | 4.25 | -1.15 | 4.25 | -1.15 | 4.99 | 6.09 | 0.003301 | 3.68 | 52.94 | 22.01 | 0.76 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|--------------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 22. SF S22 | Q 50 | 136.00 | 1.32 | 4.54 | 4.22 | -0.32 | 4.22 | -0.32 | 4.54 | 5.32 | 0.006210 | 3.93 | 34.63 | 22.01 | 1.00 |
| Rapallo | 22. SF S22 | Q 200 | 171.00 | 1.32 | 6.97 | 4.22 | -2.75 | 4.22 | -2.75 | 4.79 | 7.17 | 0.000517 | 1.94 | 88.25 | 22.01 | 0.31 |
| Rapallo | 22. SF S22 | Q 500 | 195.00 | 1.32 | 5.39 | 4.22 | -1.17 | 4.22 | -1.17 | 4.96 | 6.07 | 0.003200 | 3.65 | 53.47 | 22.01 | 0.75 |
| Rapallo | 21.3 SF S21 | Q 50 | 136.00 | 1.23 | 4.42 | 2.94 | -1.48 | 3.29 | -1.13 | 3.64 | 4.71 | 0.001688 | 2.39 | 56.93 | 26.61 | 0.52 |
| Rapallo | 21.3 SF S21 | Q 200 | 171.00 | 1.23 | 7.02 | 2.94 | -4.08 | 3.29 | -3.73 | 3.88 | 7.11 | 0.000218 | 1.36 | 126.03 | 26.61 | 0.20 |
| Rapallo | 21.3 SF S21 | Q 500 | 195.00 | 1.23 | 5.57 | 2.94 | -2.63 | 3.29 | -2.28 | 4.03 | 5.82 | 0.000884 | 2.23 | 87.52 | 26.61 | 0.39 |
| Rapallo | 21.2 SF S21 | Q 50 | 136.00 | 1.23 | 4.42 | 2.94 | -1.48 | 3.29 | -1.13 | 3.64 | 4.71 | 0.001689 | 1.73 | 56.92 | 26.61 | 0.38 |
| Rapallo | 21.2 SF S21 | Q 200 | 171.00 | 1.23 | 7.02 | 2.94 | -4.08 | 3.29 | -3.73 | 3.88 | 7.11 | 0.000218 | 1.36 | 126.03 | 26.61 | 0.20 |
| Rapallo | 21.2 SF S21 | Q 500 | 195.00 | 1.23 | 5.57 | 2.94 | -2.63 | 3.29 | -2.28 | 4.03 | 5.82 | 0.000884 | 2.23 | 87.51 | 26.61 | 0.39 |
| Rapallo | 21.11 SF S21 | Bridge | | | | | | | | | | | | | | |
| Rapallo | 21.1 SF S21 | Q 50 | 136.00 | 0.99 | 3.63 | 3.50 | -0.13 | 4.15 | 0.52 | 3.34 | 4.55 | 0.005515 | 4.24 | 32.04 | 12.31 | 0.84 |
| Rapallo | 21.1 SF S21 | Q 200 | 171.00 | 0.99 | 6.77 | 3.50 | -3.27 | 4.15 | -2.62 | 3.73 | 7.07 | 0.000833 | 2.42 | 70.62 | 12.31 | 0.32 |
| Rapallo | 21.1 SF S21 | Q 500 | 195.00 | 0.99 | 4.26 | 3.50 | -0.76 | 4.15 | -0.11 | 3.97 | 5.49 | 0.005891 | 4.91 | 39.73 | 12.31 | 0.87 |
| Rapallo | 21. SF S21 | Q 50 | 136.00 | 0.99 | 3.80 | 3.50 | -0.30 | 4.15 | 0.35 | 3.12 | 4.39 | 0.003252 | 3.41 | 39.90 | 14.54 | 0.66 |
| Rapallo | 21. SF S21 | Q 200 | 171.00 | 0.99 | 6.81 | 3.50 | -3.31 | 4.15 | -2.66 | 3.46 | 7.02 | 0.000552 | 2.04 | 83.75 | 14.54 | 0.27 |
