LEFT EOD — VARIES WITH SUPER — NOMINAL OFFSET = -20.4770 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+79.3379 | -20.4757 | 6636.1889 | 636.0889 | -99.1148 | -442.2037 | 1212892.6462 | 2319114.9105 | -100.5036 | -30 34 33.45 | -440.0502 | -0.038000 |
| CL ABUT 1 | 316+83.8679 | -20.4757 | 6636.2836 | 636.2836 | -97.5940 | -438.2266 | 1212896.5437 | 2319117.0182 | -99.0221 | -30 34 33.45 | -435.7941 | -0.038000 |
| F-1 | 317+05.8178 | -20.4757 | 6636.7359 | 636.7910 | -90.0390 | -417.8097 | 1212915.5760 | 2319127.5909 | | | -414.0221 | -0.038000 |
| F-2 | 317+27.9678 | -20.4757 | 6637.1347 | 637.2651 | -82.8622 | -397.2550 | 1212934.7999 | 2319137.8105 | | | -392.2501 | -0.038000 |
| F-3 | 317+50.1177 | -20.4757 | 6637.4799 | 637.6755 | -76.0660 | -376.5712 | 1212954.2094 | 2319147.6736 | | | -370.4782 | -0.038000 |
| F-4 | 317+72.2676 | -20.4757 | 6637.7715 | 637.9999 | -69.6527 | -355.7656 | 1212973.7975 | 2319157.1768 | | | -348.7062 | -0.038000 |
| F-5 | 317+94.4175 | -20.4757 | 6638.0222 | 638.2425 | -63.8245 | -334.8451 | 1212993.5577 | 2319166.3168 | | | -326.9343 | -0.038000 |
| F-6 | 318+16.5675 | -20.4757 | 6638.2703 | 638.4470 | -57.9835 | -313.8169 | 1213013.4833 | 2319175.0905 | | | -305.1623 | -0.038000 |
| F-7 | 318+38.7174 | -20.4757 | 6638.5183 | 638.6332 | -52.7316 | -292.6882 | 1213033.5674 | 2319183.4949 | | | -283.3904 | -0.038000 |
| F-8 | 318+60.8673 | -20.4757 | 6638.7664 | 638.8232 | -47.8705 | -271.4661 | 1213053.8032 | 2319191.5272 | | | -261.6184 | -0.038000 |
| F-9 | 318+83.0172 | -20.4757 | 6639.0145 | 639.0338 | -43.4020 | -250.1580 | 1213074.1838 | 2319199.1847 | | | -239.8465 | -0.038000 |
| CL PIER 2 | 319+05.1679 | -20.4757 | 6639.2626 | 639.2626 | -39.3274 | -228.7702 | 1213094.7030 | 2319206.4649 | -41.9368 | -30 34 33.45 | -218.0738 | -0.038000 |
| F-1 | 319+27.3539 | -20.4757 | 6639.5111 | 639.5320 | -35.6427 | -207.2767 | 1213115.3860 | 2319213.3758 | | | -196.2664 | -0.038000 |
| F-2 | 319+49.5398 | -20.4757 | 6639.7595 | 639.8188 | -32.3560 | -185.7187 | 1213136.1933 | 2319219.9032 | | | -174.4590 | -0.038000 |
| F-3 | 319+71.7258 | -20.4757 | 6640.0080 | 640.1270 | -29.4684 | -164.1036 | 1213157.1177 | 2319226.0448 | | | -152.6516 | -0.038000 |
| F-4 | 319+93.9118 | -20.4757 | 6640.2565 | 640.4397 | -26.9809 | -142.4389 | 1213178.1520 | 2319231.7985 | | | -130.8443 | -0.038000 |
| F-5 | 320+16.0977 | -20.4757 | 6640.5050 | 640.7340 | -24.8944 | -120.7318 | 1213199.2892 | 2319237.1623 | | | -109.0369 | -0.038000 |
| F-6 | 320+38.2837 | -20.4757 | 6640.7535 | 640.9920 | -23.2095 | -98.9899 | 1213220.5219 | 2319242.1345 | | | -87.2295 | -0.038000 |
| F-7 | 320+60.4696 | -20.4757 | 6641.0020 | 641.2080 | -21.9268 | -77.2206 | 1213241.8428 | 2319246.7133 | | | -65.4221 | -0.038000 |
| F-8 | 320+82.6556 | -20.4764 | 6641.2507 | 641.4046 | -21.0475 | -55.4332 | 1213263.2450 | 2319250.8965 | | | -43.6148 | -0.037302 |
| F-9 | 321+04.8415 | -20.4828 | 6641.4520 | 641.7137 | -20.5769 | -33.6293 | 1213284.7216 | 2319254.6776 | | | -21.8074 | -0.030515 |
| CL ABUT 3 | 321+26.9003 | -20.4896 | 6642.0757 | 642.0757 | -20.4896 | -11.8297 | 1213306.2543 | 2319258.0795 | -23.6594 | -30 00 00.00 | -0.0073 | -0.021890 |
| BF ABUT 3 | 321+31.2300 | -20.4902 | 6642.1422 | 642.0422 | -20.4902 | -7.5000 | 1213310.5338 | 2319258.7375 | -23.6601 | -30 00 00.00 | 4.3224 | -0.021006 |

W1 — VARIES WITH SUPER — NOMINAL OFFSET = -16.3444 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+81.8117 | -16.3433 | 6636.4003 | 636.3003 | -96.3842 | -441.4090 | 1212892.9121 | 2319119.7069 | -95.7067 | -30 27 28.22 | -441.5136 | -0.038000 |
| CL ABUT 1 | 316+86.1417 | -16.3433 | 6636.4938 | 636.4938 | -92.8663 | -437.4168 | 1212896.6270 | 2319121.8143 | -94.2252 | -30 27 28.22 | -437.2426 | -0.038000 |
| F-1 | 317+08.2916 | -16.3433 | 6636.9401 | 636.9952 | -85.3271 | -416.5109 | 1212915.7476 | 2319132.3847 | | | -415.3944 | -0.038000 |
| F-2 | 317+30.4416 | -16.3433 | 6637.3329 | 637.4634 | -78.1677 | -396.2693 | 1212935.0602 | 2319142.6903 | | | -393.5461 | -0.038000 |
| F-3 | 317+52.5915 | -16.3433 | 6637.6721 | 637.8677 | -71.3905 | -375.4998 | 1212954.5580 | 2319152.4578 | | | -371.6979 | -0.038000 |
| F-4 | 317+74.7414 | -16.3433 | 6637.9578 | 638.1842 | -64.9978 | -354.5072 | 1212974.2344 | 2319161.9537 | | | -349.8496 | -0.038000 |
| F-5 | 317+96.8914 | -16.3433 | 6638.2069 | 638.4272 | -58.9918 | -333.6010 | 1212994.0827 | 2319171.0818 | | | -328.0014 | -0.038000 |
| F-6 | 318+19.0413 | -16.3433 | 6638.4550 | 638.6317 | -53.3745 | -312.4875 | 1213014.0962 | 2319179.8480 | | | -306.1531 | -0.038000 |
| F-7 | 318+41.1912 | -16.3433 | 6638.7031 | 638.8179 | -48.1479 | -291.2740 | 1213034.2680 | 2319188.2403 | | | -284.3049 | -0.038000 |
| F-8 | 318+63.3412 | -16.3433 | 6638.9512 | 639.0079 | -43.3137 | -269.9675 | 1213054.5913 | 2319196.2590 | | | -262.4566 | -0.038000 |
| F-9 | 318+85.4911 | -16.3433 | 6639.1992 | 639.2185 | -38.8736 | -248.5755 | 1213075.0591 | 2319203.9031 | | | -240.6084 | -0.038000 |
| CL PIER 2 | 319+07.6417 | -16.3433 | 6639.4473 | 639.4473 | -34.8290 | -227.1045 | 1213095.6653 | 2319211.1643 | -37.1408 | -30 27 28.22 | -218.7595 | -0.038000 |
| F-1 | 319+29.8137 | -16.3433 | 6639.6957 | 639.7166 | -31.1771 | -205.5559 | 1213116.4273 | 2319218.0542 | | | -196.9836 | -0.038000 |
| F-2 | 319+51.9977 | -16.3433 | 6639.9461 | 640.0034 | -27.9264 | -183.9034 | 1213137.2134 | 2319226.5593 | | | -175.0078 | -0.038000 |
| F-3 | 319+74.1758 | -16.3433 | 6640.1925 | 640.3115 | -25.0721 | -162.2145 | 1213158.3162 | 2319230.6772 | | | -153.1317 | -0.038000 |
| F-4 | 319+96.3538 | -16.3433 | 6640.4409 | 640.6211 | -22.6211 | -140.4766 | 1213179.4264 | 2319236.4060 | | | -131.2557 | -0.038000 |
| F-5 | 320+18.5319 | -16.3433 | 6640.6893 | 640.9183 | -20.5722 | -118.6971 | 1213200.6428 | 2319241.7437 | | | -109.3798 | -0.038000 |
| F-6 | 320+40.7098 | -16.3433 | 6640.9377 | 641.1762 | -18.9262 | -96.8834 | 1213221.9624 | 2319246.6883 | | | -87.5038 | -0.038000 |
| F-7 | 320+62.8878 | -16.3433 | 6641.1861 | 641.3921 | -17.6836 | -75.0431 | 1213243.3496 | 2319251.2383 | | | -65.6279 | -0.038000 |
| F-8 | 320+85.0659 | -16.3462 | 6641.4522 | 641.5921 | -16.8458 | -53.1835 | 1212264.8275 | 2319255.3911 | | | -43.7519 | -0.036914 |
| F-9 | 321+07.2439 | -16.3555 | 6641.7260 | 641.7260 | -16.3555 | -31.3109 | 1213286.4792 | 2319259.1434 | | | -21.8760 | -0.029347 |
| CL ABUT 3 | 321+29.2871 | -16.3555 | 6642.2014 | 642.2014 | -16.3555 | -9.4629 | 1213307.9846 | 2319262.5285 | -18.8657 | -30 00 00.00 | -0.0064 | -0.021370 |
| BF ABUT 3 | 321+33.6169 | -16.3560 | 6642.2618 | 642.1618 | -16.3560 | -5.2131 | 1213312.2641 | 2319263.1866 | -18.8662 | -30 00 00.00 | 4.3233 | -0.020639 |

W2 — VARIES WITH SUPER — NOMINAL OFFSET = -6.4864 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+87.6316 | -6.4858 | 6636.9001 | 636.8001 | -83.1228 | -439.5112 | 1212893.0693 | 2319131.1250 | -84.2874 | -30 10 47.80 | -445.0163 | -0.038000 |
| CL ABUT 1 | 316+91.9616 | -6.4858 | 6636.9908 | 636.9908 | -81.6117 | -435.4864 | 1212896.8251 | 2319133.2319 | -82.8059 | -30 10 47.80 | -440.7097 | -0.038000 |
| F-1 | 317+14.1116 | -6.4858 | 6637.4231 | 637.4782 | -74.1101 | -414.7710 | 1212916.1566 | 2319143.7967 | | | -418.6795 | -0.038000 |
| F-2 | 317+36.2616 | -6.4858 | 6637.8018 | 637.9323 | -66.9321 | -393.8227 | 1212935.6797 | 2319154.0028 | | | -396.6492 | -0.038000 |
| F-3 | 317+58.4115 | -6.4858 | 6638.1269 | 638.3225 | -60.2601 | -372.7466 | 1212955.3878 | 2319163.8469 | | | -374.6190 | -0.038000 |
| F-4 | 317+80.5615 | -6.4858 | 6638.3986 | 638.6271 | -53.9964 | -351.5498 | 1212975.2743 | 2319173.3256 | | | -352.5888 | -0.038000 |
| F-5 | 318+02.7115 | -6.4858 | 6638.6467 | 638.8670 | -47.9631 | -330.6295 | 1212995.3424 | 2319182.4356 | | | -330.5585 | -0.038000 |
| F-6 | 318+24.8614 | -6.4858 | 6638.8948 | 639.0715 | -42.4024 | -309.3029 | 1213015.5552 | 2319191.1738 | | | -308.5283 | -0.038000 |
| F-7 | 318+47.0114 | -6.4858 | 6639.1428 | 639.2577 | -37.2361 | -287.9073 | 1213035.9356 | 2319199.5373 | | | -286.4981 | -0.038000 |
| F-8 | 318+69.1614 | -6.4858 | 6639.3909 | 639.4477 | -32.4659 | -266.4000 | 1213056.4674 | 2319207.5232 | | | -264.4678 | -0.038000 |
| F-9 | 318+91.3113 | -6.4858 | 6639.6390 | 639.6583 | -28.0935 | -244.8004 | 1213077.1427 | 2319215.1287 | | | -242.4376 | -0.038000 |
| CL PIER 2 | 319+13.4616 | -6.4858 | 6639.8871 | 639.8871 | -24.1203 | -223.1393 | 1213097.9554 | 2319222.3515 | -25.7207 | -30 10 47.80 | -220.4070 | -0.038000 |
| F-1 | 319+35.6221 | -6.4858 | 6640.1353 | 640.1562 | -20.5561 | -201.3907 | 1213118.9074 | 2319229.1920 | | | -198.3663 | -0.038000 |
| F-2 | 319+57.7826 | -6.4858 | 6640.3835 | 640.4627 | -17.3742 | -179.5797 | 1213139.9822 | 2319235.6444 | | | -176.3256 | -0.038000 |
| F-3 | 319+79.9431 | -6.4858 | 6640.6317 | 640.7507 | -14.6057 | -157.7139 | 1213161.1725 | 2319241.7064 | | | -154.2849 | -0.038000 |
| F-4 | 320+02.1036 | -6.4858 | 6640.8799 | 641.0631 | -12.2413 | -135.8007 | 1213182.4711 | 2319247.3762 | | | -132.2442 | -0.038000 |
| F-5 | 320+24.2641 | -6.4858 | 6641.1281 | 641.3571 | -10.2820 | -113.8475 | 1213203.8709 | 2319252.6518 | | | -110.2035 | -0.038000 |
| F-6 | 320+46.4246 | -6.4858 | 6641.3763 | 641.6148 | -8.7284 | -91.8619 | 1213225.3644 | 2319257.5312 | | | -88.1628 | -0.038000 |
| F-7 | 320+68.5850 | -6.4858 | 6641.6245 | 641.8305 | -7.5811 | -69.8534 | 1213246.9443 | 2319262.0129 | | | -66.1221 | -0.038000 |
| F-8 | 320+90.7455 | -6.4870 | 6641.8879 | 642.0277 | -6.8416 | -47.8225 | 1213268.6035 | 2319266.0942 | | | -44.0814 | -0.037564 |
| F-9 | 321+12.9060 | -6.4916 | 6642.1940 | 642.2563 | -6.5119 | -25.7856 | 1213290.3348 | 2319269.7719 | | | -22.0407 | -0.026622 |
| CL ABUT 3 | 321+34.9810 | -6.4935 | 6642.4818 | 642.4818 | -6.4935 | -3.7490 | 1213312.1123 | 2319273.1418 | -7.4981 | -30 00 00.00 | -0.0041 | -0.020466 |
| BF ABUT 3 | 321+39.3109 | -6.4937 | 6642.5327 | 642.4327 | -6.4937 | 0.5809 | 1213316.3918 | 2319273.8002 | -7.4982 | -30 00 00.00 | 4.3258 | -0.020097 |

HCL — PARALLEL TO HORIZONTAL CONTROL — 0.250000 FEET BELOW FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+91.4000 | 0.0000 | 6637.2258 | 637.1258 | -75.7304 | -438.2754 | 1212893.1721 | 2319138.6203 | -78.7915 | -30 00 00.00 | -447.3300 | +/-.038000 |
| CL ABUT 1 | 316+95.7300 | 0.0000 | 6637.3148 | 637.3148 | -74.2238 | -434.2159 | 1212898.9552 | 2319140.7268 | -75.3100 | -30 00 00.00 | -443.0000 | +/-.038000 |
| F-1 | 317+17.8800 | 0.0000 | 6637.7380 | 637.7930 | -66.7469 | -413.3664 | 1212916.4249 | 2319151.2878 | | | -420.8500 | +/-.038000 |
| F-2 | 317+40.0300 | 0.0000 | 6638.1075 | 638.2380 | -59.6560 | -392.3824 | 1212936.0663 | 2319161.4878 | | | -398.7000 | +/-.038000 |
| F-3 | 317+62.1800 | 0.0000 | 6638.4236 | 638.6192 | -52.9537 | -371.2711 | 1212955.9325 | 2319171.3231 | | | -376.5500 | +/-.038000 |
| F-4 | 317+84.3300 | 0.0000 | 6638.6875 | 638.9159 | -46.6421 | -350.0396 | 1212975.9570 | 2319180.7906 | | | -354.4000 | +/-.038000 |
| F-5 | 318+06.4800 | 0.0000 | 6638.9355 | 639.1559 | -40.7236 | -328.6953 | 1212996.1528 | 2319189.8866 | | | -332.2500 | +/-.038000 |
| F-6 | 318+28.6300 | 0.0000 | 6639.1836 | 639.3604 | -35.1999 | -307.2455 | 1213016.5129 | 2319198.6085 | | | -310.1000 | +/-.038000 |
| F-7 | 318+50.7800 | 0.0000 | 6639.4317 | 639.5466 | -30.0732 | -285.6973 | 1213037.0307 | 2319206.9530 | | | -287.9500 | +/-.038000 |
| F-8 | 318+72.9300 | 0.0000 | 6639.6798 | 639.7365 | -25.3450 | -264.0581 | 1213057.6990 | 2319214.9174 | | | -265.8000 | +/-.038000 |
| F-9 | 318+95.0800 | 0.0000 | 6639.9279 | 639.9471 | -21.0170 | -242.3354 | 1213078.5107 | 2319222.4990 | | | -243.6500 | +/-.038000 |
| CL PIER 2 | 319+17.2300 | 0.0000 | 6640.1759 | 640.1759 | -17.0907 | -220.5365 | 1213099.4588 | 2319229.6952 | -18.2247 | -30 00 00.00 | -221.5000 | +/-.038000 |
| F-1 | 319+39.3800 | 0.0000 | 6640.4240 | 640.4449 | -13.5674 | -198.6688 | 1213120.5362 | 2319236.5035 | | | -199.3500 | +/-.038000 |
| F-2 | 319+61.5300 | 0.0000 | 6640.6721 | 640.7314 | -10.4484 | -176.7398 | 1213141.7356 | 2319242.9216 | | | -177.2000 | +/-.038000 |
| F-3 | 319+83.6800 | 0.0000 | 6640.9202 | 641.0392 | -7.7346 | -154.7570 | 1213163.0499 | 2319248.9473 | | | -155.0500 | +/-.038000 |
| F-4 | 320+05.8300 | 0.0000 | 6641.1683 | 641.3515 | -5.4270 | -132.7278 | 1213184.4718 | 2319254.5786 | | | -132.9000 | +/-.038000 |
| F-5 | 320+27.9800 | 0.0000 | 6641.4163 | 641.6453 | -3.5264 | -110.6598 | 1213205.9940 | 2319259.8136 | | | -110.7500 | +/-.038000 |
| F-6 | 320+50.1300 | 0.0000 | 6641.6644 | 641.9030 | -2.0335 | -88.5605 | 1213227.6091 | 2319264.6504 | | | -88.6000 | +/-.038000 |
| F-7 | 320+72.2800 | 0.0000 | 6641.9125 | 642.1185 | -0.9487 | -66.4374 | 1213249.3099 | 2319269.0874 | | | -66.4500 | +/-.038000 |
| F-8 | 320+94.4300 | 0.0000 | 6642.1606 | 642.3005 | -0.2724 | -44.2981 | 1213271.0887 | 2319273.1232 | | | -44.3000 | +/-.034599 |
| F-9 | 321+16.5800 | 0.0000 | 6642.4087 | 642.4703 | -0.0049 | -22.1500 | 1213292.9384 | 2319276.7562 | | | -22.1500 | +/-.025102 |
| CL ABUT 3 | 321+38.7300 | 0.0000 | 6642.6567 | 642.6567 | 0.0000 | 0.0000 | 1213314.8300 | 2319280.1200 | 0.0000 | -30 00 00.00 | 0.0000 | +/-.020131 |
| BF ABUT 3 | 321+43.0600 | 0.0000 | 6642.7052 | 642.6052 | 0.0000 | 4.3300 | 1213319.1096 | 2319280.7886 | 0.0000 | -30 00 00.00 | 4.3300 | +/-.020000 |

W3 — VARIES WITH SUPER — NOMINAL OFFSET = 3.3715 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+93.3403 | 3.3717 | 6637.3939 | 637.2939 | -71.6827 | -437.6307 | 1212893.2256 | 2319142.5114 | -72.9000 | -29 54 26.51 | -448.5350 | +0.038000 |
| CL ABUT 1 | 316+97.6703 | 3.3717 | 6637.4820 | 637.4820 | -70.3865 | -433.5574 | 1212897.0227 | 2319144.6176 | -71.4185 | -29 54 26.51 | -444.1928 | +0.038000 |
| F-1 | 317+19.8203 | 3.3717 | 6637.9004 | 637.9555 | -62.9244 | -412.6372 | 1212916.5642 | 2319155.1748 | | | -421.9806 | +0.038000 |
| F-2 | 317+41.9703 | 3.3717 | 6638.2653 | 638.3958 | -55.8476 | -391.5828 | 1212936.2973 | 2319165.3736 | | | -399.7684 | +0.038000 |
| F-3 | 317+64.1202 | 3.3717 | 6638.5766 | 638.7722 | -49.1607 | -370.4013 | 1212956.2153 | 2319175.2043 | | | -377.5562 | +0.038000 |
| F-4 | 317+86.2702 | 3.3717 | 6638.8371 | 639.0656 | -42.8659 | -349.1000 | 1212976.3114 | 2319184.6657 | | | -355.3439 | +0.038000 |
| F-5 | 318+08.4202 | 3.3717 | 6639.0852 | 639.3055 | -36.9653 | -327.6862 | 1212996.5786 | 2319193.7547 | | | -333.1317 | +0.038000 |
| F-6 | 318+30.5702 | 3.3717 | 6639.3333 | 639.5100 | -31.4609 | -306.1671 | 1213017.0101 | 2319202.4680 | | | -310.9195 | +0.038000 |
| F-7 | 318+52.7202 | 3.3717 | 6639.5814 | 639.6962 | -26.3547 | -284.5501 | 1213037.5990 | 2319210.8027 | | | -288.7073 | +0.038000 |
| F-8 | 318+74.8702 | 3.3717 | 6639.8294 | 639.8862 | -21.6483 | -262.8425 | 1213058.3382 | 2319218.7560 | | | -266.4951 | +0.038000 |
| F-9 | 318+97.0202 | 3.3717 | 6640.0775 | 640.0968 | -17.3424 | -241.0519 | 1213079.2206 | 2319226.3251 | | | -244.2828 | +0.038000 |
| CL PIER 2 | 319+19.1703 | 3.3717 | 6640.3256 | 640.3256 | -13.4414 | -219.1852 | 1213100.2393 | 2319233.5076 | -14.3333 | -29 54 26.51 | -222.0705 | +0.038000 |
| F-1 | 319+41.3151 | 3.3717 | 6640.5736 | 640.5946 | -9.9464 | -197.2555 | 1213121.3820 | 2319240.2993 | | | -199.8635 | +0.038000 |
| F-2 | 319+63.4599 | 3.3717 | 6640.8217 | 640.8809 | -6.8528 | -175.2650 | 1213142.6464 | 2319246.6996 | | | -177.6564 | +0.038000 |
| F-3 | 319+85.6048 | 3.3717 | 6641.0697 | 641.1687 | -4.1674 | -153.2213 | 1213164.0252 | 2319252.7066 | | | -155.4494 | +0.038000 |
| F-4 | 320+07.7496 | 3.3717 | 6641.3177 | 641.5009 | -1.8893 | -131.1317 | 1213185.5113 | 2319258.3179 | | | -133.2423 | +0.038000 |
| F-5 | 320+29.8944 | 3.3717 | 6641.5657 | 641.7947 | -0.0191 | -109.0038 | 1213207.0973 | 2319263.5320 | | | -111.0353 | +0.038000 |
| F-6 | 320+52.0393 | 3.3717 | 6641.8137 | 642.0523 | 1.4424 | -86.8452 | 1213228.7758 | 2319268.3467 | | | -88.8282 | +0.038000 |
| F-7 | 320+74.1841 | 3.3717 | 6642.0617 | 642.2677 | 2.6947 | -64.6635 | 1213250.5394 | 2319272.7605 | | | -66.6212 | +0.037988 |
| F-8 | 320+96.3289 | 3.3711 | 6642.2962 | 642.4361 | 3.1370 | -42.4660 | 1213272.3809 | 2319276.7715 | | | -44.4141 | +0.033573 |
| F-9 | 321+18.4738 | 3.3697 | 6642.5120 | 642.5737 | 3.3689 | -20.2605 | 1213294.2929 | 2319280.3779 | | | -22.2071 | +0.024395 |
| CL ABUT 3 | 321+40.6751 | 3.3689 | 6642.7460 | 642.7460 | 3.3689 | 1.9451 | 1213316.2401 | 2319283.7555 | 3.8901 | -30 00 00.00 | -0.0015 | +0.020038 |
| BF ABUT 3 | 321+45.0051 | 3.3689 | 6642.7943 | 642.8943 | 3.3689 | 6.2751 | 1213320.5197 | 2319284.4141 | 3.8901 | -30 00 00.00 | 4.3285 | +0.020000 |

RIGHT EOD — VARIES WITH SUPER — NOMINAL OFFSET = 7.5041 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF ABUT 1 | 316+95.7031 | 7.5041 | 6637.5992 | 637.4992 | -67.1940 | -436.8414 | 1212893.2910 | 2319147.2755 | -68.1355 | -29 47 46.69 | -450.0147 | +0.038000 |
| CL ABUT 1 | 317+00.0331 | 7.5041 | 6637.6861 | 637.5861 | -65.6527 | -432.7511 | 1212897.1054 | 2319149.3814 | -66.6540 | -29 47 46.69 | -445.6576 | +0.038000 |
| F-1 | 317+22.1831 | 7.5041 | 6638.0989 | 638.1539 | -58.2442 | -411.7444 | 1212916.7348 | 2319159.9383 | | | -423.3691 | +0.038000 |
| F-2 | 317+44.3331 | 7.5041 | 6638.4581 | 638.5885 | -51.1647 | -390.6037 | 1212936.5558 | 2319170.1311 | | | -401.0806 | +0.038000 |
| F-3 | 317+66.4831 | 7.5041 | 6638.7637 | 638.9593 | -44.5167 | -369.3363 | 1212956.5616 | 2319179.9563 | | | -378.7921 | +0.038000 |
| F-4 | 317+88.6331 | 7.5041 | 6639.0206 | 639.2691 | -38.2023 | -347.9495 | 1212976.7452 | 2319189.4105 | | | -356.5036 | +0.038000 |
| F-5 | 318+10.7831 | 7.5041 | 6639.2687 | 639.4890 | -32.3237 | -326.4505 | 1212997.1000 | 2319195.5907 | | | -334.2151 | +0.038000 |
| F-6 | 318+32.9331 | 7.5041 | 6639.5168 | 639.6835 | -26.8829 | -304.8447 | 1213017.6188 | 2319207.1936 | | | -311.9265 | +0.038000 |
| F-7 | 318+55.0831 | 7.5041 | 6639.7648 | 639.8797 | -21.8818 | -283.1454 | 1213038.2948 | 2319215.5163 | | | -289.6380 | +0.038000 |
| F-8 | 318+77.2331 | 7.5041 | 6640.0129 | 640.0697 | -17.1222 | -261.3540 | 1213059.1203 | 2319223.4558 | | | -267.3495 | +0.038000 |
| F-9 | 318+99.3831 | 7.5041 | 6640.2610 | 640.2803 | -12.8455 | -239.4800 | 1213080.0900 | 2319231.0097 | | | -245.0610 | +0.038000 |
| CL PIER 2 | 319+21.5341 | 7.5041 | 6640.5091 | 640.5091 | -8.9733 | -217.5308 | 1213101.1949 | 2319238.1753 | -9.5687 | -29 47 46.69 | -222.7725 | +0.038000 |
| F-1 | 319+43.6939 | 7.5041 | 6640.7570 | 640.7780 | -5.5085 | -195.5249 | 1213122.4177 | 2319244.9468 | | | -200.4952 | +0.038000 |
| F-2 | 319+65.8087 | 7.5041 | 6641.0050 | 641.0643 | -2.4503 | -173.4589 | 1213143.7619 | 2319251.3256 | | | -178.2180 | +0.038000 |
| F-3 | 319+87.9475 | 7.5041 | 6641.2529 | 641.3720 | 0.2003 | -151.3402 | 1213165.2201 | 2319257.3096 | | | -155.9407 | +0.038000 |
| F-4 | 320+10.0863 | 7.5041 | 6641.5009 | 641.6841 | 2.4424 | -129.1744 | 1213186.7850 | 2319262.8966 | | | -133.6635 | +0.038000 |
| F-5 | 320+32.2251 | 7.5041 | 6641.7489 | 641.9778 | 4.2752 | -106.9750 | 1213208.4493 | 2319268.0850 | | | -111.3862 | +0.038000 |
| F-6 | 320+54.3640 | 7.5041 | 6641.9968 | 642.2356 | 5.6483 | -84.7436 | 1213230.2056 | 2319272.8727 | | | -89.1090 | +0.038000 |
| F-7 | 320+76.5028 | 7.5041 | 6642.2441 | 642.4500 | 6.7109 | -62.4897 | 1213252.0466 | 2319277.2583 | | | -66.8317 | +0.037905 |
| F-8 | 320+98.6416 | 7.5042 | 6642.4563 | 642.5562 | 7.3129 | -40.5269 | 1213273.9618 | 2319281.2403 | | | -44.5545 | +0.033139 |
| F-9 | 321+20.7853 | 7.5038 | 6642.6328 | 642.6945 | 7.5038 | -17.9447 | 1213295.9528 | 2319284.8172 | | | -22.2772 | +0.023804 |
| CL ABUT 3 | 321+43.0621 | 7.5035 | 6642.8553 | 642.8553 | 7.5035 | 4.3321 | 1213317.9704 | 2319288.2051 | 8.6643 | -30 00 00.00 | -0.0064 | +0.020000 |
| BF ABUT 3 | 321+47.3921 | 7.5035 | 6642.9038 | 642.8038 | 7.5035 | 8.6621 | 1213322.2501 | 2319288.8637 | 8.6643 | -30 00 00.00 | 4.3296 | +0.020000 |

Quantities — Detail — Design

| | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | DSO | 10/08 |
| Detailed By | ROA | 10/08 |
| Checked By | DSO | 10/08 |
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/24/2010
File Name: 16042V_Brdg_Geometry_02.dgn
Horiz. Scale: 1:1 — Vert. Scale: As Noted
Unit Information 0221 — Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 — EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP A OVER US 160
BRIDGE DECK ELEVATIONS
(2 OF 2)

Designer: A. Leifheit — Structure Numbers: P-05-V
Detailer: R. Artman
Sheet Subset: Bridge — Subset Sheets: B37 of B37

Project No./Code: NH 1602-114
16042
Sheet Number 266

## GENERAL NOTES

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-2 BRIDGES.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

A COLORED STRUCTURAL CONCRETE STAIN FINISH WILL BE REQUIRED, AS SHOWN ON THE PLANS, ON EXPOSED CONCRETE SURFACES. THE COLORED STRUCTURAL CONCRETE STAIN IS TO BE SELECTED FROM TEST PANELS PROVIDED BY THE CONTRACTOR. A CLASS 2 FINISH SHALL BE PROVIDED FOR ALL CONCRETE SURFACES TO RECIEVE CONCRETE STAIN. A CLASS 1 FINISH SHALL BE PROVIDED FOR ALL OTHER SURFACES TO 1 FOOT BELOW THE GROUND LINE.

ALL BOLTS SHALL BE ⅞" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

Ⓝ DENOTES NON COATED REINFORCING STEEL.

ALL THE PROVISIONS FOR BRIDGE DECK CONCRETE SHALL ALSO APPLY TO APPROACH SLAB CONCRETE.

AN EMERGENCY DECK CONSTRUCTION JOINT MAY BE LOCATED AT THE ONE QUARTER SPAN POINT BACK FROM A PIER OR ABUTMENT WITH RESPECT TO THE DIRECTION OF THE DECK PLACEMENT.

ALL CONCRETE SHALL BE LEVEL II SULFATE RESISTANT.

UNLESS NOTED OTHERWISE, THE FOLLOWING STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36 (ASTM A-36): BEARING PLATES, BEARING DEVICES, BRIDGE RAILING.

THE FOLLOWING STRUCTURAL STEEL SHALLL BE AASHTO M-222 (ASTM A-588) GRADE 50: BRIDGE RAILING.

## DESIGN DATA

DESIGN CODE: AASHTO LRFD, 4TH EDITION WITH 2008 INTERIMS

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

LIVE LOAD: HL-93 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR BRIDGE DECK OVERLAY.
ASSUMES 5 LBS. PER SQ. FT. FOR LOST DECK FORMS
SEISMIC: ZONE 1, SITE CLASS D, As=0.098g, SD1=0.098g

REINFORCED CONCRETE:
CLASS D CONCRETE: f'c = 4,500 psi
REINFORCING STEEL: fy = 60,000 psi

CAISSON CONCRETE:
CLASS BZ CONCRETE: f'c = 4,000 psi
REINFORCING STEEL: fy = 60,000 psi

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

| BAR SIZE | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|---|---|---|---|---|---|---|---|---|
| SPLICE LENGTH FOR CLASS D CONCRETE | 1'-3" | 1'-7" | 2'-5" | 2'-10" | 3'-8" | 4'-8" | 5'-11" | 7'-3" |

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

| BAR SIZE | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|---|---|---|---|---|---|---|---|---|
| SPLICE LENGTH FOR CLASS D CONCRETE | 1'-1" | 1'-4" | 1'-7" | 1'-11" | 2'-6" | 3'-1" | 3'-11" | 4'-10" |

THE ABOVE SPLICE LENGTHS MAY BE REDUCED BY 20% WHEN 3" OF CLEAR COVER EXISTS AND BAR SPACING IS 6" OR GREATER ON CENTER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

FOR STRUCTURE NUMBER INSTALLATION, SEE STANDARD S-614-12.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

## INDEX OF DRAWINGS





## BRIDGE DESCRIPTION

2 SPAN (162'-6", 136'-6")
CONTINUOUS PRESTRESSED CONCRETE HAUNCHED BOX GIRDER OVER WILSON GULCH.
26'-0" ROADWAY CURB TO CURB,
NO SKEW. (2) 1'-6" TYPE 10M (SPECIAL) BRIDGE RAIL.

CROSS REFERENCE DRAWING NUMBER
(IF BLANK, REFERENCE IS TO SAME SHEET)

BXX
XX

SECTION OR DETAIL IDENTIFICATION

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | ANL | 10/08 |
| Checked By | MJN | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | MJN | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | ANL | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_GenNotes_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
GENERAL NOTES

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B1 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 267

## SUMMARY OF APPROXIMATE QUANTITIES

| Item No. | Description | Units | Superstructure | Abut. 1 | Pier 2 | Abut. 3 | Total |
|---|---|---|---|---|---|---|---|
| 206 | Structure Excavation | CY | - | 13 | 174 | 96 | 283 |
| 206 | Structure Backfill (Class 1) | CY | - | 239 | 156 | 204 | 599 |
| 206 | Mechanical Reinforcement of Soil | CY | - | 163 | - | 153 | 316 |
| 403 | Hot Mix Asphalt | TON | 143 | - | - | - | 143 |
| 503 | Drilled Caisson (36") | LF | - | 275 | - | 223 | 498 |
| 503 | Drilled Caisson (48") | LF | - | - | 87 | - | 87 |
| 507 | Concrete Slope and Ditch Paving (Reinforced) | CY | - | 13 | - | - | 13 |
| 512 | Bridge Bearing Device (Type III) | EA | - | 2 | - | - | 2 |
| 515 | Waterproofing Membrane | SY | 880 | - | - | - | 880 |
| 518 | Waterstop | LF | 279 | - | - | - | 279 |
| 601 | Concrete Class D (Bridge) | CY | 589 | 72 | 67 | 52 | 780 |
| 601 | Structural Concrete Coating | SY | 1483 | 74 | 109 | 66 | 1732 |
| 602 | Reinforcing Steel | LBS | 46643 | - | - | - | 46643 |
| 602 | Reinforcing Steel (Epoxy Coated) | LBS | 89813 | 9223 | 18038 | 5134 | 122208 |
| 606 | Bridge Rail Type 10M (Special) | LF | 589 | - | - | - | 589 |
| 613 | 1" Conduit (Anti-Icing System) | LF | 56 | - | - | - | 56 |
| 613 | 1.5" Conduit (Anti-Icing System) | LF | 448 | - | - | - | 448 |
| 613 | 2" Conduit (Anti-Icing System) | LF | 548 | - | - | - | 548 |
| 613 | 2" Electrical Conduit | LF | 597 | - | - | - | 597 |
| 613 | 6" Electrical Conduit | LF | 609 | - | - | - | 609 |
| 618 | Prestressing Steel Strand | MKFT | 1770 | - | - | - | 1770 |

| | Design | | | Detail | | | Quantities | | |
|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | AML | 10/08 | Detailed By | AML | 10/08 | Quantities By | AML | 10/08 |
| Checked By | SEMA | 10/08 | Checked By | SEMA | 10/08 | Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_SumApproxQuant_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |

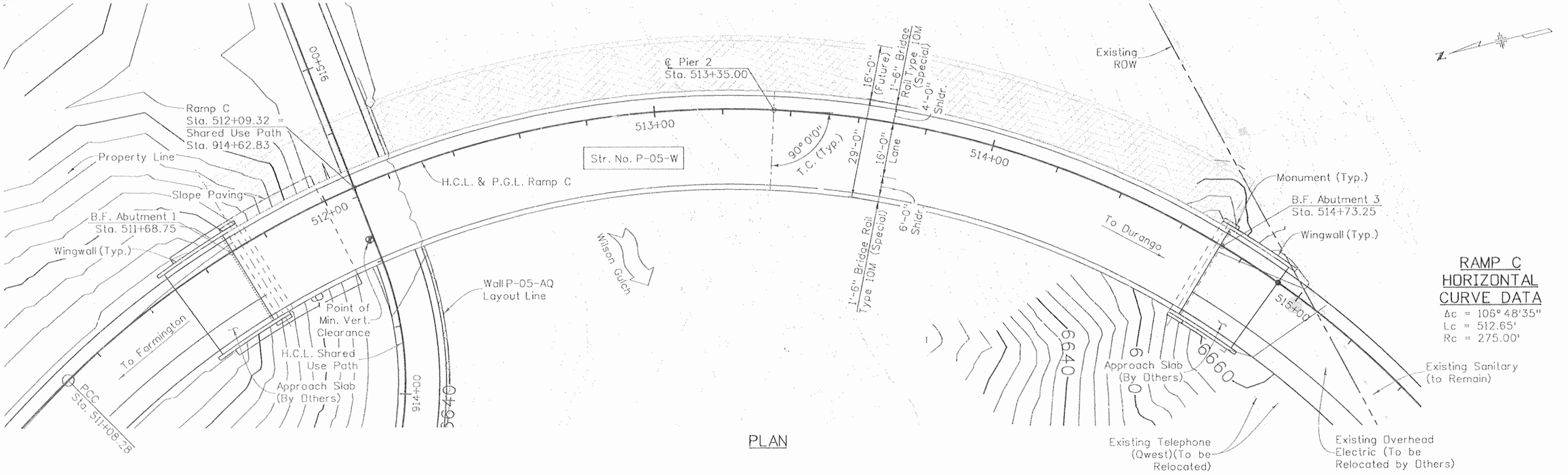
Colorado Department of Transportation
CDOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
SUMMARY OF QUANTITIES

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B2 of B34

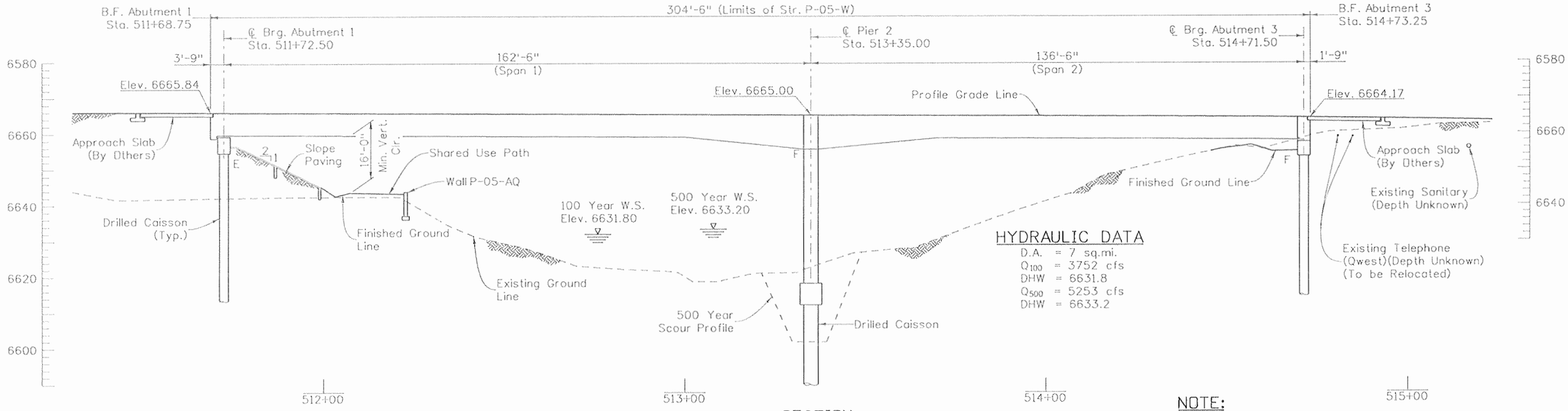
Project No./Code
NH 1602-114
16042
Sheet Number 268




PLAN

## RAMP C HORIZONTAL CURVE DATA

Δc = 106° 48'35"
Lc = 512.65'
Rc = 275.00'




SECTION
(Taken Along P.G.L.)

## HYDRAULIC DATA

D.A. = 7 sq.mi.
$Q_{100}$ = 3752 cfs
DHW = 6631.8
$Q_{500}$ = 5253 cfs
DHW = 6633.2

**NOTE:**
Elevations are taken at top of 3" HMA wearing surface.

| Quantities | INITIAL | DATE |
|---|---|---|
| | AML | 10/08 |
| Quantities By: | LW | 10/08 |
| Checked By: | | |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | DRA | 10/08 |
| Checked By: | MJN | 10/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | AML | 10/08 |
| Checked By: | MJN | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_GenLayout_01.dgn
Horiz. Scale: 1:30 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

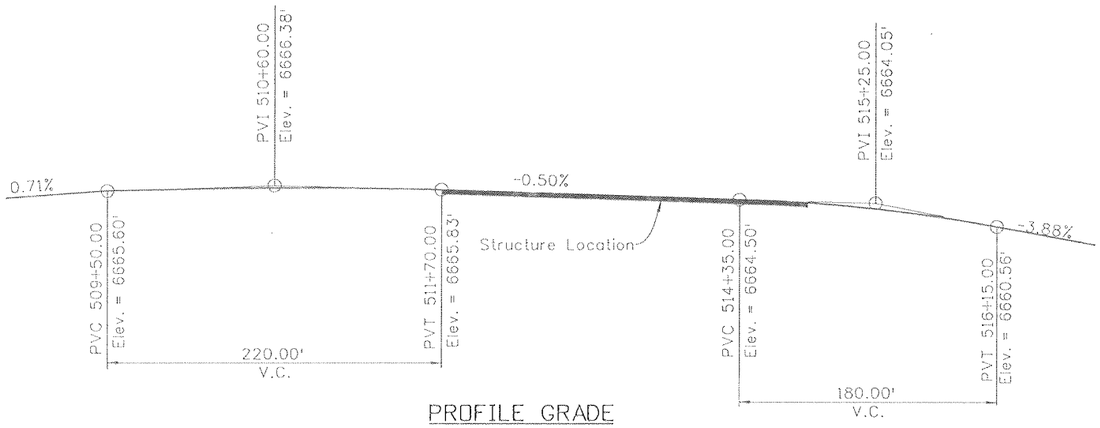

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 9/10
Revised:
Void:

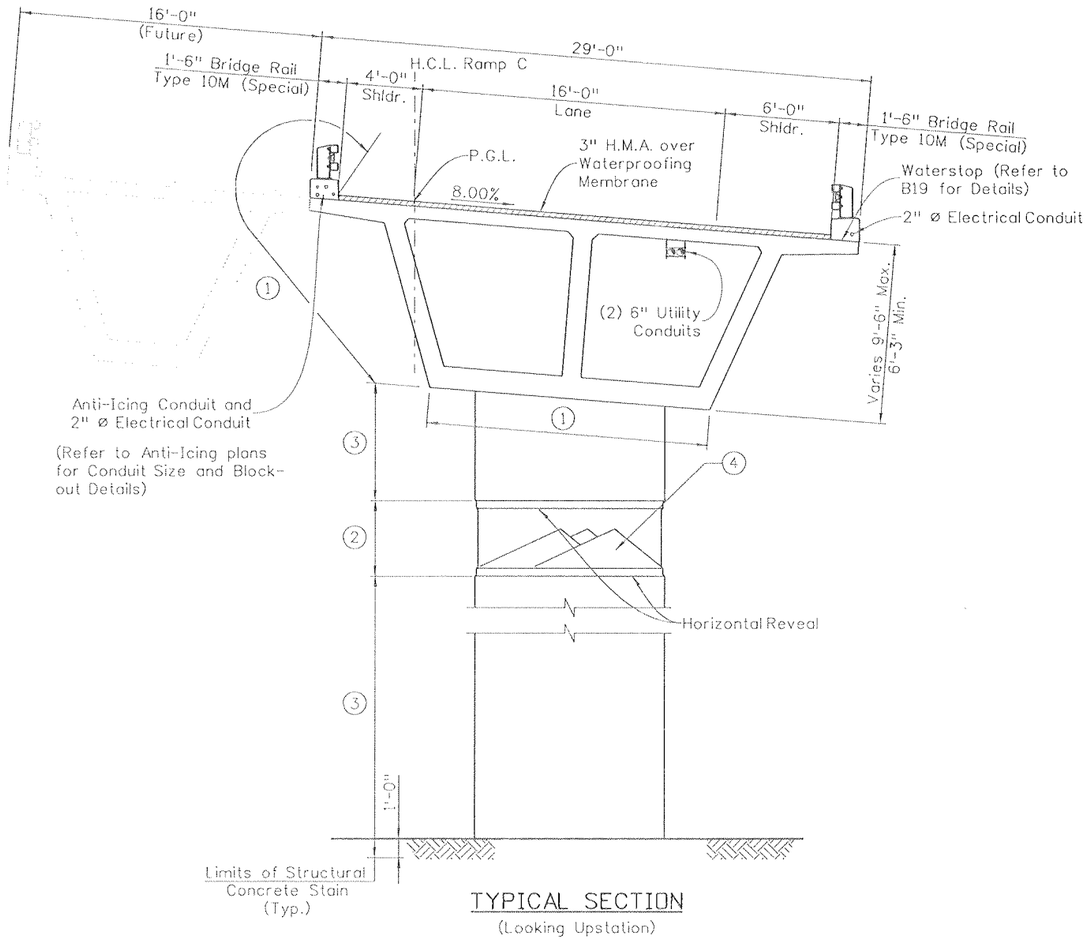
RAMP C OVER WILSON GULCH
GENERAL LAYOUT

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B3 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 269




PROFILE GRADE




TYPICAL SECTION
(Looking Upstation)

NOTE:

A colored structural concrete stain finish is required, as shown on the Plans, on all exposed concrete surfaces. Including piers, abutments, and wingwalls. Color numbers correspond to paint numbers as described by Diamond Vogel Paints.