| Rapallo | 21. SF S21 | Q 500 | 195.00 | 0.99 | 4.48 | 3.50 | -0.98 | 4.15 | -0.33 | 3.69 | 5.26 | 0.003367 | 3.91 | 49.89 | 14.54 | 0.67 |
| Rapallo | 20. SF S20 | Q 50 | 136.00 | 0.37 | 3.95 | 3.50 | -0.45 | 4.15 | 0.20 | 2.50 | 4.31 | 0.001518 | 2.66 | 51.16 | 14.54 | 0.45 |
| Rapallo | 20. SF S20 | Q 200 | 171.00 | 0.37 | 6.84 | 3.50 | -3.34 | 4.15 | -2.69 | 2.84 | 7.01 | 0.000406 | 1.84 | 93.15 | 14.54 | 0.23 |
| Rapallo | 20. SF S20 | Q 500 | 195.00 | 0.37 | 4.66 | 3.50 | -1.16 | 4.15 | -0.51 | 3.06 | 5.17 | 0.001792 | 3.17 | 61.48 | 14.54 | 0.49 |
| Rapallo | 19. SF S19 | Q 50 | 136.00 | 0.37 | 3.92 | 3.50 | -0.42 | 4.15 | 0.23 | 2.54 | 4.31 | 0.002397 | 2.74 | 49.61 | 14.54 | 0.47 |
| Rapallo | 19. SF S19 | Q 200 | 171.00 | 0.37 | 6.83 | 3.50 | -3.33 | 4.15 | -2.68 | 2.88 | 7.01 | 0.000577 | 1.86 | 91.89 | 14.54 | 0.24 |
| Rapallo | 19. SF S19 | Q 500 | 195.00 | 0.37 | 4.63 | 3.50 | -1.13 | 4.15 | -0.48 | 3.11 | 5.17 | 0.002757 | 3.26 | 59.84 | 14.54 | 0.51 |
| Rapallo | 18. SF S18 | Q 50 | 136.00 | 0.23 | 4.06 | 3.45 | -0.61 | 3.45 | -0.61 | 2.20 | 4.24 | 0.000801 | 1.86 | 72.97 | 21.13 | 0.32 |
| Rapallo | 18. SF S18 | Q 200 | 171.00 | 0.23 | 6.89 | 3.45 | -3.44 | 3.45 | -3.44 | 2.47 | 6.98 | 0.000199 | 1.29 | 132.83 | 21.13 | 0.16 |
| Rapallo | 18. SF S18 | Q 500 | 195.00 | 0.23 | 4.83 | 3.45 | -1.38 | 3.45 | -1.38 | 2.66 | 5.07 | 0.000880 | 2.19 | 89.17 | 21.13 | 0.34 |
| Rapallo | 17.1 SF S17 | Q 50 | 136.00 | 0.23 | 3.98 | 2.00 | -1.98 | 2.00 | -1.98 | 2.00 | 4.22 | 0.002801 | 2.20 | 61.87 | 25.00 | 0.38 |
| Rapallo | 17.1 SF S17 | Q 200 | 171.00 | 0.23 | 5.64 | 2.00 | -3.64 | 2.00 | -3.64 | 2.00 | 6.86 | 0.018300 | 4.90 | 34.93 | | 0.69 |
| Rapallo | 17.1 SF S17 | Q 500 | 195.00 | 0.23 | 4.77 | 2.00 | -2.77 | 2.00 | -2.77 | 3.34 | 5.06 | 0.002284 | 2.39 | 81.65 | 25.00 | 0.37 |
| Rapallo | 17 SF S17 | Q 50 | 136.00 | 0.23 | 3.94 | 2.00 | -1.94 | 2.00 | -1.94 | 2.00 | 4.22 | 0.003617 | 2.46 | 58.89 | 25.70 | 0.42 |
| Rapallo | 17 SF S17 | Q 200 | 171.00 | 0.23 | 5.28 | 2.00 | -3.28 | 2.00 | -3.28 | 2.00 | 6.81 | 0.026085 | 5.86 | 32.15 | | 0.80 |
| Rapallo | 17 SF S17 | Q 500 | 195.00 | 0.23 | 4.75 | 2.00 | -2.75 | 2.00 | -2.75 | 2.06 | 5.06 | 0.002747 | 2.57 | 79.60 | 25.70 | 0.39 |
| Rapallo | 16 SF S16 | Q 50 | 136.00 | 0.30 | 3.89 | 2.00 | -1.89 | 2.00 | -1.89 | 2.00 | 4.20 | 0.004282 | 2.65 | 56.44 | 27.00 | 0.45 |
| Rapallo | 16 SF S16 | Q 200 | 171.00 | 0.30 | 4.74 | 2.00 | -2.74 | 2.00 | -2.74 | 2.00 | 6.64 | 0.031759 | 6.51 | 29.81 | | 0.94 |
| Rapallo | 16 SF S16 | Q 500 | 195.00 | 0.30 | 4.72 | 2.00 | -2.72 | 2.00 | -2.72 | 2.04 | 5.04 | 0.002932 | 2.65 | 79.05 | 27.00 | 0.40 |
| Rapallo | 15 SF S15 | Q 50 | 136.00 | 0.14 | 3.83 | 2.00 | -1.83 | 2.00 | -1.83 | 1.96 | 4.14 | 0.004367 | 2.68 | 57.11 | 29.20 | 0.45 |
| Rapallo | 15 SF S15 | Q 200 | 171.00 | 0.14 | 4.30 | 2.00 | -2.30 | 2.00 | -2.30 | 1.96 | 6.27 | 0.030077 | 6.51 | 29.92 | | 1.00 |
| Rapallo | 15 SF S15 | Q 500 | 195.00 | 0.14 | 4.71 | 2.00 | -2.71 | 2.00 | -2.71 | 1.96 | 5.00 | 0.002740 | 2.59 | 82.65 | 29.20 | 0.39 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl | |
|---------|-----------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|------|
| Rapallo | 14.2 | SF S14 | Q 50 | 136.00 | 0.15 | 3.83 | 2.00 | -1.83 | 2.00 | -1.83 | 1.90 | 4.11 | 0.003811 | 2.53 | 60.12 | 29.80 | 0.42 |
| Rapallo | 14.2 | SF S14 | Q 200 | 171.00 | 0.15 | 4.37 | 2.00 | -2.37 | 2.00 | -2.37 | 1.90 | 6.04 | 0.024996 | 6.02 | 32.30 | | 0.90 |
| Rapallo | 14.2 | SF S14 | Q 500 | 195.00 | 0.15 | 4.71 | 2.00 | -2.71 | 2.00 | -2.71 | 1.90 | 4.98 | 0.002449 | 2.47 | 86.25 | 29.80 | 0.37 |
| Rapallo | 14.1 | SF S14 | Q 50 | 136.00 | 0.15 | 3.82 | 2.00 | -1.82 | 2.00 | -1.82 | 1.90 | 4.11 | 0.004076 | 2.58 | 58.98 | 29.80 | 0.43 |
| Rapallo | 14.1 | SF S14 | Q 200 | 171.00 | 0.15 | 4.27 | 2.00 | -2.27 | 2.00 | -2.27 | 1.90 | 6.00 | 0.027131 | 6.16 | 31.61 | | 0.94 |
| Rapallo | 14.1 | SF S14 | Q 500 | 195.00 | 0.15 | 4.70 | 2.00 | -2.70 | 2.00 | -2.70 | 1.90 | 4.98 | 0.002545 | 2.49 | 85.32 | 29.80 | 0.37 |
| Rapallo | 14 | SF S14 | Q 50 | 136.00 | 0.15 | 3.82 | 2.00 | -1.82 | 2.00 | -1.82 | 1.90 | 4.10 | 0.003906 | 2.55 | 59.66 | 29.80 | 0.42 |
| Rapallo | 14 | SF S14 | Q 200 | 171.00 | 0.15 | 4.29 | 2.00 | -2.29 | 2.00 | -2.29 | 1.90 | 5.96 | 0.024996 | 6.02 | 32.30 | | 0.91 |
| Rapallo | 14 | SF S14 | Q 500 | 195.00 | 0.15 | 4.70 | 2.00 | -2.70 | 2.00 | -2.70 | 1.90 | 4.97 | 0.002472 | 2.47 | 86.01 | 29.80 | 0.37 |
| Rapallo | 13 | SF S13 | Q 50 | 136.00 | 0.20 | 3.73 | 2.00 | -1.73 | 2.00 | -1.73 | 1.84 | 4.07 | 0.004905 | 2.78 | 54.48 | 28.00 | 0.47 |