(1) #8513 (Superstructure)

(2) #8515 (Banner Background)

(3) #8513 (Column)

(4) #8511 (Mountains)

| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | AML | 10/08 | Detailed By | DRA | 10/08 | Quantities By | AML | 10/08 |
| Checked By | MJN | 10/08 | Checked By | MJN | 10/08 | Checked By | LW | 10/08 |

| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | | Sheet Revisions | |
| File Name: 16042W_TypSection_01.dgn | | Date: | Comments |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |

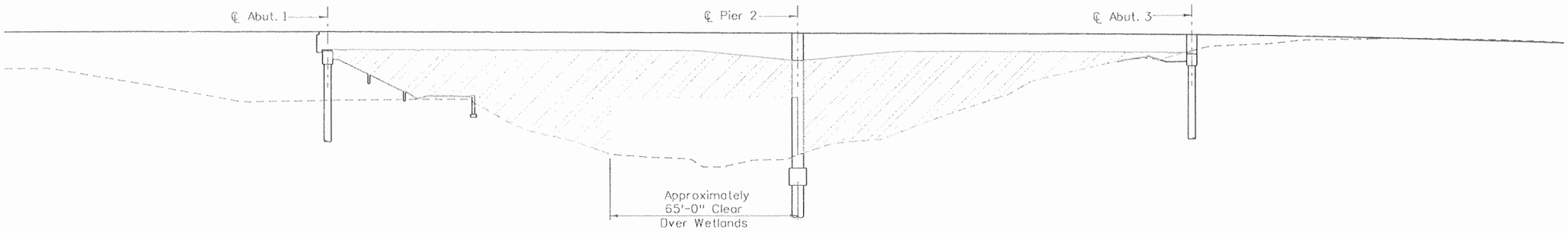
SEMA CONSTRUCTION — WILSON & COMPANY

0000

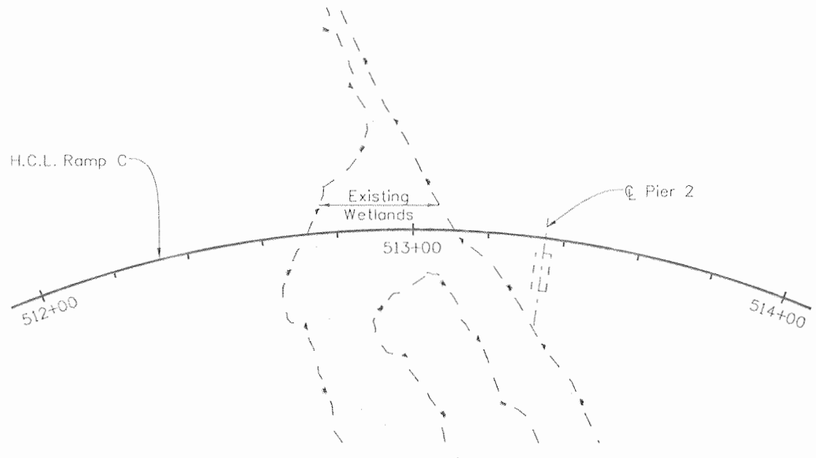
| Init. |
|---|
| |
| |
| |
| |

Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | | | |
|---|---|---|---|
| No Revisions: 9/10 | RAMP C OVER WILSON GULCH TYPICAL SECTION | | Project No./Code |
| Revised: | Designer: A. Leifheit | Structure Numbers: P-05-W | NH 1602-114 |
| Void: | Detailer: D. Anderson | | 16042 |
| | Sheet Subset: Bridge | Subset Sheets: B4 of B34 | Sheet Number 270 |




ELEVATION




PARTIAL PLAN AT PIER 2

## NOTES:

1. Wetlands shall not be disturbed during Construction.
2. Refer to Erosion Control plans for work zone limitations and access limitations within Wilson Gulch.

Locations available for falsework.

| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | | INITIAL | DATE | | | INITIAL | DATE |
| Designed By | AML | 10/08 | | Detailed By | RGA | 10/08 | | Quantities By | AML | 10/08 |
| Checked By | MJN | 10/08 | | Checked By | MJN | 10/08 | | Checked By | LW | 10/08 |

| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | | Sheet Revisions | |
| File Name: 16042W_ConstSeq_01.dgn | | Date: | Comments |
| Horiz. Scale: 1:40 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |
| SEMA CONSTRUCTION / WILSON & COMPANY | | | |

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

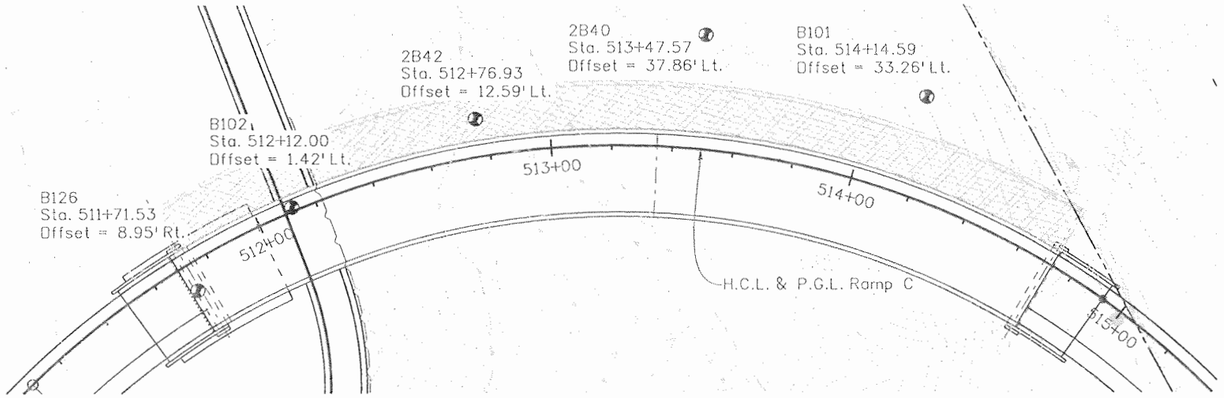
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

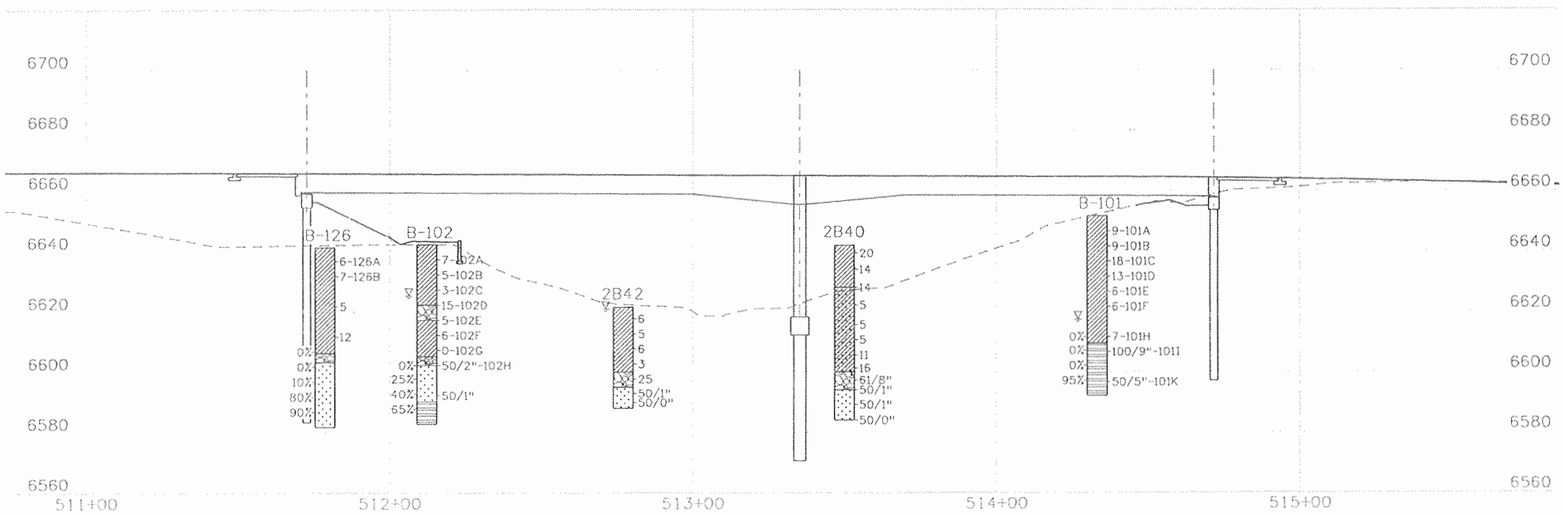
RAMP C OVER WILSON GULCH
CONSTRUCTION CONSTRAINTS

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B5 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 271 |




PLAN




## SUMMARY OF TEST RESULTS

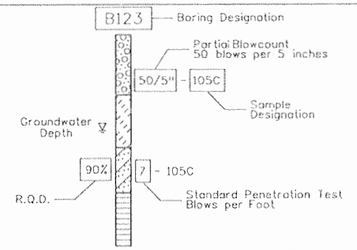
| Sample No. | Depth | Classification: Corps of Engrs. or Visual | Classification: AASHTO | Grading Analysis (AASHTO) Percent: Gravel | Coarse Sand | Fine Sand | Silt and Clay | Atterberg Limits: Liquid Limit $L_w$ | Plastic Limit $P_w$ | Plastic Limit $L_w$ | Water Content % | Dry Unit Weight P.C.F. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101-D | 19.6-21.1 | SANDY CLAY | A-6(8) | 4.8 | 7.3 | 13.1 | 74.8 | 34 | 22 | 12 | 20.7 | |
| 101-2 | 57.5-58.3 | | | | | | | | | | | 153.7 |
| 102-A | 5-6.5 | SANDY CLAY | A-6(12) | 0.6 | 4.5 | 18.0 | 76.9 | 38 | 21 | 17 | 25.0 | |
| 102-G | 35-36.5 | SANDY CLAY | A-7-6(19) | 0.3 | 2.0 | 12.5 | 85.2 | 44 | 22 | 22 | 33.1 | |
| 102-2 | 52.5-53.3 | | | | | | | | | | | 160.2 |

## TYPE OF MATERIAL

- Sandy Clay
- Shale
- Sandstone
- Clayey Sand
- Fill
- Coarse Sand - Clay
- Gravel and Cobbles

Note: Boulders may be encountered at any depth

## LEGEND




| Design | | | Detail | | | Quantities | |
|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL |
| Designed By | MCH | 10/08 | Detailed By | RGA | 10/08 | Quantities By | MCH |
| Checked By | SWT | 10/08 | Checked By | SWT | 10/08 | Checked By | LW |

Print Date: 9/22/2010
File Name: 16042W_EngGeology_01.dgn
Horiz. Scale: 1:30 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |

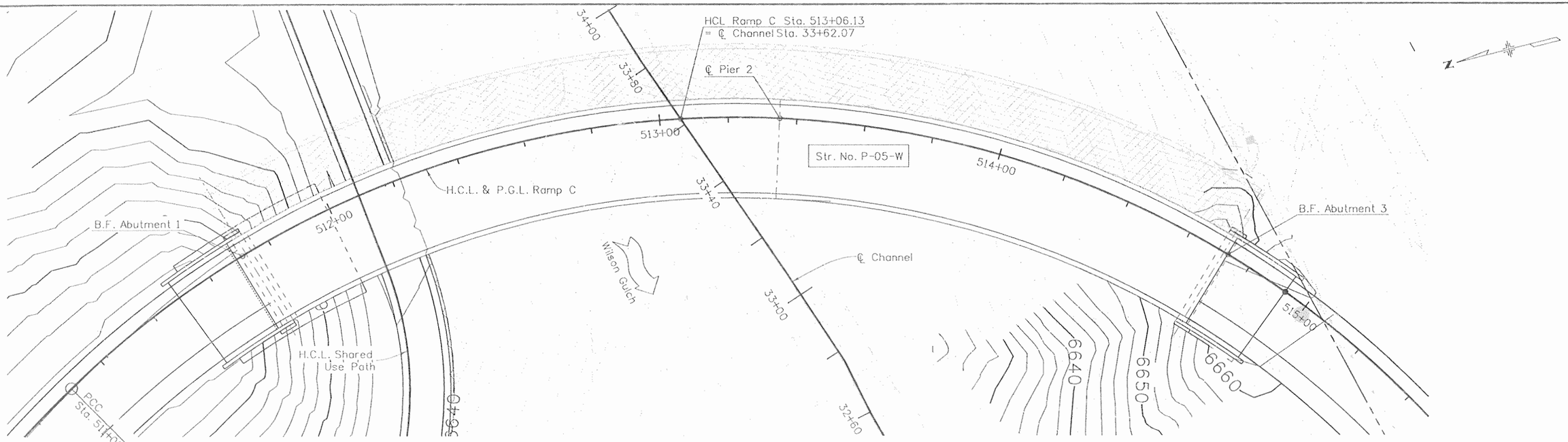
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
ENGINEERING GEOLOGY

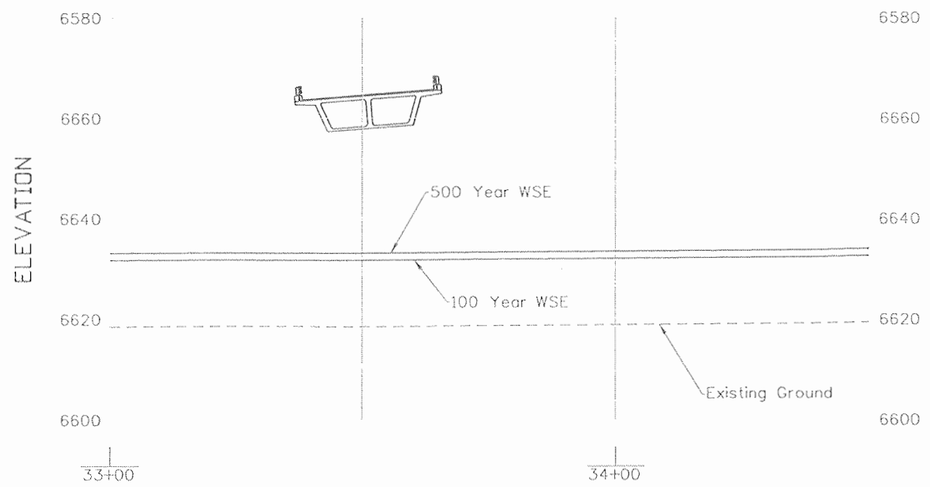
| | | | |
|---|---|---|---|
| Designer: | M. Hallman | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B6 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 272 |




PLAN

PROFILE OF WATER SURFACE




STATIONS ARE ALONG CHANNEL CENTERLINE IN FEET

| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | | INITIAL | DATE | | | INITIAL | DATE |
| Designed By | VSF | 10/08 | | Detailed By | DRA | 10/08 | | Quantities By | VSF | 10/08 |
| Checked By | TAH | 10/08 | | Checked By | TAH | 10/08 | | Checked By | LW | 10/08 |

| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | | Sheet Revisions | |
| File Name: 16042W_BHR_01.dgn | | Date: | Comments |
| Horiz. Scale: 1:30 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |
| SEMA CONSTRUCTION / WILSON & COMPANY | | | |

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
CDOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

RAMP C OVER WILSON GULCH
BRIDGE HYDRAULIC INFORMATION
(1 OF 2)

| | | | |
|---|---|---|---|
| Designer: V. Fossinger | | Structure Numbers | P-05-W |
| Detailer: D. Anderson | | | |
| Sheet Subset: Bridge | Subset Sheets: B7 of B34 | | |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 273 |

DRAINAGE AREA 7 SQUARE MILES

## CHANNEL DESCRIPTION

BOTTOM MATERIAL: COHESIVE ☐ NON-COHESIVE ■
BOTTOM MATERIAL SIZE: CLAY ☐ SILT SAND ☐ GRAVEL ■
COBBLES ☐ OTHER ☐
STREAM FORM: STRAIGHT ☐ MEANDERING ■ BRAIDED ☐
MANNINGS "n" FOR DESIGN: CHANNEL = 0.068 OVERBANK = 0.104
DEBRIS: BRUSH ☐ TREES/LOGS ☐ ICE ☐ OTHER ☐

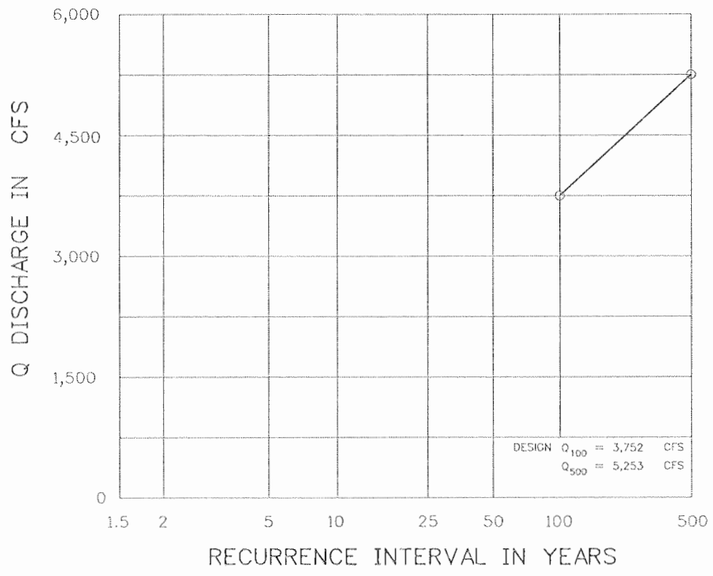
## COMPARISON OF HYDRAULICS △

| | VELOCITY | | FREEBOARD | | MAX. BACKWATER | |
|---|---|---|---|---|---|---|
| NATURAL CHANNEL | N/A | fps. | N/A | ft. | N/A | ft. |
| EXISTING CHANNEL | 5.1 | fps | N/A | ft. | N/A | ft. |
| PROPOSED CHANNEL | 5.1 | fps | 23.6 | ft. | 0.1 | ft. |

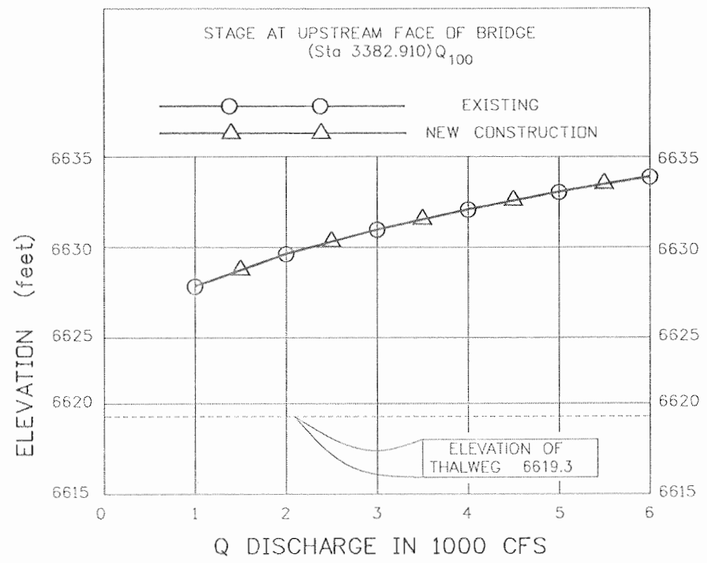
△ AT PROPOSED BRIDGE LOCATION DURING DESIGN DISCHARGE (Q100)

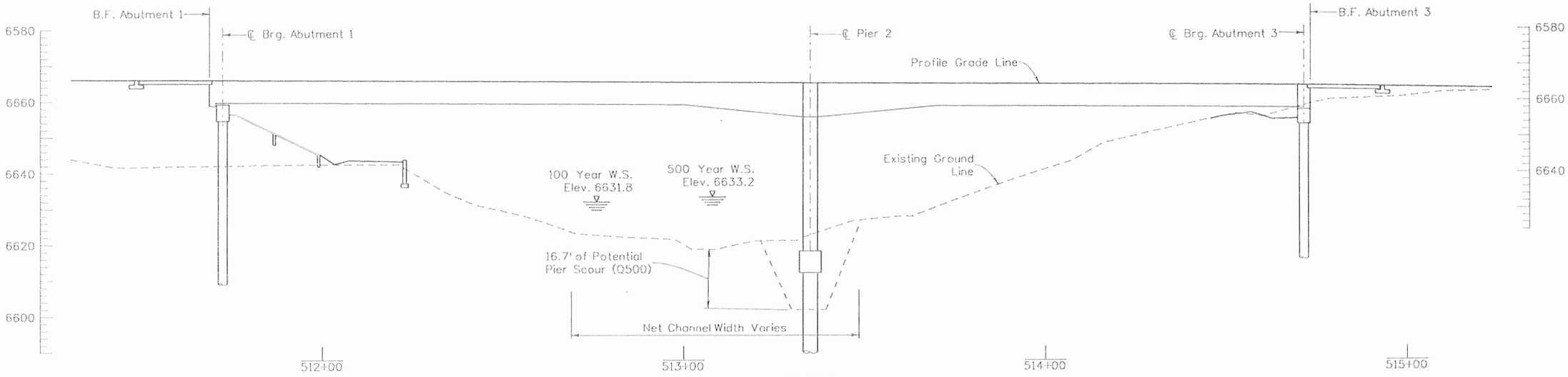
*THE SCOUR LIMITS AND RIVER FLOW RATES MAY BE FOUND IN THE REPORT BY WILSON & COMPANY, DATED JULY 2008, ENTITLED "FINAL DRAINAGE REPORT FOR US 550 AND US-160 INTERCHANGE".*

## DISCHARGE-FREQUENCY




## STAGE-DISCHARGE




## SECTION

(Taken Along PGL)

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | VSF | 10/08 |
| Checked By | LW | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | TAH | 10/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | VSF | 10/08 |
| Checked By | TAH | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_BHR_02.dgn
Horiz. Scale: 1:30 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

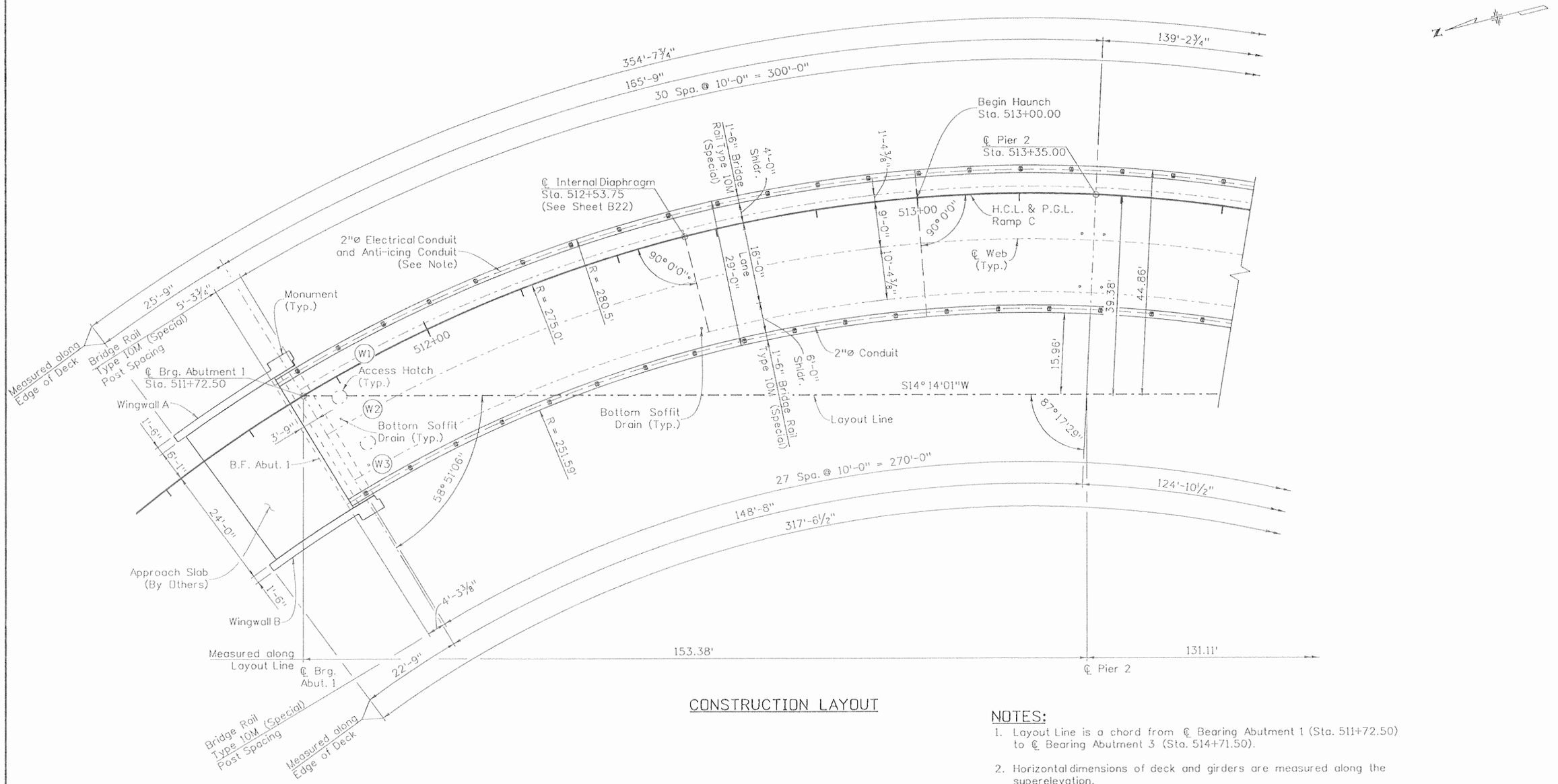

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
BRIDGE HYDRAULIC INFORMATION
(2 OF 2)