| Rapallo | 13 | SF S13 | Q 200 | 171.00 | 0.20 | 4.03 | 2.00 | -2.03 | 2.00 | -2.03 | 1.82 | 5.78 | 0.026567 | 6.16 | 31.29 | | 0.97 |
| Rapallo | 13 | SF S13 | Q 500 | 195.00 | 0.20 | 4.64 | 2.00 | -2.64 | 2.00 | -2.64 | 3.57 | 4.95 | 0.002925 | 2.65 | 79.98 | 28.00 | 0.40 |
| Rapallo | 12.1 | SF S12 | Q 50 | 136.00 | 0.14 | 3.64 | 2.00 | -1.64 | 2.00 | -1.64 | 3.15 | 4.02 | 0.005545 | 2.89 | 51.58 | 26.30 | 0.49 |
| Rapallo | 12.1 | SF S12 | Q 200 | 171.00 | 0.14 | 3.89 | 2.00 | -1.89 | 2.00 | -1.89 | 2.00 | 5.50 | 0.024434 | 5.93 | 32.10 | | 0.95 |
| Rapallo | 12.1 | SF S12 | Q 500 | 195.00 | 0.14 | 4.58 | 2.00 | -2.58 | 2.00 | -2.58 | 3.52 | 4.92 | 0.003211 | 2.75 | 76.22 | 26.30 | 0.41 |
| Rapallo | 12 | SF S12 | Q 50 | 136.00 | 0.13 | 3.52 | 2.00 | -1.52 | 2.00 | -1.52 | 3.15 | 3.98 | 0.007176 | 3.18 | 46.80 | 24.80 | 0.55 |
| Rapallo | 12 | SF S12 | Q 200 | 171.00 | 0.13 | 3.70 | 2.00 | -1.70 | 2.00 | -1.70 | 2.00 | 5.38 | 0.025493 | 6.06 | 31.33 | | 0.99 |
| Rapallo | 12 | SF S12 | Q 500 | 195.00 | 0.13 | 4.51 | 2.00 | -2.51 | 2.00 | -2.51 | 3.55 | 4.90 | 0.003775 | 2.93 | 71.20 | 24.80 | 0.44 |
| Rapallo | 11 | SF S11 | Q 50 | 136.00 | 0.10 | 2.77 | 1.95 | -0.82 | 1.95 | -0.82 | 1.96 | 3.81 | 0.015746 | 4.77 | 31.29 | | 0.92 |
| Rapallo | 11 | SF S11 | Q 200 | 171.00 | 0.10 | 3.46 | 1.95 | -1.51 | 1.95 | -1.51 | 1.95 | 5.10 | 0.024893 | 6.00 | 31.29 | | 1.01 |
| Rapallo | 11 | SF S11 | Q 500 | 195.00 | 0.10 | 4.43 | 1.95 | -2.48 | 1.95 | -2.48 | 3.48 | 4.85 | 0.004116 | 3.04 | 68.02 | 23.30 | 0.46 |
| Rapallo | 10 | SF S10 | Q 50 | 136.00 | 0.14 | 2.45 | 1.95 | -0.50 | 1.95 | -0.50 | 1.57 | 3.39 | 0.013431 | 4.51 | 32.99 | | 0.91 |
| Rapallo | 10 | SF S10 | Q 200 | 171.00 | 0.14 | 2.95 | 1.95 | -1.00 | 1.95 | -1.00 | 1.95 | 4.43 | 0.021233 | 5.67 | 32.99 | | 1.03 |
| Rapallo | 10 | SF S10 | Q 500 | 195.00 | 0.14 | 4.29 | 1.95 | -2.34 | 1.95 | -2.34 | 3.41 | 4.74 | 0.004397 | 3.10 | 66.91 | 23.50 | 0.47 |
| Rapallo | 9 | SF S9 | Q 50 | 136.00 | 0.02 | 2.40 | 1.95 | -0.45 | 1.95 | -0.45 | 1.51 | 3.20 | 0.010789 | 4.15 | 35.69 | | 0.83 |
| Rapallo | 9 | SF S9 | Q 200 | 171.00 | 0.02 | 2.87 | 1.95 | -0.92 | 1.95 | -0.92 | 1.95 | 4.13 | 0.017057 | 5.22 | 35.69 | | 0.94 |
| Rapallo | 9 | SF S9 | Q 500 | 195.00 | 0.02 | 4.27 | 1.95 | -2.32 | 1.95 | -2.32 | 3.30 | 4.68 | 0.003952 | 2.97 | 69.83 | 24.10 | 0.44 |