Designer: V. Fossinger
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B8 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 274




## CONSTRUCTION LAYOUT

**NOTES:**

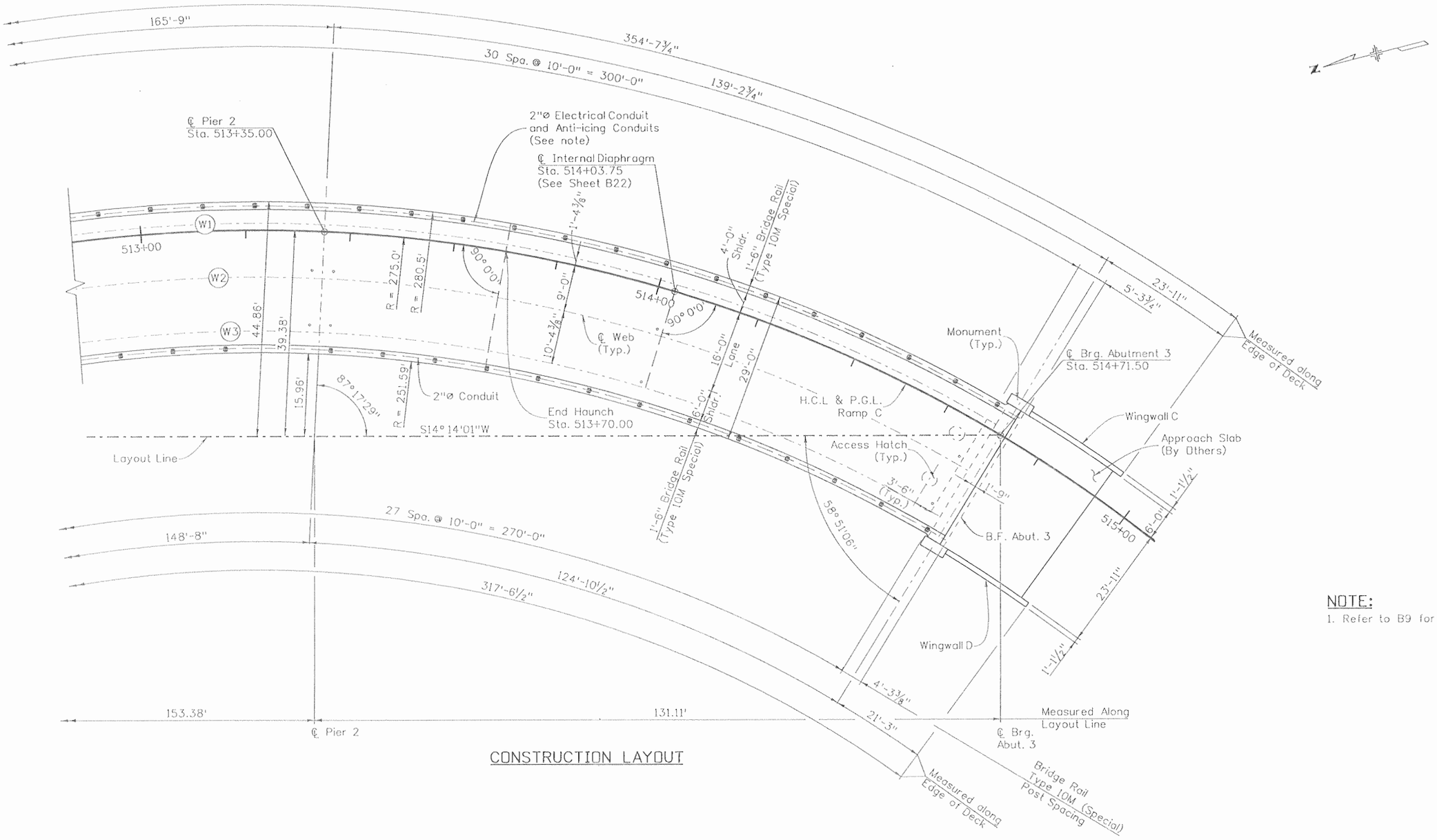
1. Layout Line is a chord from ℄ Bearing Abutment 1 (Sta. 511+72.50) to ℄ Bearing Abutment 3 (Sta. 514+71.50).
2. Horizontal dimensions of deck and girders are measured along the superelevation.
3. Girders are measured from ℄ Web to ℄ Web at top of concrete deck.
4. Refer to Anti-icing Plans for additional conduit size and location. A minimum of (1) 2"ø conduit shall be placed in each curb. Project conduits a minimum of 2'-0" from curb ends.

| Design | | | Detail | | | Quantities | |
|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL |
| Designed By | AML | 10/08 | Detailed By | RGA | 10/08 | Quantities By | AML |
| Checked By | MJN | 10/08 | Checked By | MJN | 10/08 | Checked By | LW |

| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | Sheet Revisions | | |
| File Name: 16042W_ConstLay_01.dgn | Date: | Comments | Init. |
| Horiz. Scale: 1:30 Vert. Scale: As Noted | | | |
| Unit Information 0221 Unit Leader STW | | | |
| SEMA CONSTRUCTION / WILSON & COMPANY | | | |


Colorado Department of Transportation
CDOT — Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | | | | |
|---|---|---|---|---|
| No Revisions: 9/10 | RAMP C OVER WILSON GULCH CONSTRUCTION LAYOUT (1 OF 2) | | | Project No./Code |
| Revised: | Designer: A. Leifheit | Structure Numbers | P-05-W | NH 1602-114 |
| Void: | Detailer: R. Artman | | | 16042 |
| | Sheet Subset: Bridge | Subset Sheets: B9 of B34 | | Sheet Number 275 |




CONSTRUCTION LAYOUT

NOTE:

1. Refer to B9 for notes.

| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | | INITIAL | DATE | | | INITIAL | DATE |
| Designed By | AML | 10/08 | | Detailed By | RGA | 10/08 | | Quantities By | AML | 10/08 |
| Checked By | MJN | 10/08 | | Checked By | MJN | 10/08 | | Checked By | LW | 10/08 |

| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | Sheet Revisions | | |
| File Name: 16042W_ConstLay_02.dgn | Date: | Comments | Init. |
| Horiz. Scale: 1:30 Vert. Scale: As Noted | | | |
| Unit Information 0221 Unit Leader STW | | | |
| SEMA CONSTRUCTION / WILSON & COMPANY | | | |

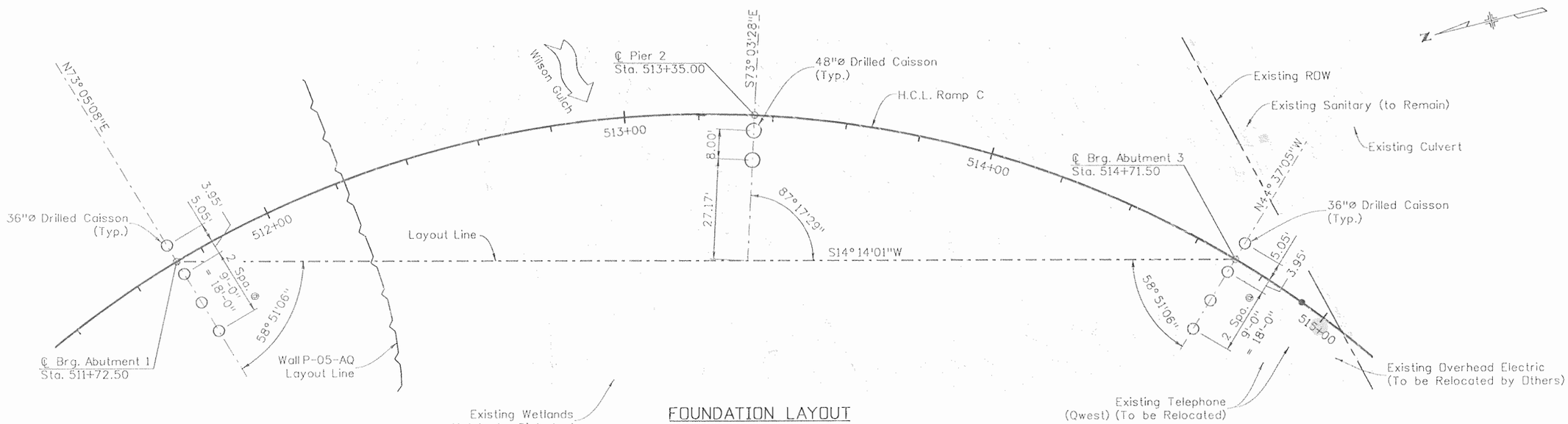
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
CONSTRUCTION LAYOUT (2 OF 2)

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B10 of B34 |

| | |
|---|---|
| Project No./Code | NH 1602-114 |
| | 16042 |
| Sheet Number | 276 |




## FOUNDATION LAYOUT

**NOTE:**
Layout line is a chord from
℄ Abutment 1 (Sta. 511+72.50) to
℄ Abutment 3 (Sta. 514+71.50)

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | MJN | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 10/08 |
| Checked By | MJN | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS
BEFORE YOU DIG
CALL 811
(or 1-800-922-1987)
UTILITY NOTIFICATION
CENTER OF COLORADO (UNCC)
www.uncc.org

| | |
|---|---|
| Print Date: 9/22/2010 | |
| File Name: 16042W_FoundLay_01.dgn | |
| Horiz. Scale: 1:30 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

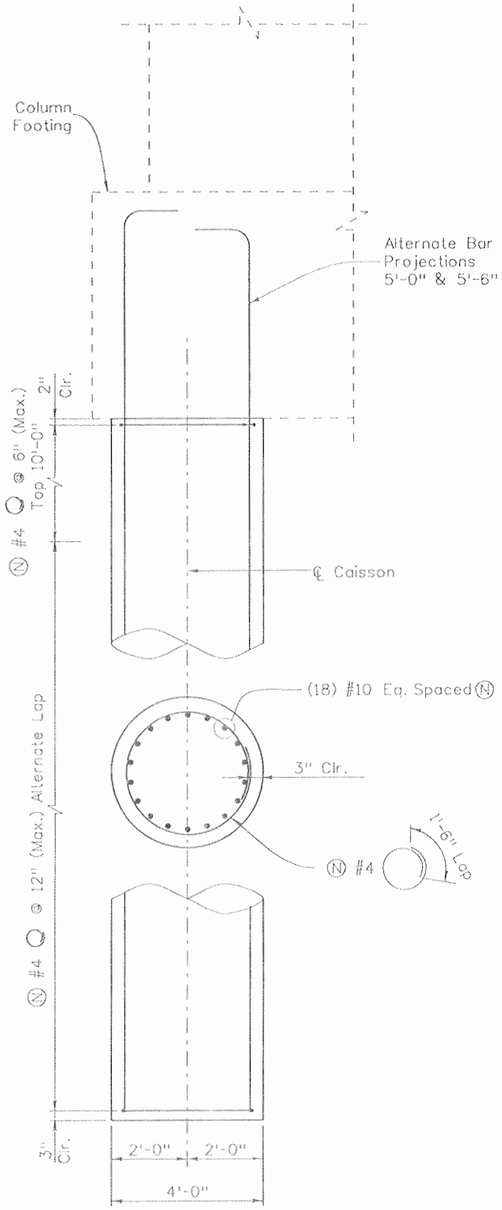

Colorado Department of Transportation
CDOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

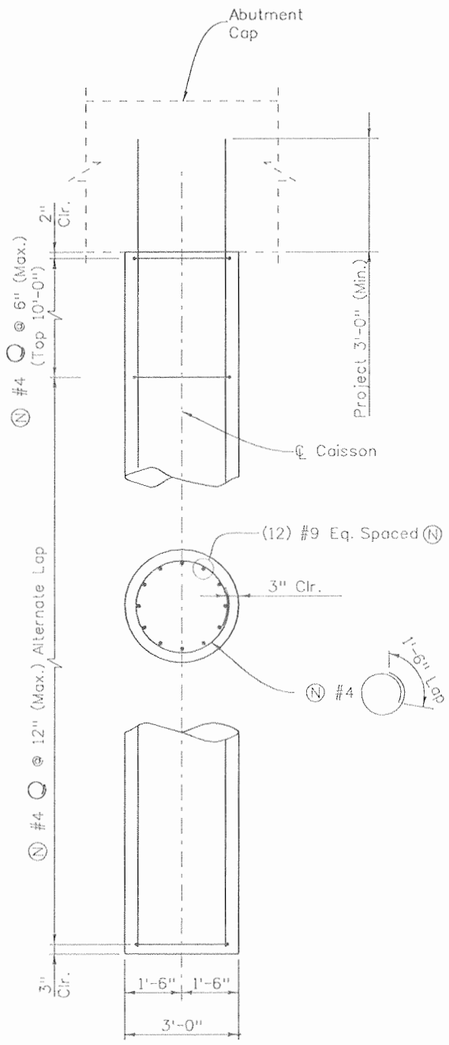
RAMP C OVER WILSON GULCH
FOUNDATION LAYOUT

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B11 of B34 |

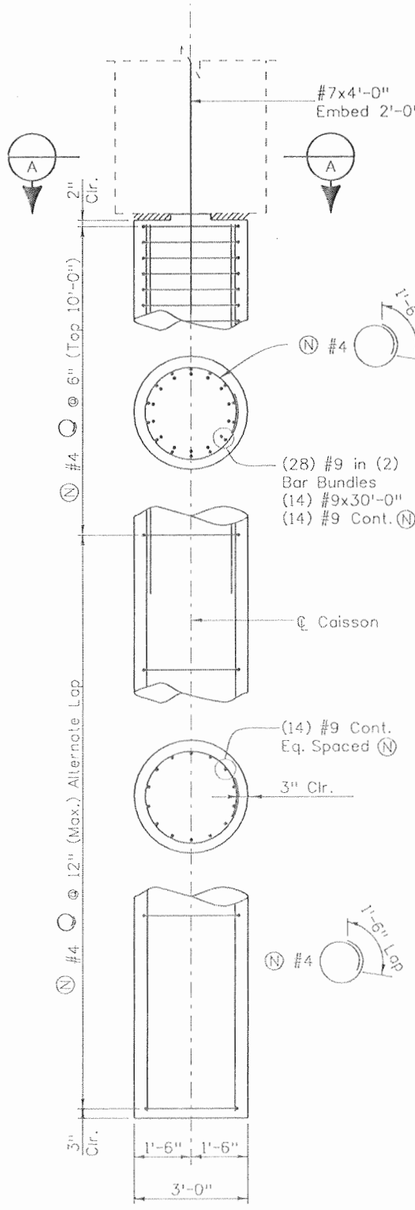
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 277 |




48" CAISSON DETAIL




ABUTMENT 1
36" CAISSON DETAIL




ABUTMENT 3
36" CAISSON DETAIL

| CAISSON DATA | | | | | | | |
|---|---|---|---|---|---|---|---|
| Location | Caisson Size | Top of Caisson Elevation | Minimum Tip Elevation | Min. Penetration Into. Bedrock | Max. Factored Load (kip) | Estimated Bedrock Elevation | Measured Bedrock Elevation |
| Abut. 1 | 36" | 6651.35 | 6583.00 | 20'-0" | 1328 | 6603.00 | **6600.35** |
| Pier 2 | 48" | 6613.50 | 6570.00 | 25'-0" | 2255 | 6595.00 | **6595.00** |
| Abut. 3 | 36" | 6651.76 | 6596.00 | 19'-0" | 460 | 6615.00 | **6615.00** |

## NOTES:

1. Caisson concrete shall be concrete Class BZ ($f'_c$ = 4000 psi).
2. Lap splices in caisson tie bar shall alternate 180°. Lap splices of longitudinal bars shall be staggered and shall be:

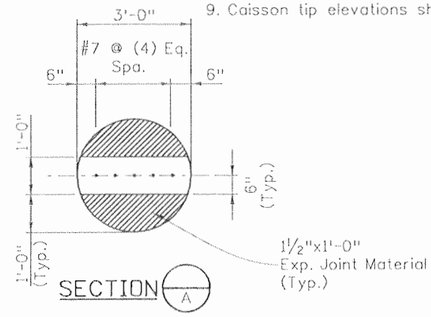
   #10 5'-2"
   #9 4'-1"
3. Foundation design based upon recommendation provided by Shannon & Wilson, Inc.

   Nominal End Bearing: 110 ksf
   End Bearing Resistance Factor: 0.75

   Nominal Side Shear: 9 ksf
   Side Shear Resistance Factor: 0.75
4. All caissons shall be Impact Echo tested per the Project Special Provisions.
5. A factored downdrag force of 438 kips/caisson is included in the abutment 1 factored loads.
6. Lateral reduction factors (p-multipliers) used in the lateral pile analysis include:

| | Transverse | Longitudinal |
|---|---|---|
| Abutments | 0.72 | 1.00 |
| Pier | 0.28 | 0.75 |

7. If groundwater inflow is encountered, casing should be used to seal off local groundwater inflow. Casing should be pushed, rotated, vibrated, or driven into an impermeable, firm stratum below the seepage zone. If the casing is extended into bedrock, the minimum bedrock penetration shall be increased by a length equivalent to the casing protrusion into bedrock.
8. If a wet hole is encountered and casing cannot be used, drilling slurry shall not be used and concrete shall be placed in accordance with Section 601.12(f) of the Standard Specifications.
9. Caisson tip elevations shall not be reduced.




SECTION A

| Design | | | | Detail | | | | Quantities | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | AML | 10/08 | Detailed By | DRA | 10/08 | Quantities By | AML | 10/08 |
| Checked By | MJN | 10/08 | Checked By | MJN | 10/08 | Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_DrillShaftDet_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

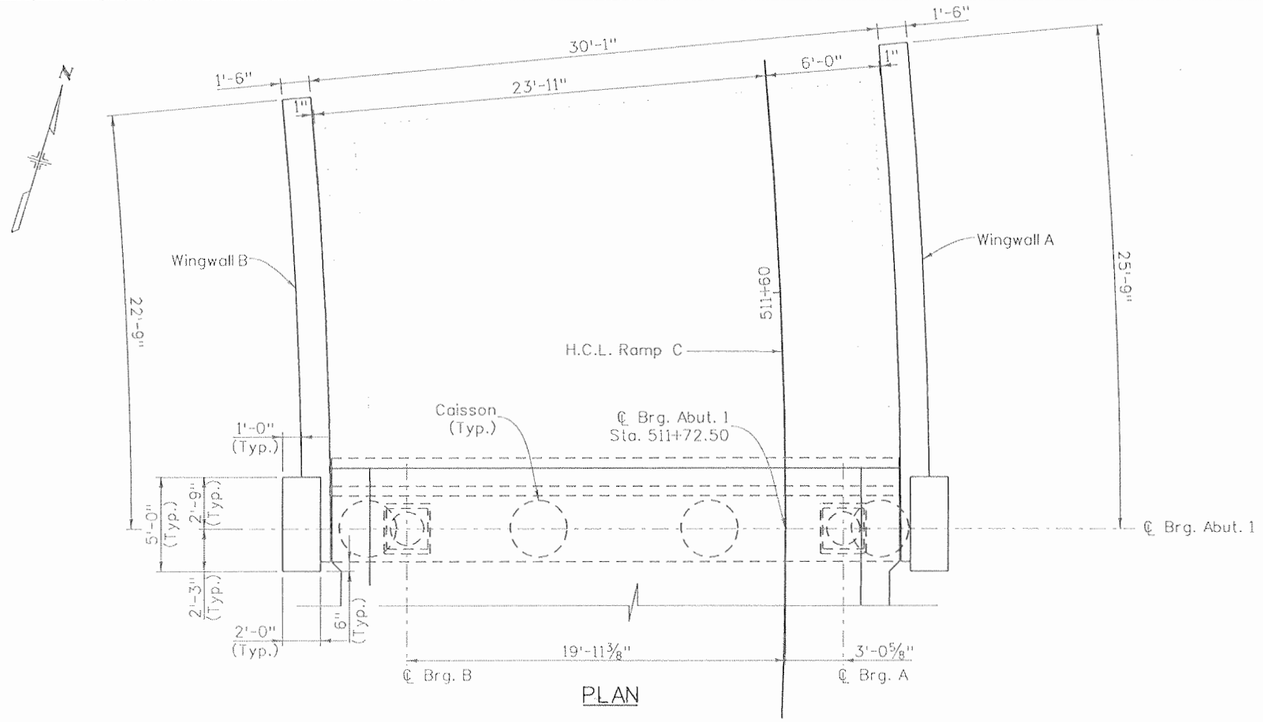
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions:
Revised: 9/10
Void:

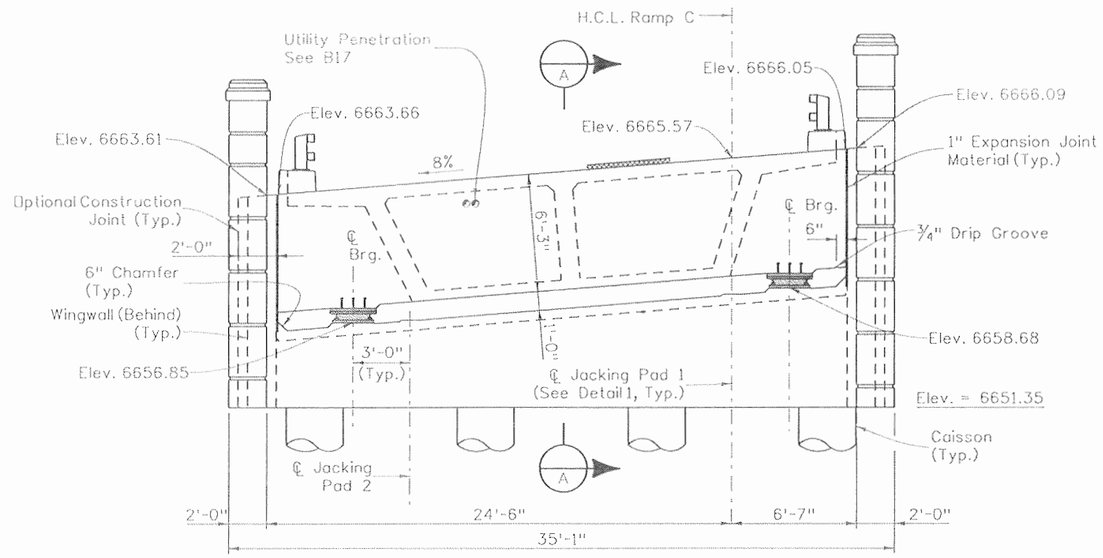
RAMP C OVER WILSON GULCH
DRILLED CAISSON DETAILS

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B12 of B34

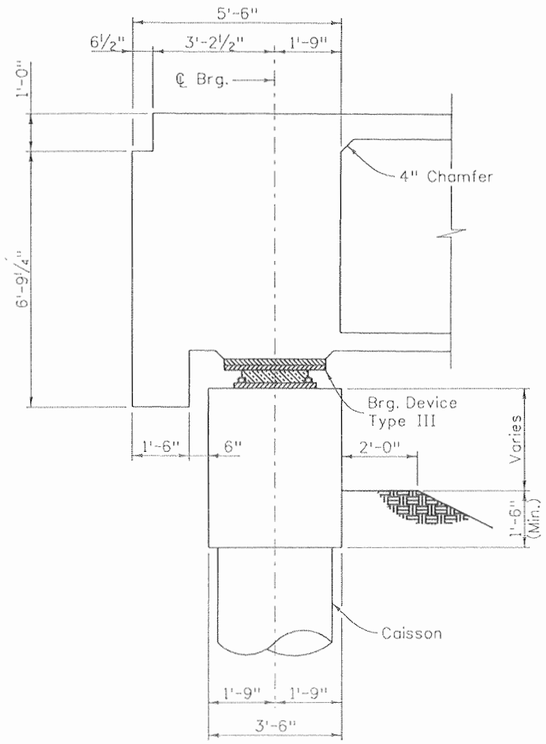
Project No./Code
NH 1602-114
16042
Sheet Number 278



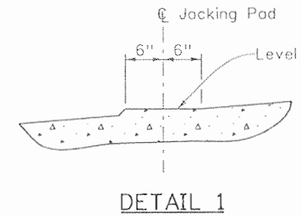

PLAN




ELEVATION




SECTION A




DETAIL 1

NOTE:

The estimated force required for jacking under DL is 439 Kips at pad 1 and 135 Kips at pad 2.

NOTES:

1. Abutments shall be concrete Class D (Bridge) (f'c = 4,500 psi).
2. Elevations are taken at ℄ Brg. Abutment, top of concrete.
3. Elevations are based upon a total bearing thickness (H) of 9 inches. Elevations shall be adjusted by the contractor if required. Contractor shall notify engineer of any elevation adjustments.
4. See sheet B17 for utility penetration details.
5. See sheet B28 for curb modifications at abutments.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | AML | 10/08 |
| Checked By: | LW | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 10/08 |
| Checked By: | MJN | 10/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | AML | 10/08 |
| Checked By: | MJN | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_Abutment1_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

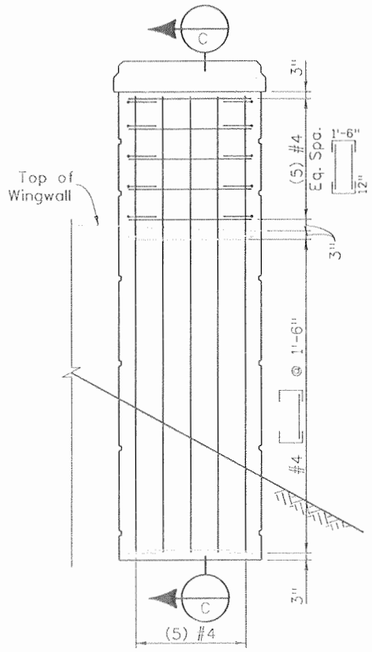
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

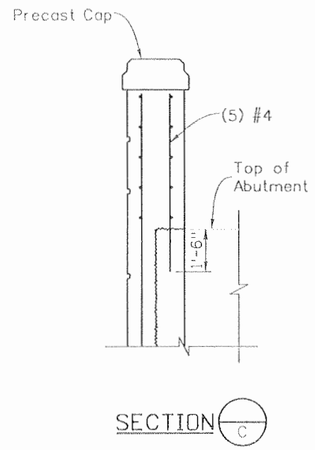
RAMP C OVER WILSON GULCH
ABUTMENT 1 DETAILS

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B13 of B34

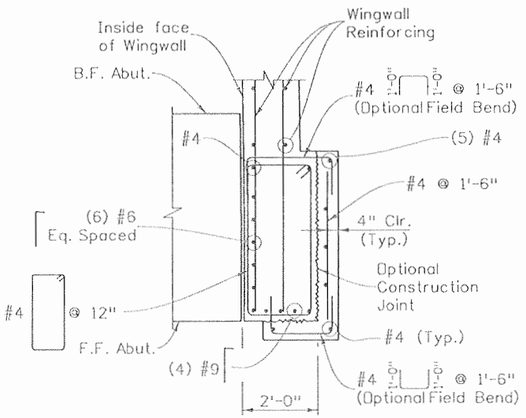
Project No./Code
NH 1602-114
16042
Sheet Number 279



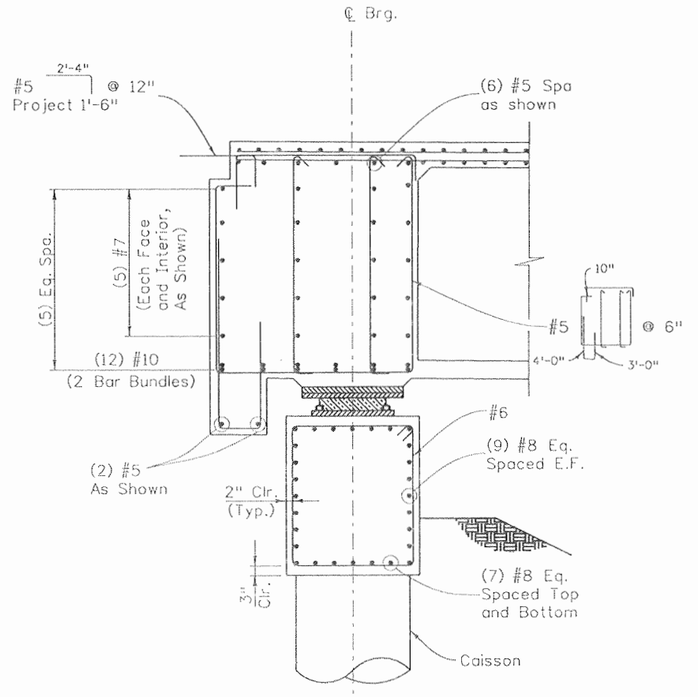

TYPICAL MONUMENT REINFORCING



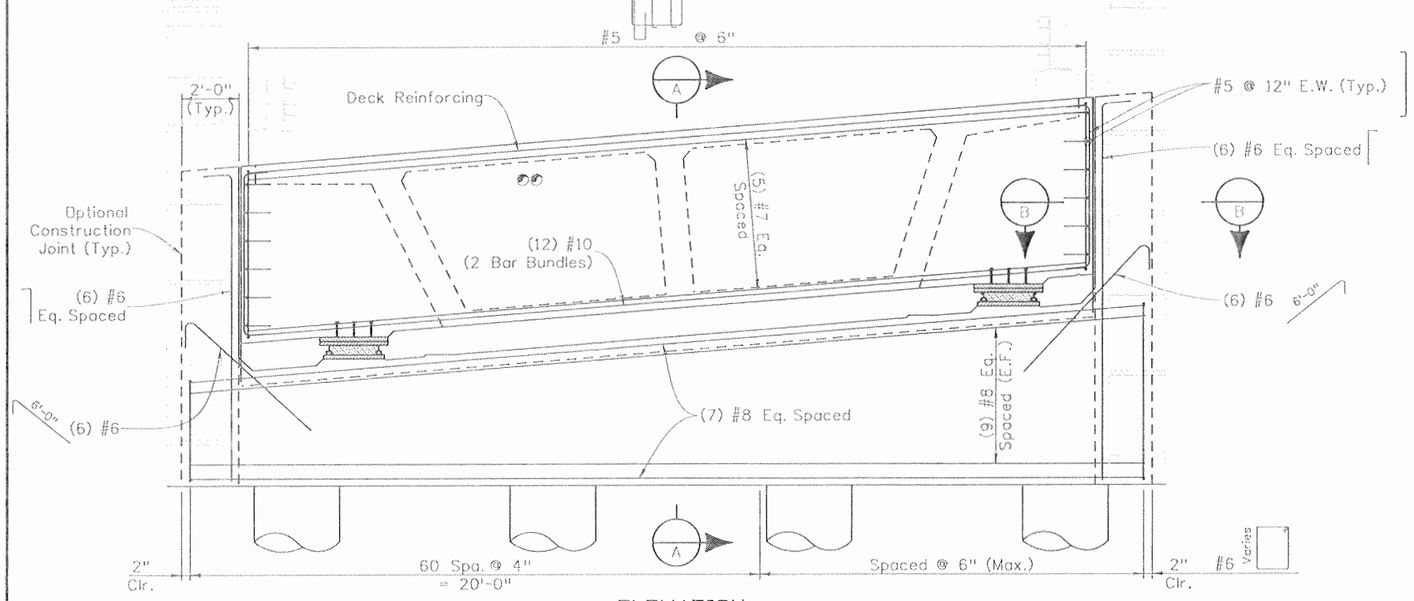

SECTION C




SECTION B




SECTION A




ELEVATION

NOTES:

1. Abutments shall be concrete Class D (Bridge) (f'c = 4,500 psi).
2. Coordinate Utility Penetration to miss Reinforcing. See Sheet B17 for details.

| Quantities | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Detailed By | LW | 10/08 |
| Quantities By | | |
| Checked By | | |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | MJN | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 10/08 |
| Checked By | MJN | 10/08 |

| | | |
|---|---|---|
| Print Date: 9/22/2010 | | |
| File Name: 16042W_Abutment1_Reinf_01.dgn | | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted | |
| Unit Information 0221 | Unit Leader STW | |

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

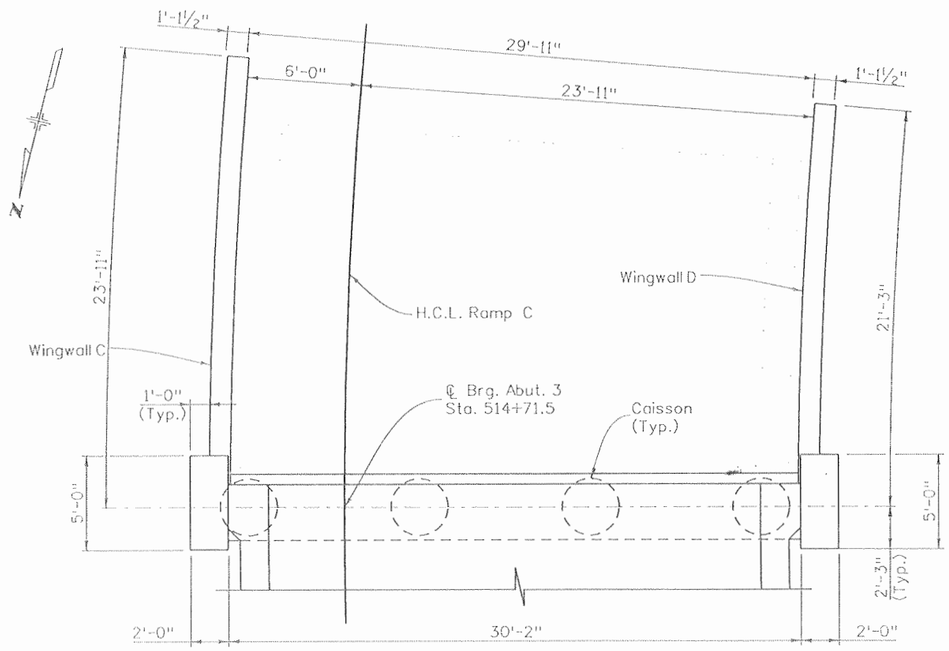
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

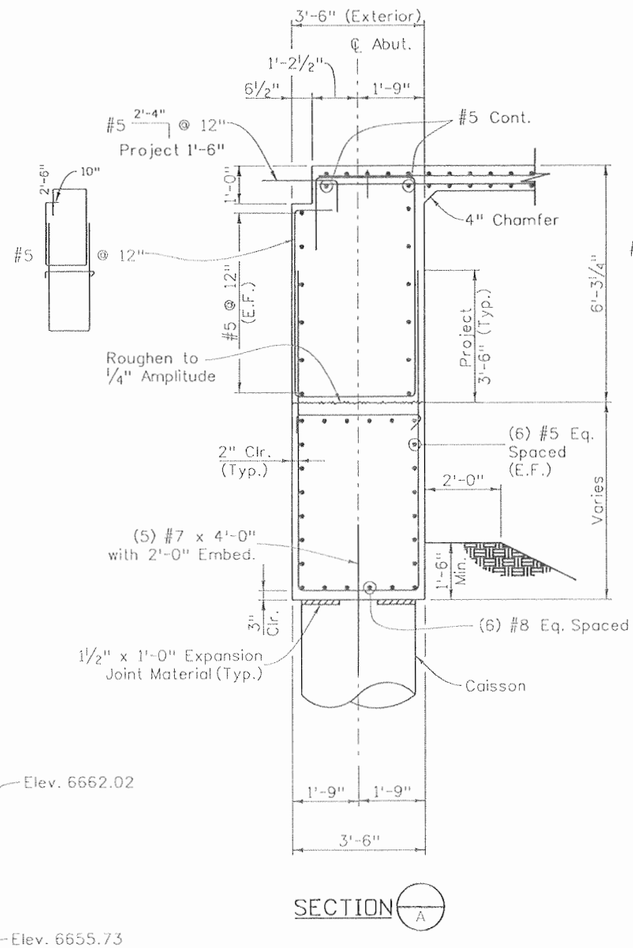
RAMP C OVER WILSON GULCH
ABUTMENT 1 REINFORCING DETAILS

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B14 of B34 |

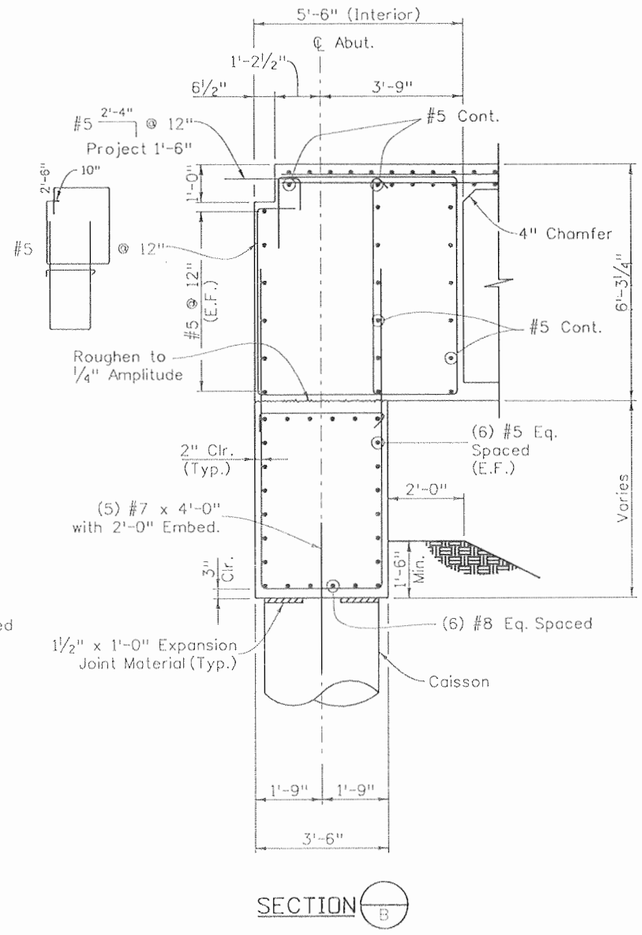
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 280 |



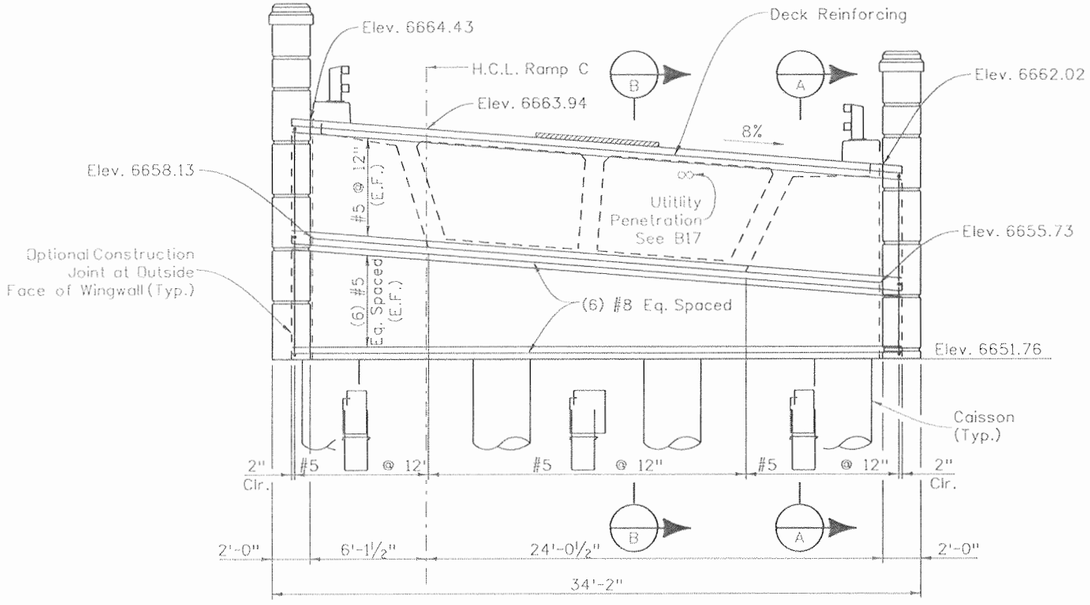

PLAN




SECTION (A)




SECTION (B)




ELEVATION

## NOTES:

1. Abutments shall be concrete Class D (Bridge) (f'c = 4,500 psi).
2. Coordinate utility penetration to miss reinforcing. See sheet B17 for utility penetration details.
3. See sheet B16 for monument reinforcing at abutment 3.
4. See sheet B28 for curb modifications at abutments.
5. Elevations are taken at top of deck, centerline brg. abutment.

| Design | Initial | Date |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | MJN | 10/08 |

| Detail | Initial | Date |
|---|---|---|
| Detailed By | RGA | 10/08 |
| Checked By | MJN | 10/08 |

| Quantities | Initial | Date |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_Abutment3_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |

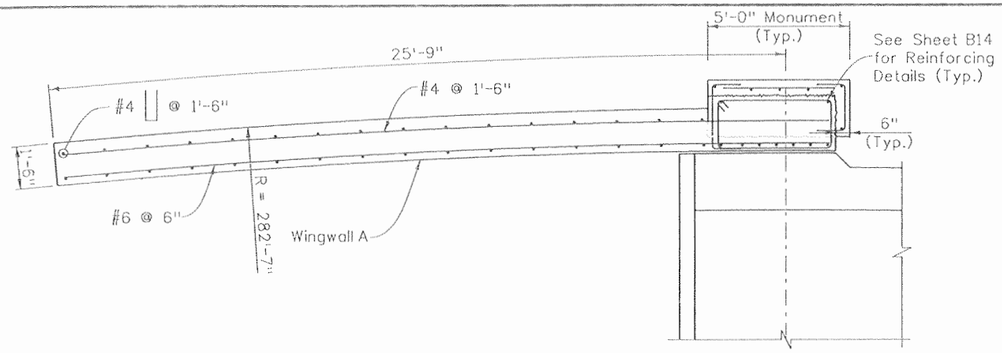
Colorado Department of Transportation
DOT — Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

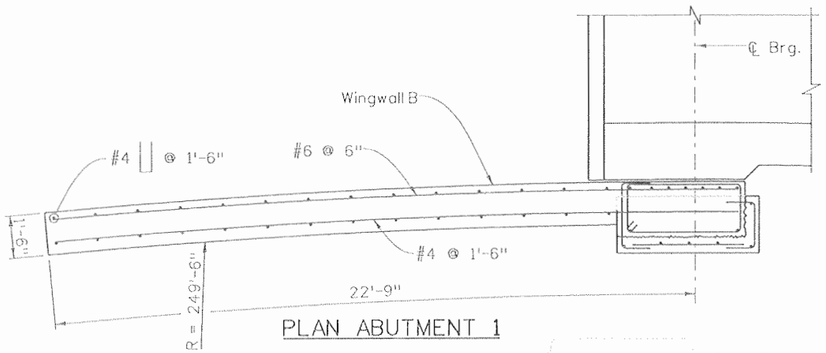
As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
ABUTMENT 3 DETAILS

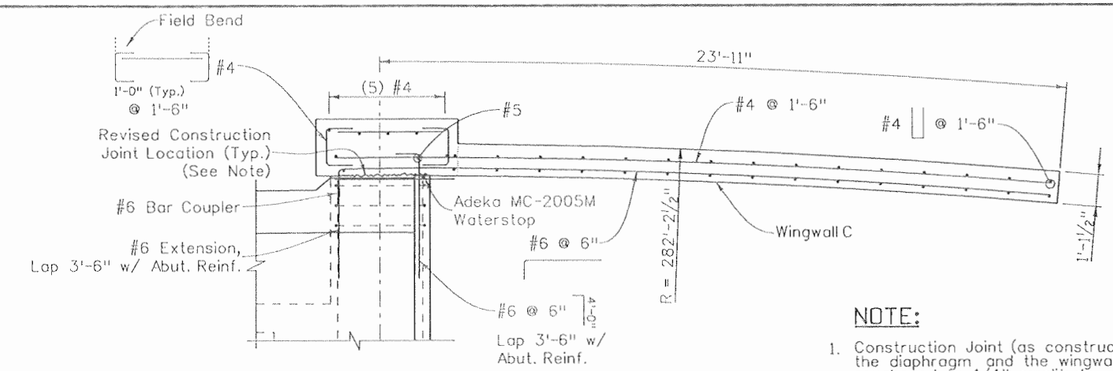
Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B15 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 281



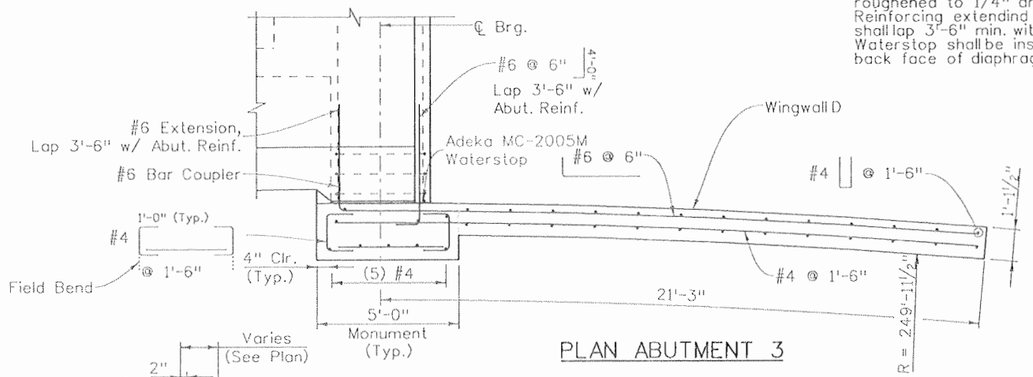




PLAN ABUTMENT 1

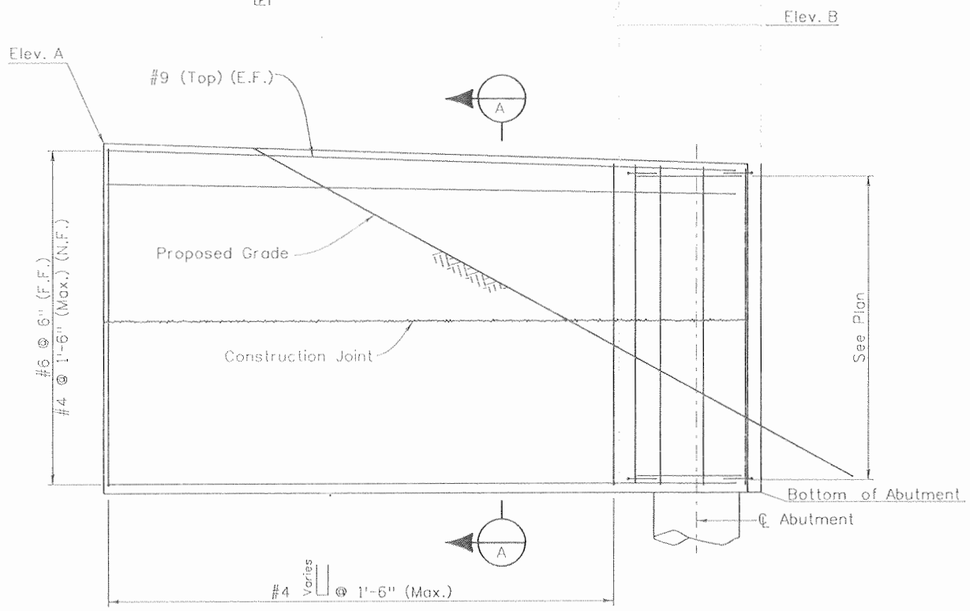



NOTE:

1. Construction Joint (as constructed) is between the diaphragm and the wingwall. Joint shall be roughened to 1/4" amplitude. Reinforcing extending from construction joint shall lap 3'-6" min. with diaphragm reinforcing. Waterstop shall be installed 4" from back face of diaphragm.