| Rapallo | 8.1 | SF S8 | Q 50 | 136.00 | 0.03 | 2.34 | 1.95 | -0.39 | 1.51 | -0.83 | 1.75 | 3.09 | 0.009122 | 3.84 | 35.43 | | 0.84 |
| Rapallo | 8.1 | SF S8 | Q 200 | 171.00 | 0.03 | 2.78 | 1.95 | -0.83 | 1.51 | -1.27 | 1.95 | 3.97 | 0.014421 | 4.83 | 35.43 | | 0.96 |
| Rapallo | 8.1 | SF S8 | Q 500 | 195.00 | 0.03 | 4.14 | 1.95 | -2.19 | 1.51 | -2.63 | 3.23 | 4.63 | 0.004473 | 3.10 | 62.90 | 21.30 | 0.50 |
| Rapallo | 8 | SF S8 | Q 50 | 136.00 | 0.03 | 2.35 | 1.95 | -0.40 | 1.95 | -0.40 | 1.83 | 3.08 | 0.009645 | 3.78 | 35.98 | | 0.82 |
| Rapallo | 8 | SF S8 | Q 200 | 171.00 | 0.03 | 2.79 | 1.95 | -0.84 | 1.95 | -0.84 | 1.95 | 3.94 | 0.015249 | 4.75 | 35.98 | | 0.94 |
| Rapallo | 8 | SF S8 | Q 500 | 195.00 | 0.03 | 4.14 | 1.95 | -2.19 | 1.95 | -2.19 | 3.21 | 4.62 | 0.004681 | 3.07 | 63.47 | 21.30 | 0.49 |
| Rapallo | 7.1 | SF S7 | Q 50 | 136.00 | 0.04 | 2.23 | 1.95 | -0.28 | 1.95 | -0.28 | 1.84 | 2.99 | 0.009812 | 3.86 | 35.19 | | 0.85 |
| Rapallo | 7.1 | SF S7 | Q 200 | 171.00 | 0.04 | 2.59 | 1.95 | -0.64 | 1.95 | -0.64 | 1.95 | 3.80 | 0.015512 | 4.86 | 35.19 | | 0.99 |
| Rapallo | 7.1 | SF S7 | Q 500 | 195.00 | 0.04 | 3.99 | 1.95 | -2.04 | 1.95 | -2.04 | 3.22 | 4.56 | 0.005951 | 3.37 | 57.93 | 20.00 | 0.55 |
| Rapallo | 7 | SF S7 | Q 50 | 136.00 | 0.04 | 2.22 | 1.95 | -0.27 | 1.95 | -0.27 | 1.84 | 2.98 | 0.009812 | 3.86 | 35.19 | | 0.85 |
| Rapallo | 7 | SF S7 | Q 200 | 171.00 | 0.04 | 2.58 | 1.95 | -0.63 | 1.95 | -0.63 | 1.95 | 3.78 | 0.015512 | 4.86 | 35.19 | | 0.99 |

HEC-RAS Plan: Plan 01 River: S. Francesco Reach: Rapallo (Continued)

| Reach | River Sta | Profile | Q Total (m3/s) | Min Ch El (m) | W.S. Elev (m) | LOB Elev (m) | L. Freeboard (m) | ROB Elev (m) | R. Freeboard (m) | Crit W.S. (m) | E.G. Elev (m) | E.G. Slope (m/m) | Vel Chnl (m/s) | Flow Area (m2) | Top Width (m) | Froude # Chl |
|---------|-----------|---------|-------------------|------------------|------------------|-----------------|---------------------|-----------------|---------------------|------------------|------------------|---------------------|-------------------|-------------------|------------------|--------------|
| Rapallo | 7 SF S7 | Q 500 | 195.00 | 0.04 | 3.98 | 1.95 | -2.03 | 1.95 | -2.03 | 3.22 | 4.56 | 0.006014 | 3.38 | 57.75 | 20.00 | 0.55 |