PLAN ABUTMENT 3




ELEVATION




SECTION A

| TABLE OF ELEVATIONS | | |
|---|---|---|
| Wingwall | Elev. A | Elev. B |
| A | 6666.16 | 6671.09 |
| B | 6663.76 | 6668.61 |
| C | 6664.10 | 6669.43 |
| D | 6661.70 | 6667.02 |

NOTE:

1. All Wingwall and Monument concrete shall be Class D (Bridge), f'c = 4,500 psi at 28 days.
2. For Monument Reinforcing Details above Wingwalls, see Sheet B14.
3. The maximum depth of the form liner reveals shall not exceed 1½".

| Quantities | INITIAL | DATE |
|---|---|---|
| Detail | RGA | 10/08 |
| Detailed By | MJN | 10/08 |
| Checked By | | |
| Designed By | AML | 10/08 |
| Quantities By | LW | 10/08 |
| Checked By | | |

Print Date: 9/22/2010
File Name: 16042W_WingwallDet_01-REV.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

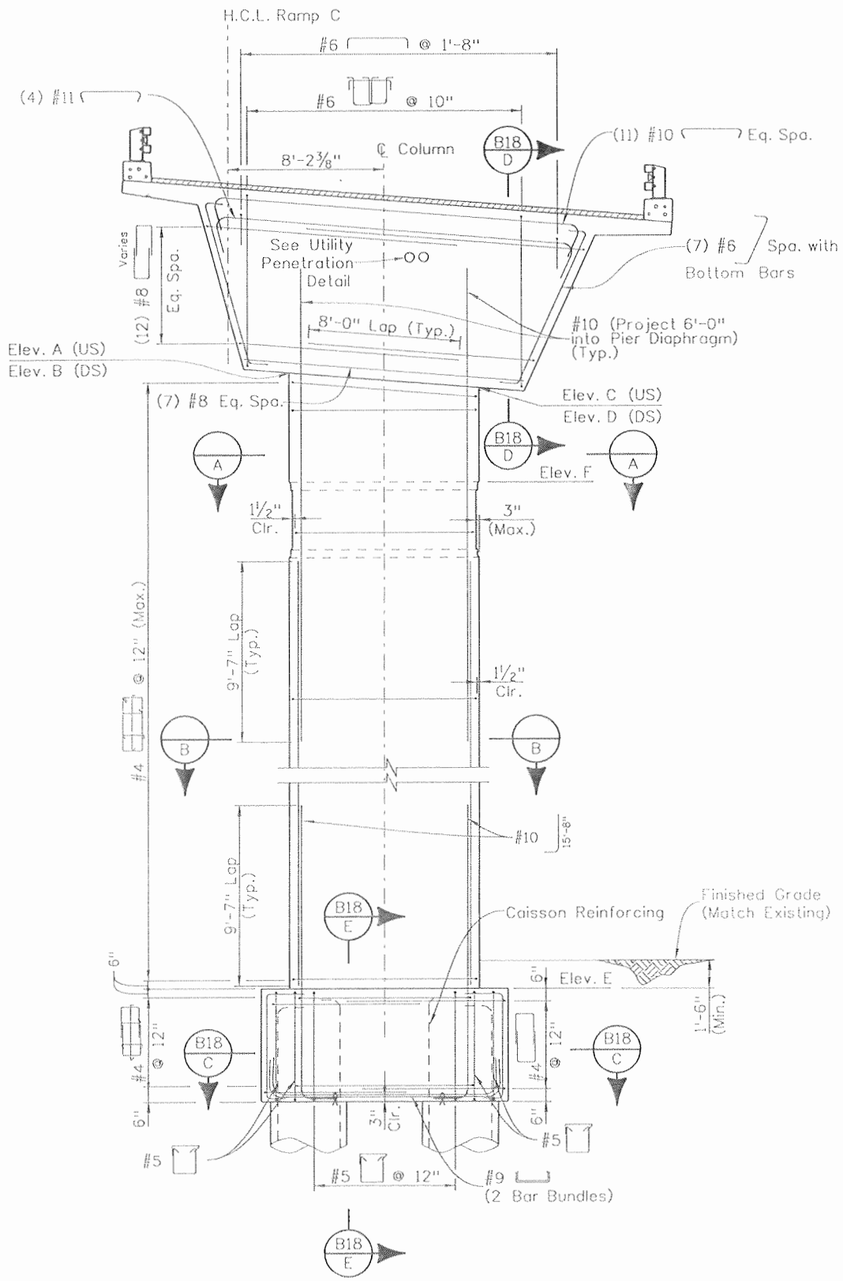
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions:
Revised: 9/10
Void:

RAMP C OVER WILSON GULCH
WINGWALL DETAILS

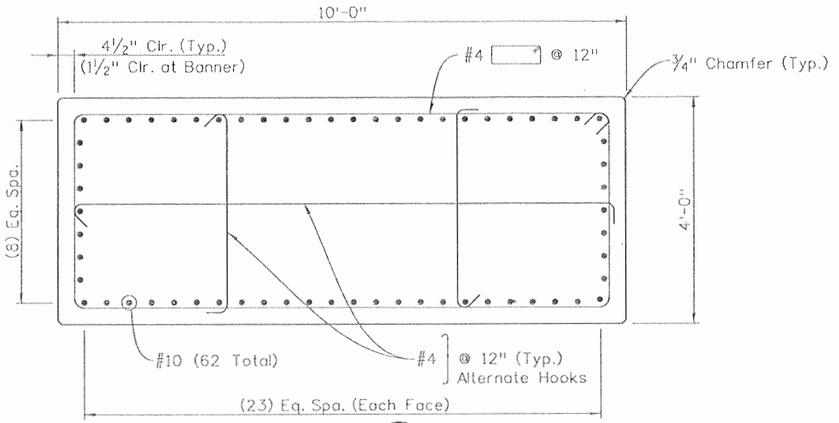
| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B16 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 282 |

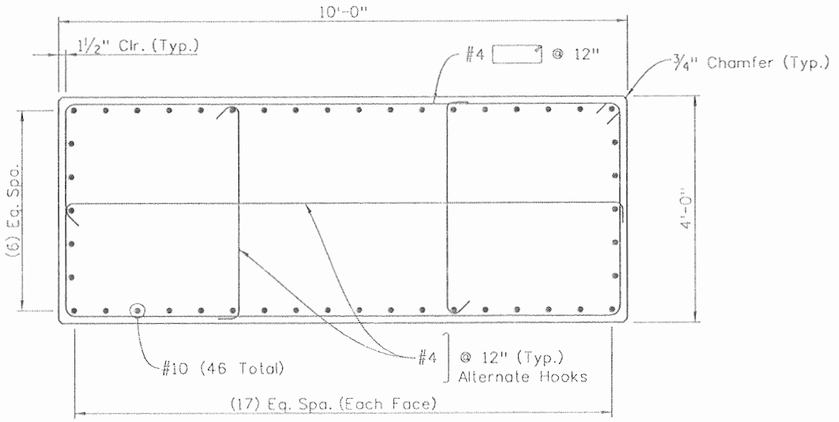



ELEVATION

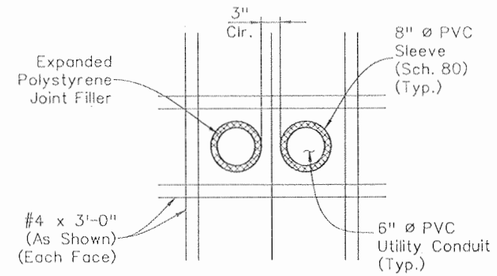
(Deck Reinforcing Not Shown for Clarity)




SECTION A




SECTION B




UTILITY PENETRATION

TABLE OF ELEVATIONS

| Location | Pier 2 |
|---|---|
| A | 6654.96 |
| B | 6654.98 |
| C | 6654.16 |
| D | 6654.18 |
| E | 6619.50 |
| F | 6649.18 |

NOTES:

1. Column concrete shall be Class D (Bridge), $f'_c$ = 4,500 psi at 28 days.
2. All reinforcing is 2" clear unless noted otherwise.
3. Utility duct penetration shall be coordinated to miss reinforcing.
4. A minimum of 1'-6" of earth cover shall be provided over the completed footing.
5. The maximum reveal depth at the banner location shall not exceed 3".

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | AML | 10/08 |
| Checked By: | MJN | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 10/08 |
| Checked By: | MJN | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | AML | 10/08 |
| Checked By: | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_Pier23Det_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |

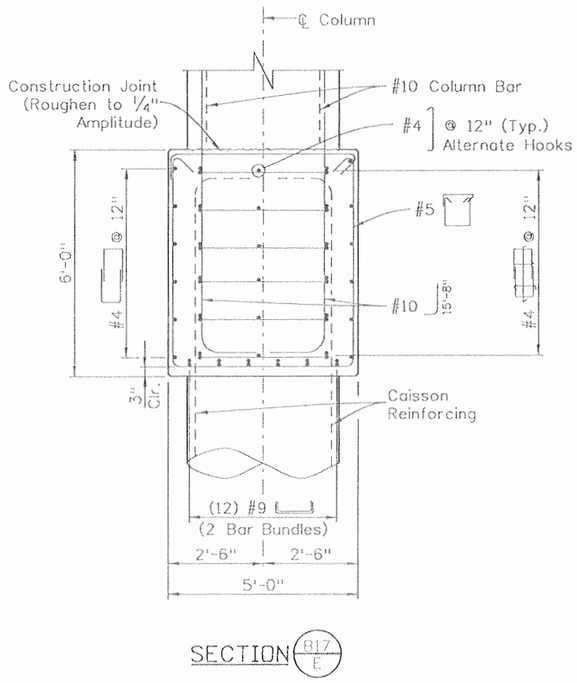
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

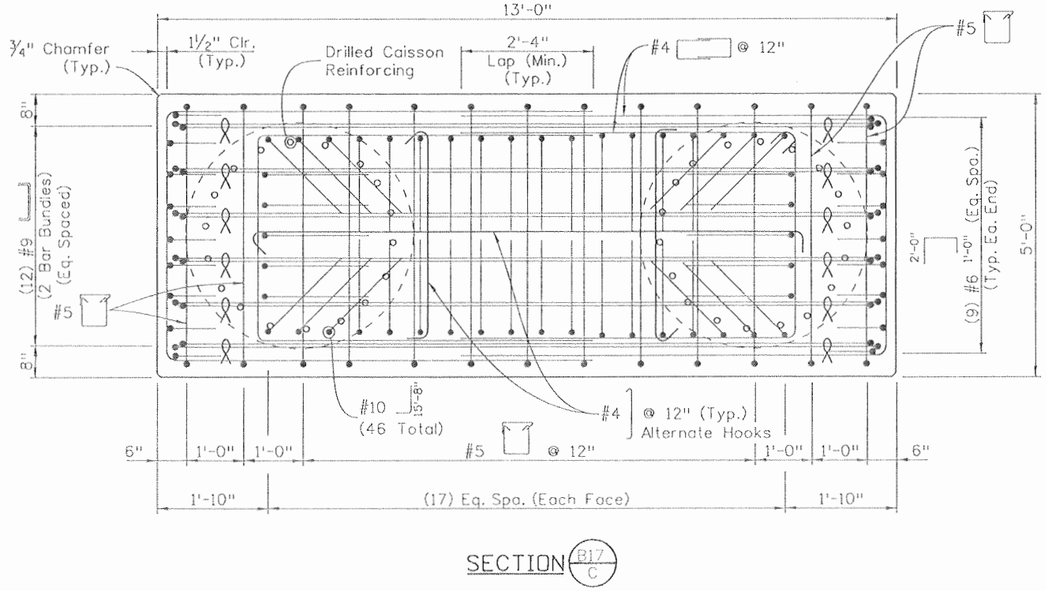
RAMP C OVER WILSON GULCH
PIER 2 DETAILS
(1 OF 2)

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B17 of B34

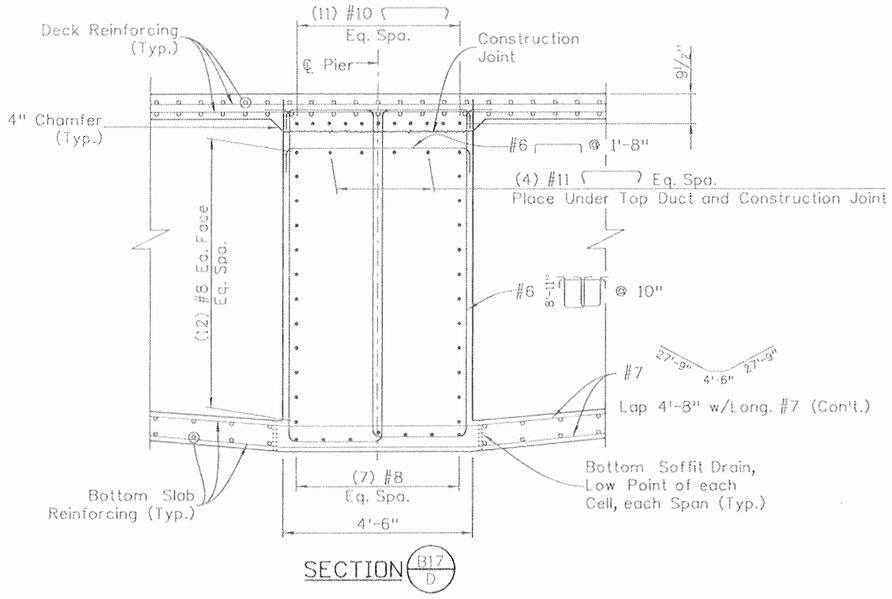
Project No./Code
NH 1602-114
16042
Sheet Number 283




SECTION B17/E




SECTION B17/C




SECTION B17/D

NOTES:

1. Column concrete shall be Class D (Bridge), $f'_c$ = 4,500 psi at 28 days.
2. All concrete cover is 2" clear unless noted otherwise.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | MJN | 10/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | MJN | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_Pier23Det_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

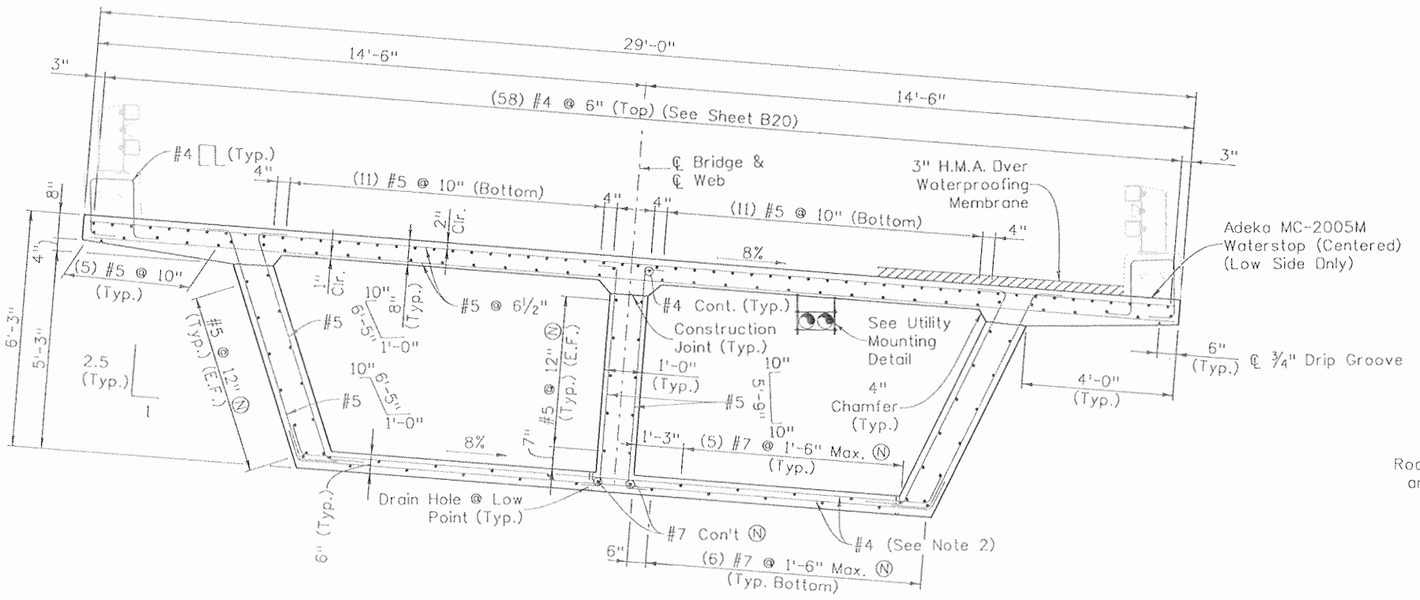
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

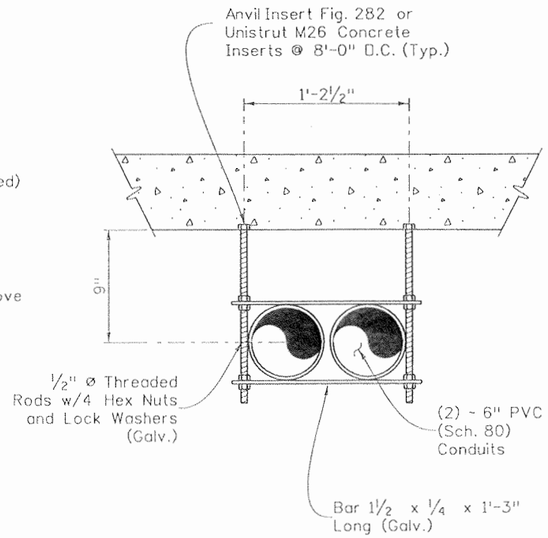
RAMP C OVER WILSON GULCH
PIER 2 DETAILS
(2 OF 2)

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B18 of B34

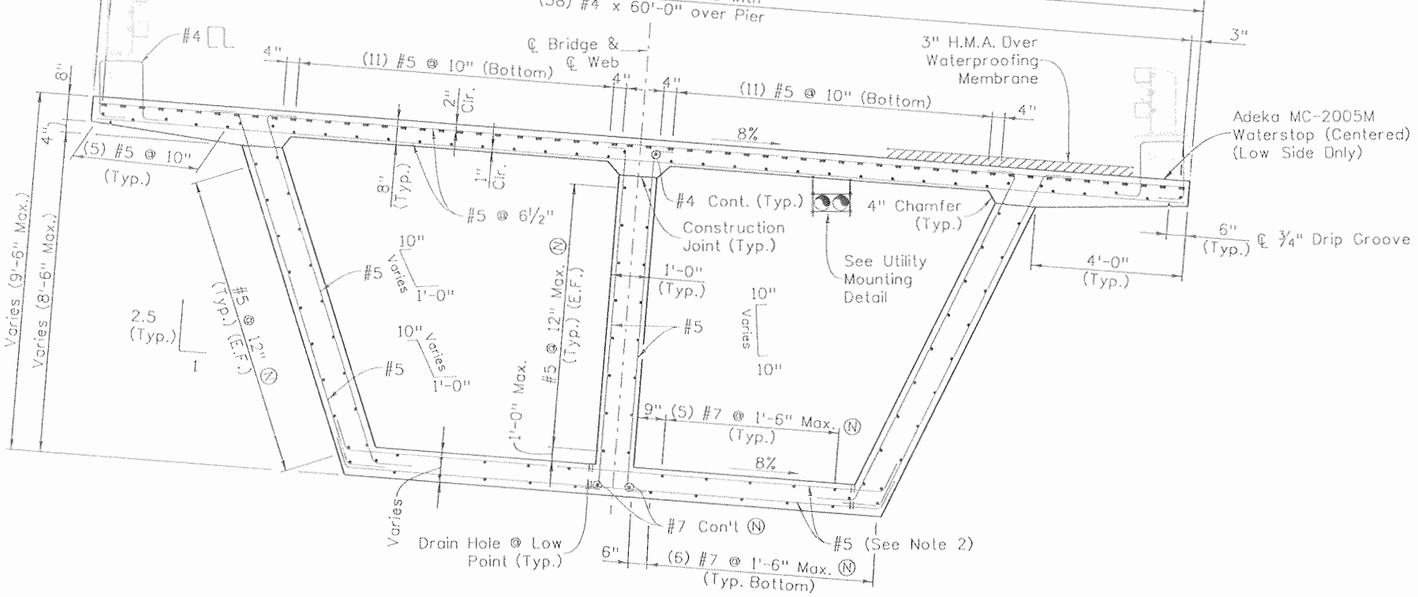
Project No./Code: NH 1602-114
16042
Sheet Number 284




TYPICAL SECTION




UTILITY MOUNTING DETAIL




VARIABLE DEPTH SECTION

## NOTES:

1. Concrete cover is 1½" clear unless noted otherwise.
2. See Cast-In-Place Box Girder Details sheets 1 thru 4 for stirrup size/spacing and additional information.
3. Superstructure shall be concrete Class D (Bridge), f' = 4,500 psi at 28 days.
4. Refer to Anti-icing Plans for locations of conduits, blockouts, and pavement monitoring device.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_SupStrSecs_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

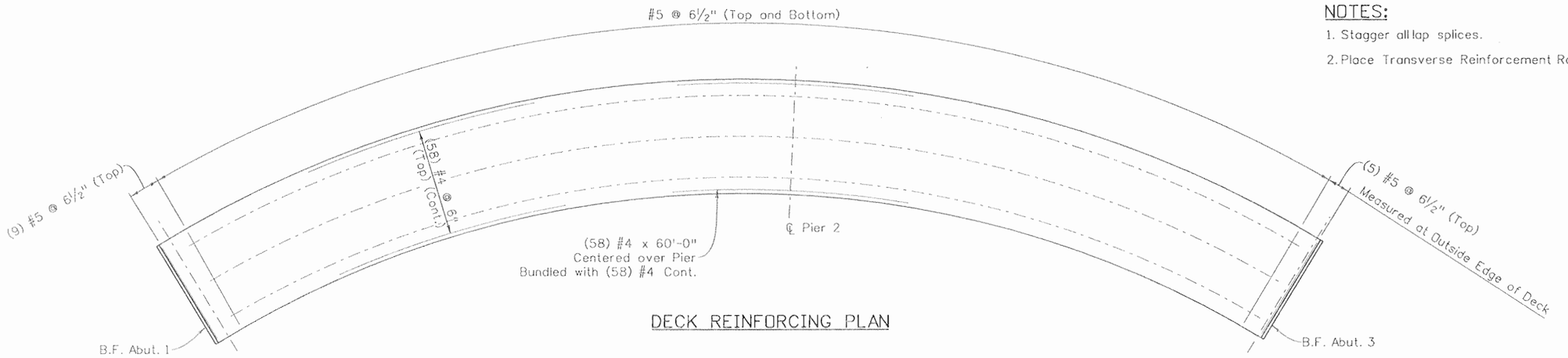
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
SUPERSTRUCTURE DETAILS

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B19 of B34

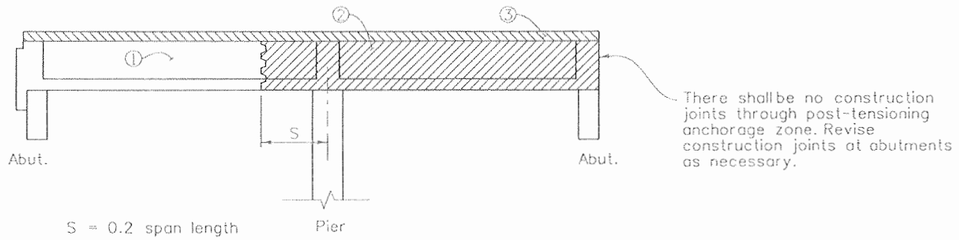
Project No./Code
NH 1602-114
16042
Sheet Number 285




DECK REINFORCING PLAN

NOTES:

1. Stagger all lap splices.
2. Place Transverse Reinforcement Radially.

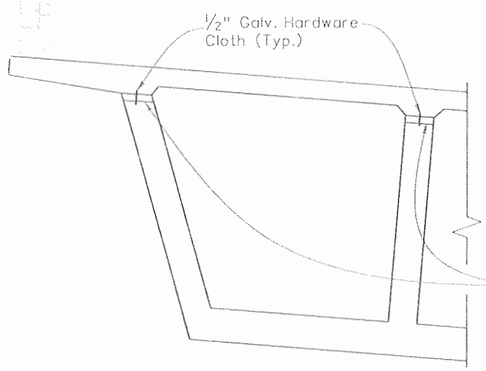



There shall be no construction joints through post-tensioning anchorage zone. Revise construction joints at abutments as necessary.

S = 0.2 span length

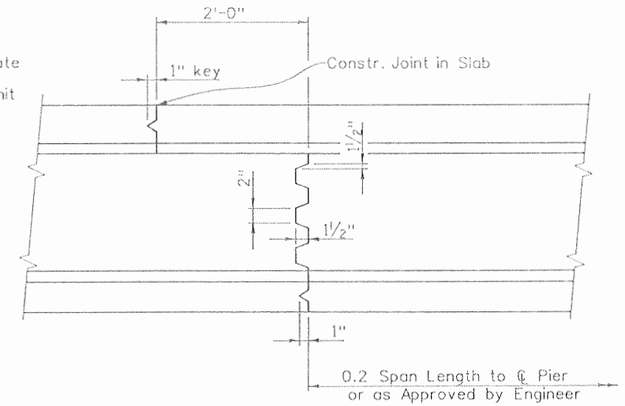
SUPERSTRUCTURE PLACING SCHEDULE

Numbers ① and ② indicate sequence of placing bottom slab and web concrete when each section constitutes a separate pour. ③ may be placed continuously or in parts, as indicated above and as approved by the Engineer. Contractor may submit an alternate placing schedule to the Engineer for approval.




TS6 x 3 x 0.1875 (2 pieces, ½ web width) Vent Tubes thru stems near high point of each span. Locate far enough away from bent on post-tensioned structures, so that there is 2" clearance between tubes and ducts. Spacing of vent tubes shall not exceed 50'.

VENT HOLE DETAIL




TRANSVERSE WEB CONSTRUCTION JOINT

| Design | Initial | Date |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | Initial | Date |
|---|---|---|
| Detailed By | ROA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | Initial | Date |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| | |
|---|---|
| Print Date: 9/22/2010 | |
| File Name: 16042W_SupStrReinfPlan_01.dgn | |
| Horiz. Scale: 1:30 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

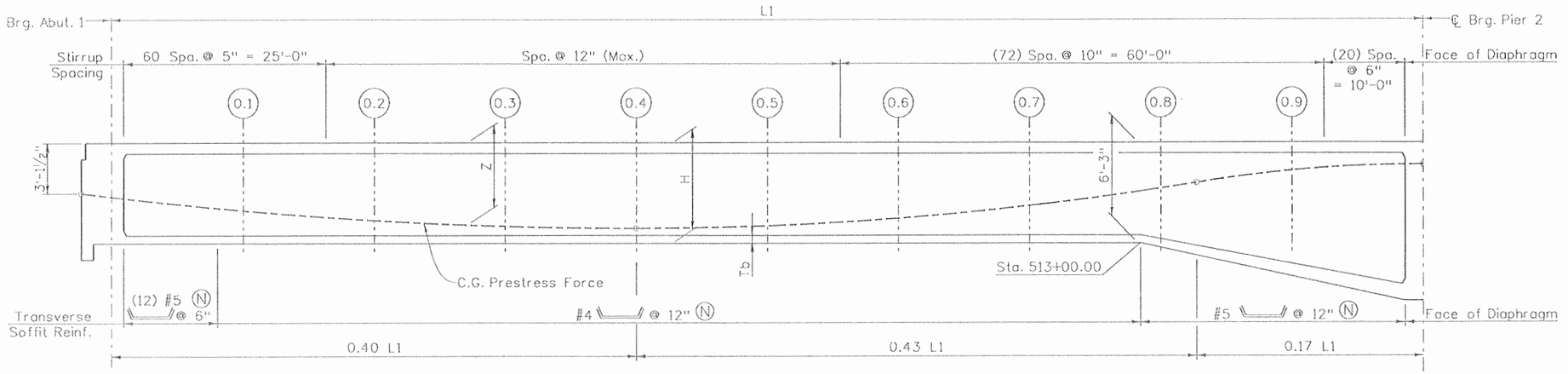
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

RAMP C OVER WILSON GULCH
DECK REINFORCING PLAN

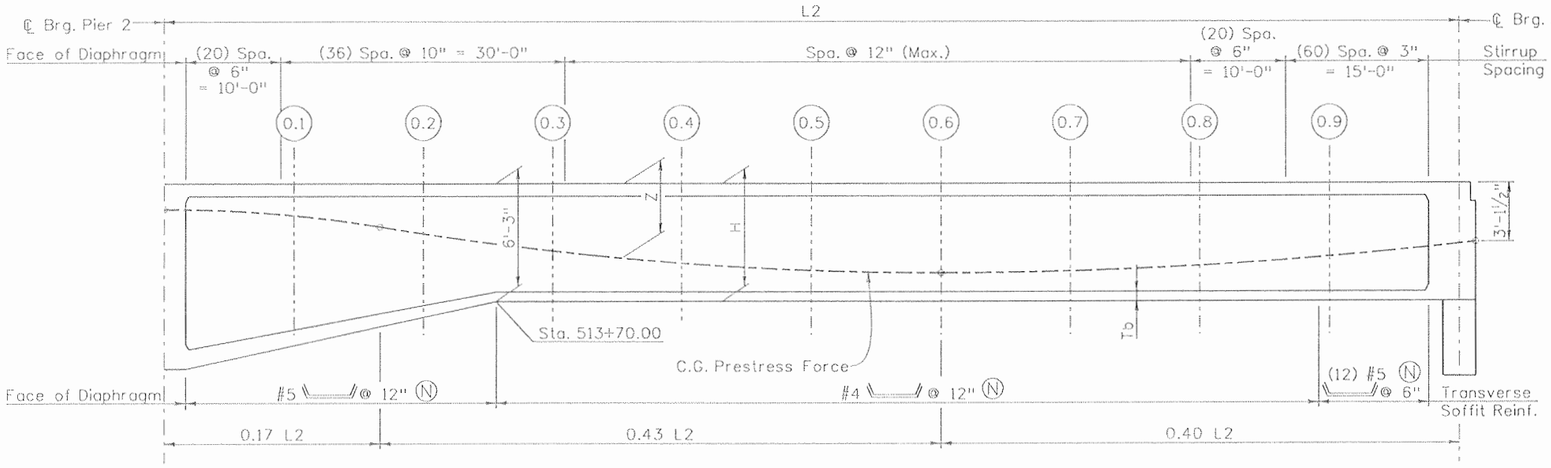
| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B20 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 286 |




## WEB ELEVATION

| | Location | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | End | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | Pier 2 |
| H (ft) | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.50 | 8.11 | 9.50 |
| Tb (in) | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.15 | 7.17 | 8.00 |
| Z (ft) | 3.13 | 4.21 | 4.82 | 5.19 | 5.31 | 5.16 | 4.69 | 3.92 | 2.84 | 1.73 | 1.35 |
| Deflection (in) | -0.08 | 0.39 | 0.83 | 1.19 | 1.39 | 1.38 | 1.17 | 0.83 | 0.48 | 0.21 | 0.00 |




## WEB ELEVATION

| | Location | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | Pier 2 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | End |
| H (ft) | 9.50 | 8.37 | 7.01 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 | 6.25 |
| Tb (in) | 8.00 | 7.30 | 6.47 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| Z (ft) | 1.35 | 1.69 | 2.66 | 3.57 | 4.23 | 4.61 | 4.75 | 4.65 | 4.37 | 3.89 | 3.13 |
| Deflection (in) | 0.00 | -0.07 | -0.21 | -0.37 | -0.47 | -0.53 | -0.55 | -0.52 | -0.44 | -0.26 | 0.00 |

**NOTE:**

See B22 for web length's L1 and L2.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_CIPPTBoxGirder_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DOT — Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
CAST-IN-PLACE BOX GIRDER
DETAILS (1 OF 4)

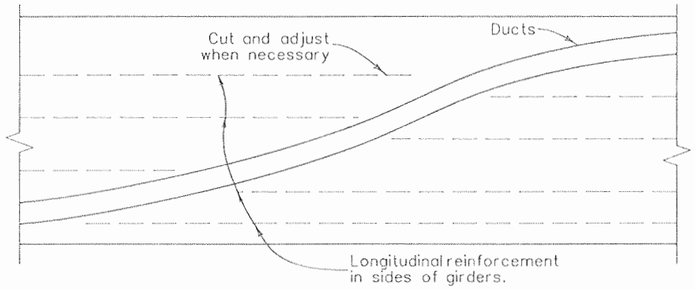
Designer: A. Leitheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B21 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 287

## WEB LENGTHS

| Web. No. | L1 (ft) | L2 (ft) |
|---|---|---|
| 1 | 163.31 | 137.18 |
| 2 | 157.18 | 132.03 |
| 3 | 151.06 | 126.89 |

Web Lengths are Measured from ℄ Brg. to ℄ Pier.




ADJUSTED GIRDER REINFORCING ELEVATION

## NOTES:

Reinforcing that interferes with the prestressing tendon alignment shall be adjusted as approved by the Engineer.

Reinforcing shall be continuous through all construction joints.

Where dead end anchorage and tendons are accessible, the anchorage system and length of projecting prestressing steel shall permit jacking with the same jacking equipment that was used on the live end.

Deviations from the duct pattern, duct size, and strand size assumed in the design must be approved by the Engineer.

The deflection shown is positive downward. It includes the effects of dead load and prestressing, and the long term effects of creep. Formed web elevations must be adjusted upward for an indicated positive deflection.

Use low-relaxation strands meeting the requirements of ASTM A416 grade 270.

## STRESSING SEQUENCE:

Tendons shall be jacked from both ends.

No more than ½ of the prestressing force in any web may be stressed before an equal force is stressed in the adjacent webs. At no time during the stressing operations will more than ⅙ of the total prestressing force be applied eccentrically about the centerline of the structure.

At the Contractors option, the prestressing force may vary ±5% from the theoretical force per web provided the total P(JACK) force is obtained and is distributed symmetrically about the centerline of the typical section. P(JACK) is the sum of the peak forces reached during jacking in each tendon.

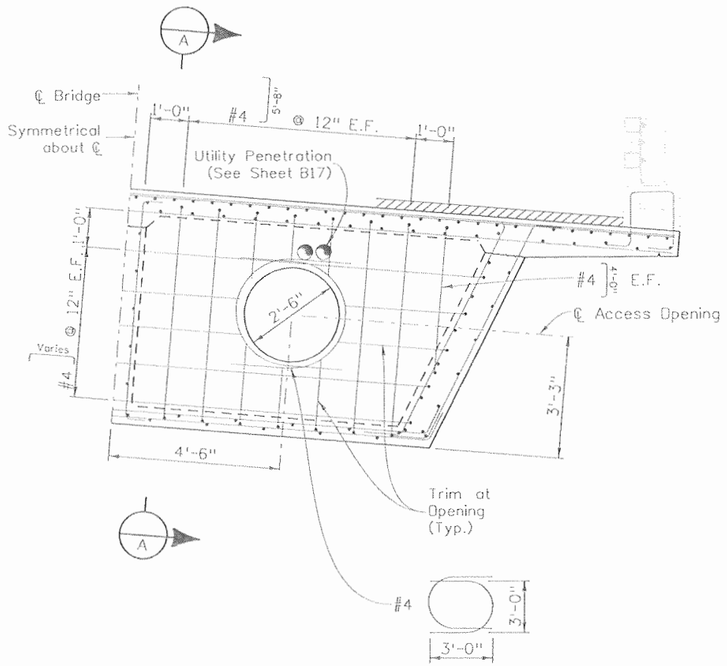
## DESIGN:

Design is based on K=0.0002 and $\mu$=0.25. P(JACK) at the jacking ends includes friction, anchor set of 0.375" at the jacking end, elastic shortening, and provisions for an additional 31 KSI long term loss in stress. Long term loss calculations based on ACI 209.

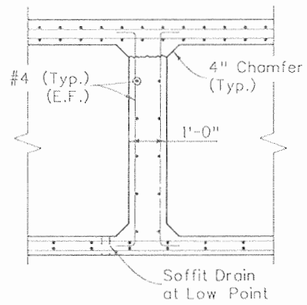
0.6" diameter low-relaxation strands with a "z" offset of ¾" in 4¼" O.D. ducts was assumed in the design.

| | | |
|---|---|---|
| $f'_s$ | = | 270 ksi |
| $f'_c$ | = | 4,500 psi at 28 days field compressive strength |
| $f'_{ci}$ | = | 4,000 psi at stressing |
| P(JACK) | = | 5,537 kips |
| Aps (min.) | = | 27.342 in² |

The Contractor shall submit elongation and jacking calculations based on $KL+\mu\alpha$ (including anchor set if any) and initial stress (initial stress ratio times jacking stress before long term losses).




INTERNAL DIAPHRAGM DETAIL



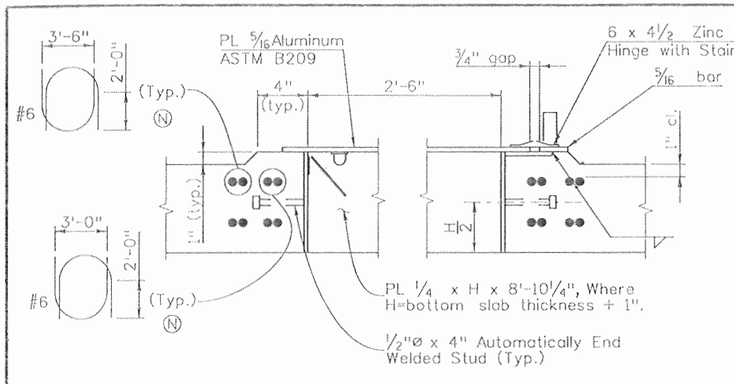

SECTION A

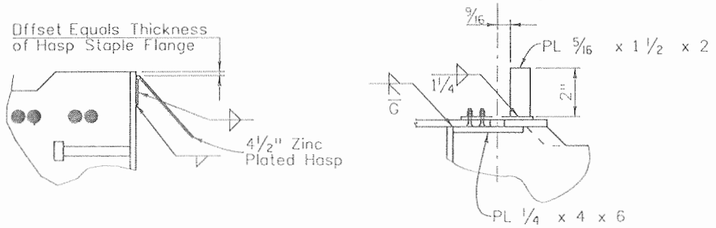
| Design | Initial | Date | Detail | Initial | Date | Quantities | Initial | Date |
|---|---|---|---|---|---|---|---|---|
| Designed By | AML | 10/08 | Detailed By | DRA | 10/08 | Quantities By | AML | 10/08 |
| Checked By | GWK | 10/08 | Checked By | GWK | 10/08 | Checked By | LW | 10/08 |

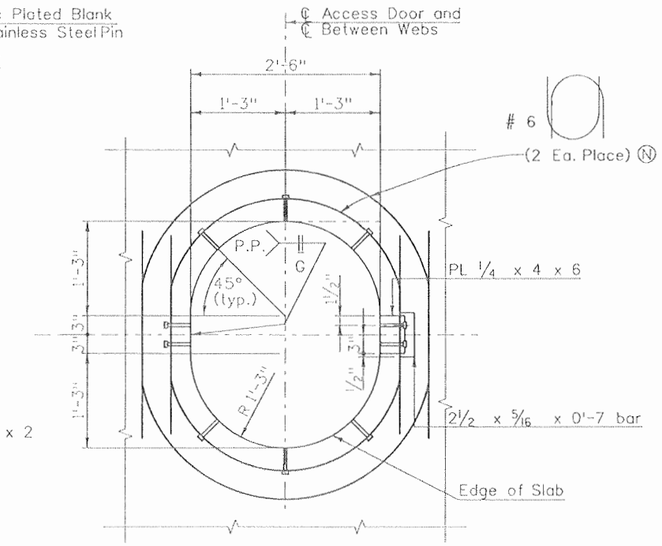
| | | | |
|---|---|---|---|
| Print Date: 9/22/2010 | Sheet Revisions | | |
| File Name: 16042W_CIPPTBoxGirder_02.dgn | Date: | Comments | Init. |
| Horiz. Scale: 1:1 Vert. Scale: As Noted | | | |
| Unit Information Unit Leader Initials | | | |
| SEMA CONSTRUCTION WILSON & COMPANY | | | |

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

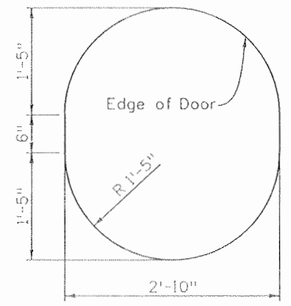
| As Constructed | | | |
|---|---|---|---|
| No Revisions: 9/10 | RAMP C OVER WILSON GULCH CAST-IN-PLACE BOX GIRDER DETAILS (2 OF 4) | | Project No./Code |
| Revised: | Designer: A. Leifheit | Structure Numbers: P-05-W | NH 1602-114 |
| Void: | Detailer: D. Anderson | | 16042 |
| | Sheet Subset: Bridge | Subset Sheets: B22 of B34 | Sheet Number 288 |




ACCESS DOOR DETAILS



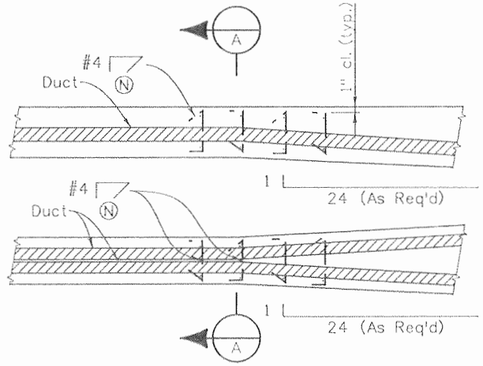

## NOTES:

See abutment details and superstructure details for dimensions and reinforcing not shown.

Grind galvanizing from frame, where the hasp or hinge attaches, prior to welding. After welding, paint the weld and surrounding areas with zinc rich paint meeting Military Specifications DOD-P-21035A.

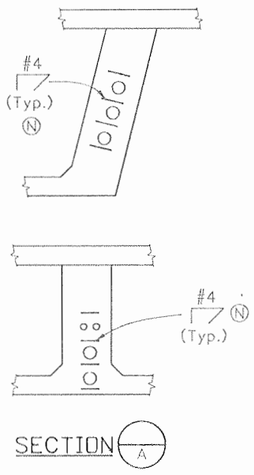
Attach door with 4-1/4"ø zinc plated bolts with countersunk heads. Use double nuts; burr threads after tightening. Attach hasp staple in a similar manner. Leave door in the open position while pouring the bottom slab.

Paint door after welding in accordance with section 509 of the specifications.

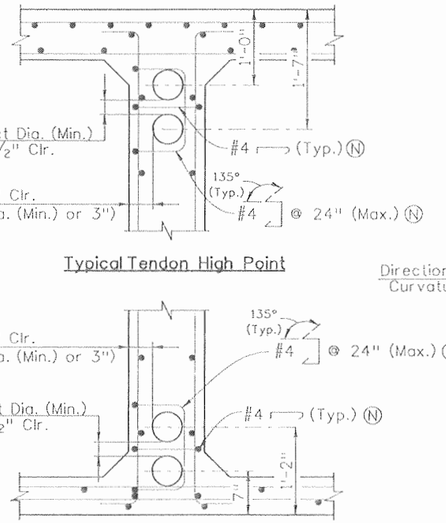



The webs shall be flared near the anchorage as required to maintain a 1 1/2" minimum cover over the ducts and a 1" minimum cover over the stirrups. The flare shall be on one side only for exterior girder webs. Provide (6) #4 ties above, below, and between each row of ducts, tie to five stirrups at beginning of web flare.

PLAN VIEW OF DUCTS AT GIRDER WEB FLARE

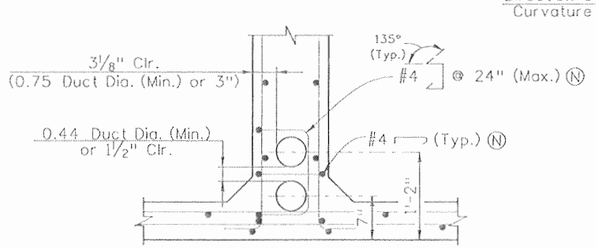



SECTION




Typical Tendon High Point

Direction of Curvature




Span 1 Tendon Low Point
Span 2 Varies

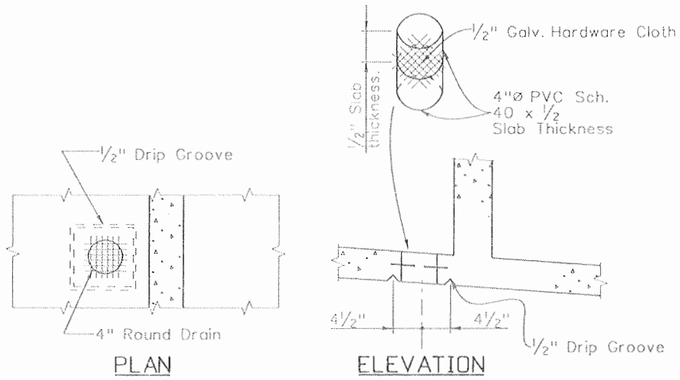
Hooks in #4 Duct Ties (⟶) point Down Station.

Hooks in #4 Duct Stirrups ( ⌐ ) point Up Station.

CLEARANCE REQUIREMENTS FOR DUCTS

## NOTES:

1. Provide minimum side clearance at outside edge of curve.
2. 4 1/4" O.D. duct has been assumed.
3. The pattern shown is what was assumed in design. The duct pattern may be modified by the supplier, provided that the specified C.G. of prestressing, prestressing force, and duct clearances are maintained.




BOTTOM SLAB DRAIN DETAIL
Locate at low point of each cell.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| | |
|---|---|
| Print Date: 9/22/2010 | |
| File Name: 16042W_CIPPTBoxGirder_03.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

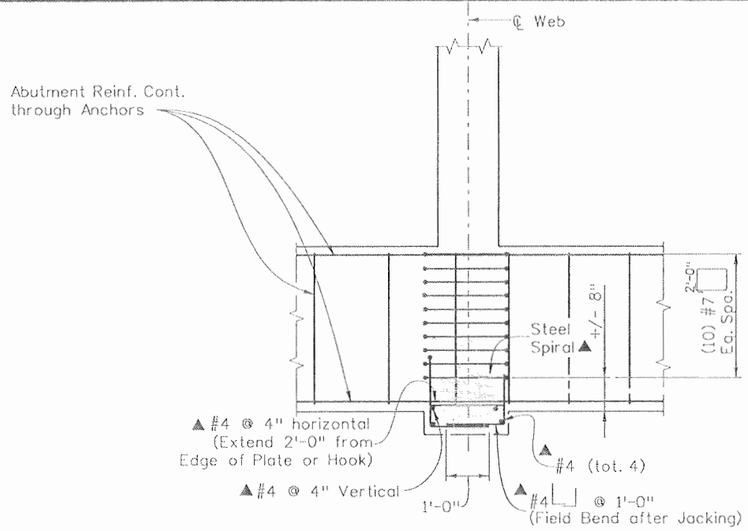
Colorado Department of Transportation
DOT (DEPARTMENT OF TRANSPORTATION)
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

RAMP C OVER WILSON GULCH
CAST-IN-PLACE BOX GIRDER
DETAILS (3 OF 4)

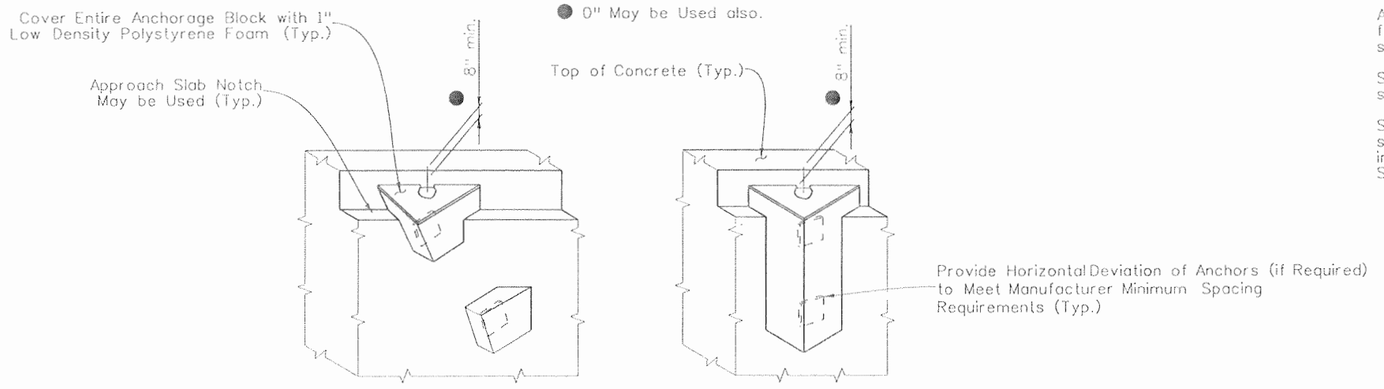
| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | D. Anderson | | |
| Sheet Subset: | Bridge | Subset Sheets: | B23 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 289 |




PLAN VIEW

SEAT FOR PRESTRESSED ANCHORAGE AT ABUTMENTS




EXT. SLOPING WEB VERTICAL WEB

TYPICAL ANCHORAGE ILLUSTRATIONS

## NOTES:

There shall be no construction joints under post-tensioning anchorages.