| Rapallo | 6 SF S6 | Q 50 | 136.00 | 0.07 | 2.32 | 2.10 | -0.22 | 2.10 | -0.22 | 1.67 | 2.80 | 0.005397 | 3.06 | 44.42 | | 0.66 |
| Rapallo | 6 SF S6 | Q 200 | 171.00 | 0.07 | 2.75 | 2.10 | -0.65 | 2.10 | -0.65 | 1.93 | 3.50 | 0.008532 | 3.85 | 44.42 | | 0.76 |
| Rapallo | 6 SF S6 | Q 500 | 195.00 | 0.07 | 4.03 | 2.10 | -1.93 | 2.10 | -1.93 | 2.09 | 4.45 | 0.004127 | 2.85 | 68.32 | 23.20 | 0.46 |
| Rapallo | 5.4 SF S5 | Q 50 | 136.00 | 0.01 | 2.28 | 2.10 | -0.18 | 2.10 | -0.18 | 1.69 | 2.76 | 0.005492 | 3.06 | 44.48 | | 0.67 |
| Rapallo | 5.4 SF S5 | Q 200 | 171.00 | 0.01 | 2.68 | 2.10 | -0.58 | 2.10 | -0.58 | 1.95 | 3.43 | 0.008683 | 3.84 | 44.48 | | 0.77 |
| Rapallo | 5.4 SF S5 | Q 500 | 195.00 | 0.01 | 3.99 | 2.10 | -1.89 | 2.10 | -1.89 | 2.10 | 4.41 | 0.004270 | 2.86 | 68.15 | 23.80 | 0.47 |
| Rapallo | 5.3 SF S5 | Q 50 | 136.00 | -0.05 | 2.01 | 1.60 | -0.41 | 1.60 | -0.41 | 1.71 | 2.73 | 0.007503 | 3.76 | 36.21 | 9.76 | 0.87 |
| Rapallo | 5.3 SF S5 | Q 200 | 171.00 | -0.05 | 2.31 | 1.60 | -0.71 | 1.60 | -0.71 | 1.86 | 3.39 | 0.014183 | 4.60 | 37.16 | | 0.99 |
| Rapallo | 5.3 SF S5 | Q 500 | 195.00 | -0.05 | 3.67 | 1.60 | -2.07 | 1.60 | -2.07 | 1.94 | 4.38 | 0.009257 | 3.71 | 52.52 | 22.77 | 0.63 |
| Rapallo | 5.2 SF S5 | Q 50 | 136.00 | -0.08 | 1.96 | 1.60 | -0.36 | 1.60 | -0.36 | 1.68 | 2.66 | 0.006855 | 3.69 | 36.81 | 11.10 | 0.86 |
| Rapallo | 5.2 SF S5 | Q 200 | 171.00 | -0.08 | 2.24 | 1.60 | -0.64 | 1.60 | -0.64 | 1.83 | 3.26 | 0.012955 | 4.47 | 38.23 | | 0.97 |
| Rapallo | 5.2 SF S5 | Q 500 | 195.00 | -0.08 | 3.47 | 1.60 | -1.87 | 1.60 | -1.87 | 1.92 | 4.28 | 0.011791 | 3.99 | 48.89 | 22.77 | 0.69 |
| Rapallo | 5.1 SF S5 | Q 50 | 136.00 | -0.08 | 2.14 | 2.10 | -0.04 | 2.10 | -0.04 | 1.60 | 2.57 | 0.004734 | 2.92 | 46.58 | | 0.65 |
| Rapallo | 5.1 SF S5 | Q 200 | 171.00 | -0.08 | 2.46 | 2.10 | -0.36 | 2.10 | -0.36 | 1.85 | 3.15 | 0.007485 | 3.67 | 46.58 | | 0.76 |
| Rapallo | 5.1 SF S5 | Q 500 | 195.00 | -0.08 | 3.68 | 2.10 | -1.58 | 2.10 | -1.58 | 2.02 | 4.17 | 0.005610 | 3.10 | 62.86 | 23.80 | 0.52 |
| Rapallo | 4 SF S4 | Q 50 | 136.00 | 0.05 | 1.70 | 1.77 | 0.07 | 1.77 | 0.07 | 1.68 | 2.46 | 0.005167 | 3.85 | 35.33 | 22.38 | 0.98 |
| Rapallo | 4 SF S4 | Q 200 | 171.00 | 0.05 | 1.83 | 1.77 | -0.06 | 1.77 | -0.06 | 1.77 | 2.93 | 0.015265 | 4.64 | 36.85 | | 1.13 |
| Rapallo | 4 SF S4 | Q 500 | 195.00 | 0.05 | 3.01 | 1.77 | -1.24 | 1.77 | -1.24 | 3.01 | 3.98 | 0.016303 | 4.34 | 44.88 | 23.35 | 0.82 |
| Rapallo | 3.1 SF S3 | Q 50 | 136.00 | 0.03 | 1.69 | 1.81 | 0.12 | 1.88 | 0.19 | 1.69 | 2.44 | 0.005276 | 3.83 | 35.55 | 23.80 | 1.00 |
| Rapallo | 3.1 SF S3 | Q 200 | 171.00 | 0.03 | 2.03 | 1.81 | -0.22 | 1.88 | -0.15 | 1.94 | 2.81 | 0.004338 | 3.92 | 43.61 | 23.80 | 0.92 |
| Rapallo | 3.1 SF S3 | Q 500 | 195.00 | 0.03 | 1.39 | 1.81 | 0.42 | 1.88 | 0.49 | 2.10 | 3.78 | 0.020556 | 6.86 | 28.44 | 23.00 | 1.97 |
| Rapallo | 3 SF S3 | Q 50 | 136.00 | 0.03 | 1.60 | 1.81 | 0.21 | 1.88 | 0.28 | 1.66 | 2.43 | 0.005184 | 4.03 | 33.77 | 22.80 | 1.06 |
| Rapallo | 3 SF S3 | Q 200 | 171.00 | 0.03 | 1.91 | 1.81 | -0.10 | 1.88 | -0.03 | 1.91 | 2.80 | 0.004511 | 4.17 | 41.03 | 23.20 | 1.00 |
| Rapallo | 3 SF S3 | Q 500 | 195.00 | 0.03 | 1.37 | 1.81 | 0.44 | 1.88 | 0.51 | 2.08 | 3.76 | 0.017997 | 6.85 | 28.48 | 22.80 | 1.96 |
| Rapallo | 2.1 SF S2 | Q 50 | 136.00 | -0.28 | 1.16 | 1.50 | 0.34 | 2.20 | 1.04 | 1.47 | 2.35 | 0.008988 | 4.84 | 28.10 | 22.80 | 1.39 |
| Rapallo | 2.1 SF S2 | Q 200 | 171.00 | -0.28 | 1.40 | 1.50 | 0.10 | 2.20 | 0.80 | 1.72 | 2.72 | 0.008218 | 5.09 | 33.58 | 22.80 | 1.34 |
| Rapallo | 2.1 SF S2 | Q 500 | 195.00 | -0.28 | 1.15 | 1.50 | 0.35 | 2.20 | 1.05 | 1.87 | 3.63 | 0.018810 | 6.98 | 27.94 | 22.80 | 2.01 |
| Rapallo | 2 SF S2 | Q 50 | 136.00 | -0.28 | 1.11 | 1.50 | 0.39 | 2.20 | 1.09 | 1.43 | 2.34 | 0.008455 | 4.90 | 27.76 | 23.30 | 1.43 |
| Rapallo | 2 SF S2 | Q 200 | 171.00 | -0.28 | 1.34 | 1.50 | 0.16 | 2.20 | 0.86 | 1.69 | 2.70 | 0.007627 | 5.17 | 33.08 | 23.30 | 1.38 |
| Rapallo | 2 SF S2 | Q 500 | 195.00 | -0.28 | 1.12 | 1.50 | 0.38 | 2.20 | 1.08 | 1.84 | 3.61 | 0.017161 | 7.00 | 27.87 | 23.30 | 2.04 |
| Rapallo | 1 SF S1 | Q 50 | 136.00 | -0.26 | 0.92 | 1.36 | 0.44 | 1.88 | 0.96 | 1.30 | 2.28 | 0.010138 | 5.17 | 26.31 | 23.30 | 1.55 |
| Rapallo | 1 SF S1 | Q 200 | 171.00 | -0.26 | 1.14 | 1.36 | 0.22 | 1.88 | 0.74 | 1.56 | 2.65 | 0.009122 | 5.45 | 31.37 | 23.30 | 1.50 |
| Rapallo | 1 SF S1 | Q 500 | 195.00 | -0.26 | 0.97 | 1.36 | 0.39 | 1.88 | 0.91 | 1.71 | 3.53 | 0.018074 | 7.09 | 27.51 | 23.30 | 2.08 |