A tendon's jacking force shall not exceed 923 kips.

The following anchorages will be allowed:
1. DSI Multi-Plane MA Anchorages
2. SDI Type C Multistrand Anchorage
3. VSL Type E

P(Jack) = Tendon jacking force.
f'ci = Mininum concrete strength at stressing.

Composite (a combination of metal casting and mortar) anchorages shall not be allowed.

All Anchorages shall be of the same type and Manufacturer.

Each anchorage shall be confined within a reinforcing steel spiral and spalling reinforcement. Spalling reinforcement shall consist of #4 @ 4" vertically and horizontally placed in front of the bearing plate. Spiral and spalling reinforcement shall be Grade 60 conforming to the requirements of Section 602, and need not be epoxy coated. Lap splicing of spiral reinforcement is not allowed.

Anchorages and reinforcing steel spirals shall be covered with concrete to provide a minimum of 4 inches of concrete cover. All other reinforcing shall have a minimum of 2" concrete cover.

The minimum distance between the centerline of anchorages shall be as recommended by the manufacturer.

The distance from the edge of bearing plate/ spiral to edge/corner of concrete shall be a minimum of 4".

All reinforcing steel designated ▲, and additional concrete required in flares not included in explicit details will not be measured for separately but shall be included in Item 618.

See abutment and superstructure details for dimensions and reinforcing steel not shown.

Shop drawings shall be prepared under the supervision (and contain the seal) of a Professional Engineer registered in the State of Colorado and in accordance with the requirements of subsection 618.04 (a) and (c). Shop drawings shall provide:
1. Bearing plate and spiral steel sizes
2. Reinforcing steel bending diagrams for all rebar designated ▲
3. Coordination of anchorages and anchorage reinforcing with other superstructure rebar
4. All dimensions necessary to form concrete recesses or blisters, and all reinforcing steel designated ▲ in accordance with subsection 618.04(c)(6) and (7).
5. Horizontal and vertical dimensions to place anchorages and ducts.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_CIPPTBoxGirder_04.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION WILSON &COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

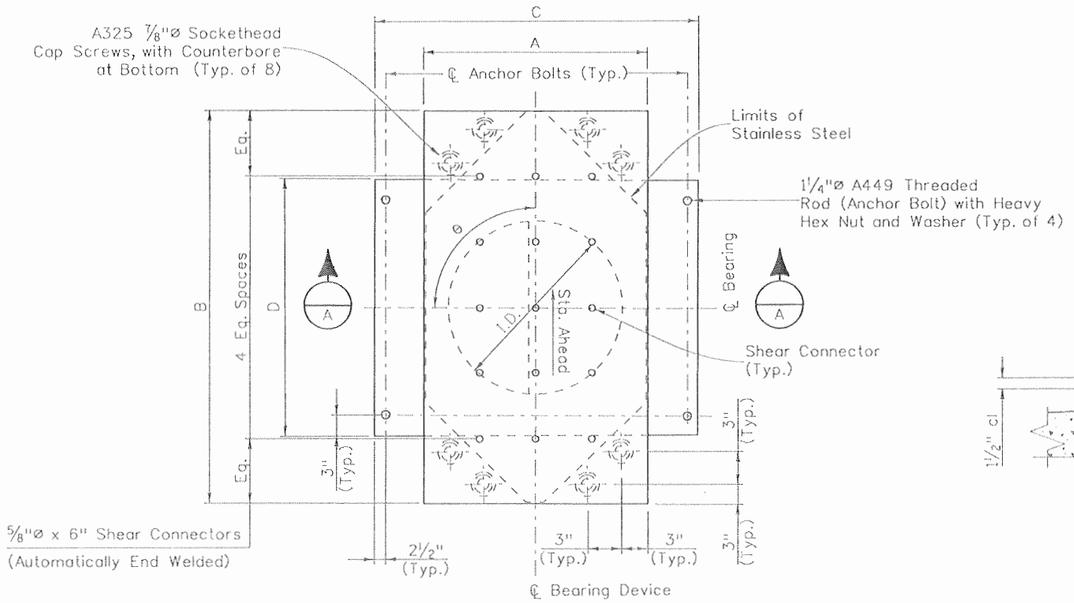
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

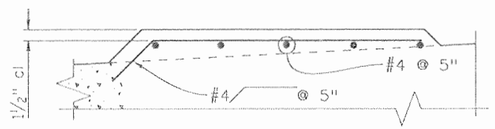
RAMP C OVER WILSON GULCH
CAST-IN-PLACE BOX GIRDER
DETAILS (4 OF 4)

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B24 of B34

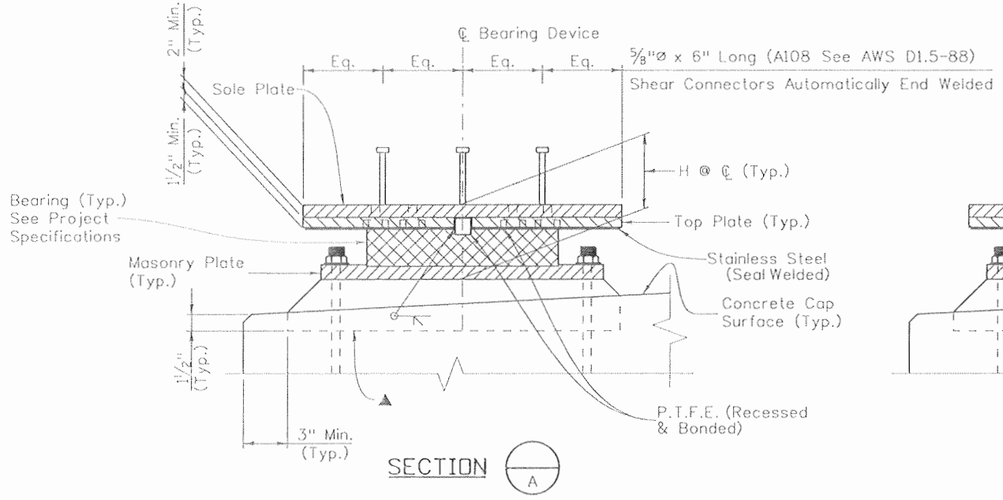
Project No./Code
NH 1602-114
16042
Sheet Number 290




PLAN

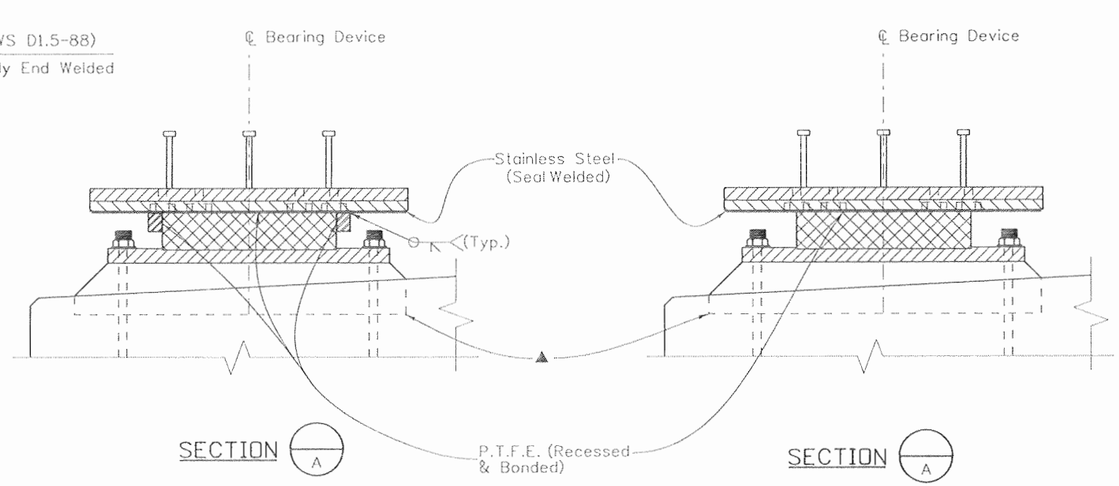



DETAIL "A"
(Optional)




SECTION A

CENTER GUIDED EXPANSION BEARING




SECTION A

SIDE BAR GUIDED EXPANSION BEARING
(See Center Guide Brg. for typ. dimensions)




SECTION A

NON-GUIDED EXPANSION BEARING
(See Center Guide Brg. for typ. dimensions)

▲ Use non-shrink approved grout in formed cavity or see Detail "A" for alternate built-up monlithic cap seat.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | AML | 10/08 |
| Checked By: | LW | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | K.T. | 10/08 |
| Checked By: | MJN | 10/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | AML | 10/08 |
| Checked By: | MJN | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_BrdgBrgDeviceType3_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

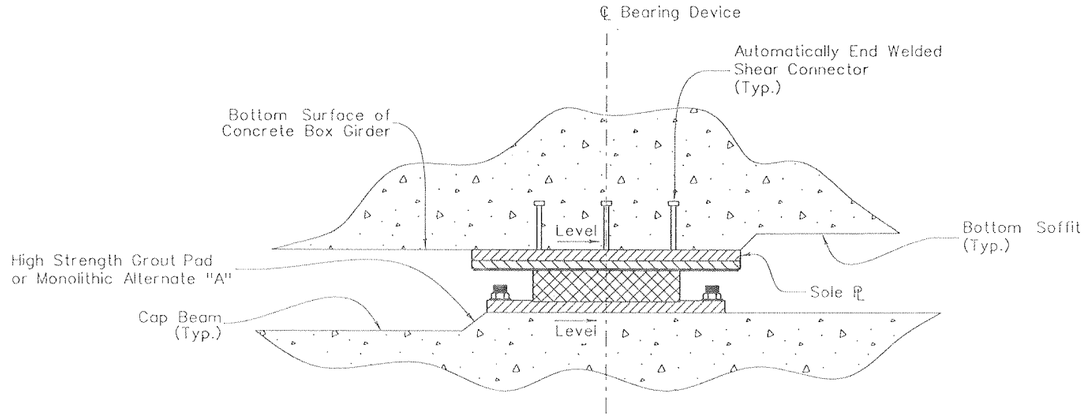
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 9/10 |
| Revised: | |
| Void: | |

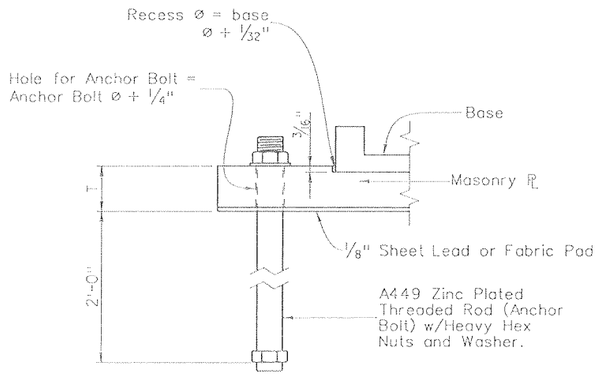
RAMP C OVER WILSON GULCH
BEARING DEVICE
TYPE III (1 OF 2)

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | K. Tucker | | |
| Sheet Subset: | Bridge | Subset Sheets: | B25 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 291 |




BEARING DEVICE TYPE III
CONCRETE GIRDER CONNECTION




ANCHOR BOLT DETAIL

## NOTES:

All structural steel for the bearing devices, including sole plates, top plates, and masonry plates, shall be AASHTO M270 (ASTM A709) Grade 36 unless otherwise shown. Grade 50 may be substituted for Grade 36 at no additional cost to the project.

Bearing seat elevations at abutments and piers shall be checked and adjusted according to the final dimensions of bearing assemblies adopted.

Longitudinal structure movement due to temperature and shrinkage is based on a mid-range temperature of 50°F. If site temperature is not 50°, a longitudinal offset of top elements of the bearing (above sliding surface) shall be made in the field based on the 10° temperature increment in the table. In addition, longitudinal one way structure movement due to prestress shortening and creep shall be accommodated for all temperature ranges with the initial offset in the table away from Pier 2.

Anchor bolts may be set in wet concrete of bearing seat, or placed within a formed cylindrical void 4" in diameter and then grouted with high strength epoxy grout.

The internal surfaces of the pot cavity and the bottom surface of the piston shall be polished after zinc metalizing.

Rotations accounting for fabrication and construction tolerances have not been included in the charts. Additional rotations of 0.01 radians (pot bearings) or 0.005 radians (disk bearings) shall be provided in addition to the design rotations shown in the chart.

The longitudinal structure movement, is the total movement of the structure at the specified location.

The inside diameter of the pot (ID) was based on an average compression stress of 3 ksi at the Service Limit State. Pot or disk bearings shall be resized by the manufacturer per the AASHTO LRFD Bridge Design Specifications and the Project Specifications. Plates shall be resized to conform to the forces, deformations, and manufacturers ID.

Bearing plates (Gd, Exp) resized by the bearing manufacturer shall include a 2" construction tolerance for dimension B.

ACCEPTABLE ALTERNATES

D. S. Brown Company
North Baltimore, Ohio

Cosmec, Inc.
Walpole, MA

Con-Serv, Inc.
Georgetown, SC

R. J. Watson, Inc.
Amherst, NY
(Disk Bearing Alternate)

| Location | | Quant. | Type | Vertical Load Per Brg. (kips) | | Horizontal Load Per Brg. (kips) | | | | Longit. Range of Structure Movement | Max. Rotation | | Top Plate (Sole Plate Similar) | | Bearing ID | Masonry Plate | | | Top Connection (Anchor Studs) | | A449 Anchor Bolts | | Total Height | Guide Angle | 10° Temp. Incr. | Initial Offset |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Service | | Strength | | | | | | | | | | | | | | | | | | |
| | | | | Service | Strength | Transv. | Longit | Transv. | Longit | (in) | Service (rad) | Strength (rad) | A (in) | B (in) | (in) | C (in) | D (in) | T (in) | No. | Size (in) | No. | Size (in) | H (in) | θ (deg) | (in) | (in) |
| Abut. 1 | A | 1 | GD. | 694 | 885 | 105 | 0 | 105 | 0 | 3.78 | 0.00341 | 0.0066 | 29 | 32 | 18 | 26 | 26 | 1.875 | 15 | 0.625 | 4 | 1.25 | 9 | 90 | 0.17 | 2.0 |
| Abut. 1 | B | 1 | EXP. | 400 | 540 | 0 | 0 | 0 | 0 | 3.78 | 0.00328 | 0.0063 | 21 | 32 | 18 | 26 | 26 | 1.875 | 15 | 0.625 | 4 | 1.25 | 9 | 90 | 0.17 | 2.0 |

Fx = Fixed bearing
Gd = Guided expansion bearing
Exp = Non-guided (free floating) expansion bearing
PTFE = Polytetrafluoroethylene
ID = Inside Diameter of Pot

Design: Designed By AML 10/08; Checked By MJN 10/08
Detail: Detailed By KLT 10/08; Checked By MJN 10/08
Quantities: Quantities By AML 10/08; Checked By LW 10/08

Print Date: 9/22/2010
File Name: 16042W_BrdgBrgDeviceType3_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

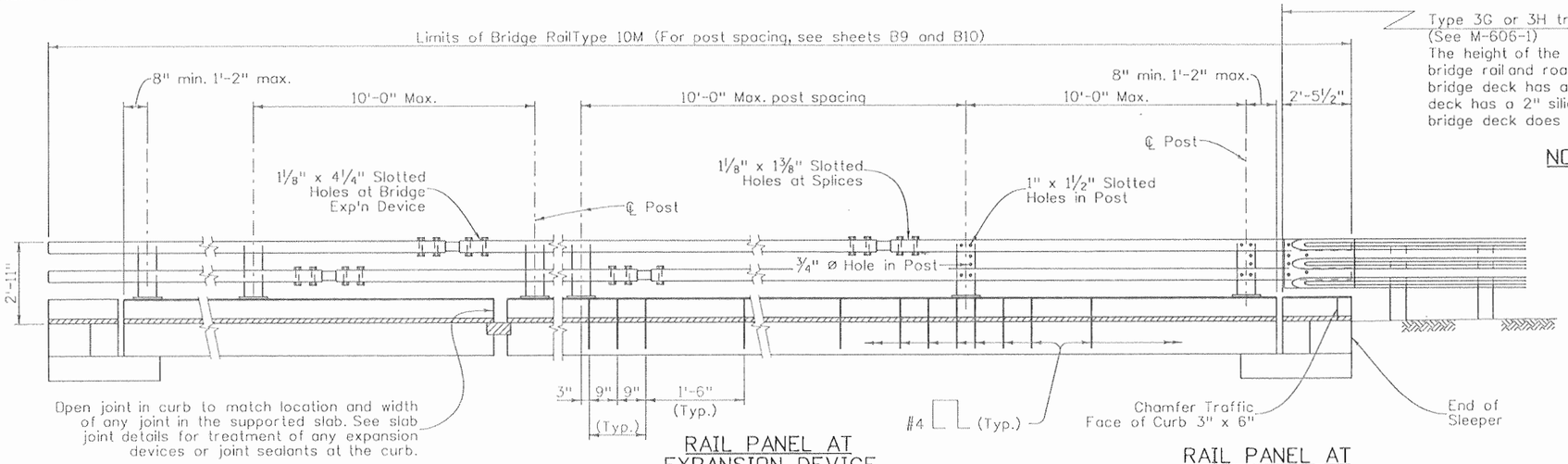
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
BEARING DEVICE
TYPE III (2 OF 2)

Designer: A. Leifheit
Detailer: K. Tucker
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B26 of B34

Project No./Code: NH 1602-114
16042
Sheet Number 292




RAIL PANEL AT TERMINAL SECTION

(See Roadway plans for ends not attached to Guard Rail.)

RAIL PANEL AT EXPANSION DEVICE

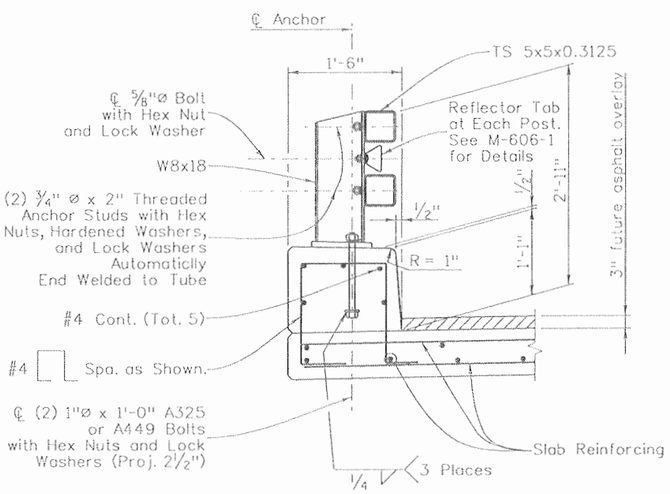
ELEVATION - BRIDGE RAIL

RAIL PANEL AT TRANSITION SECTION

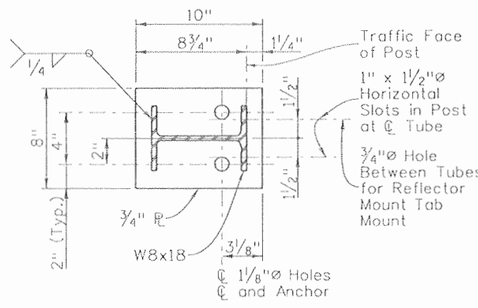
(See Roadway plans for ends requiring attachment to guard rail.)

## NOTES:

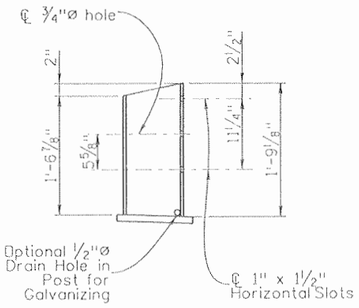
1. All tubes shall be ASTM A-847. (U.N.O.) All steel shall be ASTM A-588 Grade 50.
2. All anchor bolts and miscellaneous bolts, nuts, and washers shall be galvanized after fabrication in accordance with Section 509. Concrete, reinforcing steel, and structural steel elements shall conform to the requirements of sections 601, 602 and 509, respectively.
3. Post anchor, encased in concrete, shall be ASTM A-36 (AASHTO M-183) steel and need not be galvanized.
4. The tubes shall be shop bent or fabricated to fit horizontal curve when radius is less than 1,500 feet.
5. Tubes shall be continuous over not less than two posts. No welded butt splices will be allowed in the tube sections.
6. The centerline of the tube splice shall be 1'-8" minimum and 2'-6" maximum from the centerline of the posts.
7. All bolts that have lock washers shall be tightened to snug only.
8. Posts shall be perpendicular to the longitudinal roadway grade.
9. One or more 10'-0" post spacings may be reduced (6'-8" min.) in order to maintain dimensions from the end of the rail and expansion joints.
10. Prior to fabrication of this item, three sets of working drawings which comply with the requirements of section 105, shall be submitted to the Engineer for information only.
11. Structural Steel:
    AASHTO M-222 (ASTM A-588) GRADE 50 $f_y$ = 50,000 psi
    COLD FORMED ASTM A-847 $f_y$ = 46,000 psi
12. For additional details see next rail sheets.
13. At bridge ends without Approach Slabs. Terminate tube at nearest splice. Continue post spacing to end of structure.
14. Coordinate location of anti-icing equipment and conduits with bridge rail reinforcing and hardware. Move conduit or equipment if a conflict exists.
15. Refer to Anti-Icing Drawings for additional reinforcing and concrete insert requirements.



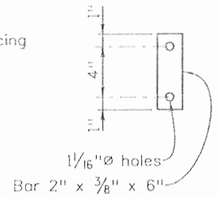

SECTION



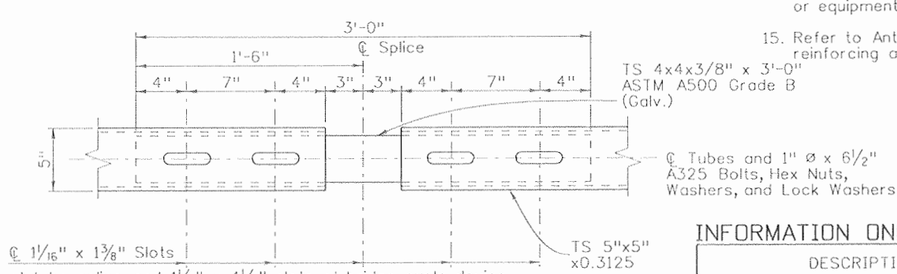

PLAN - POST DETAIL




ELEVATION




ANCHOR DETAIL




at tube splice, and 1⅛" x 4¼" slots at bridge exp'n device. Slot both inner and outer tubes. Stagger top and bottom splices into different post spacings except at expansion joint, place at opposite ends of same post space. (Range of motion = 1'-0" at bridge expansion device.)

PLAN - TUBE SPLICE

## INFORMATION ONLY

| DESCRIPTION | UNIT | PER LIN. FT. |
|---|---|---|
| Structural Steel | LB. | 45.1 |
| | | |
| Concrete Class D (Bridge) | CU.YD. | .06 |
| | | |
| Reinforcing Steel (Epoxy Coated) | LB. | 6.6 |
| | | |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_BridgeRailType10M_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

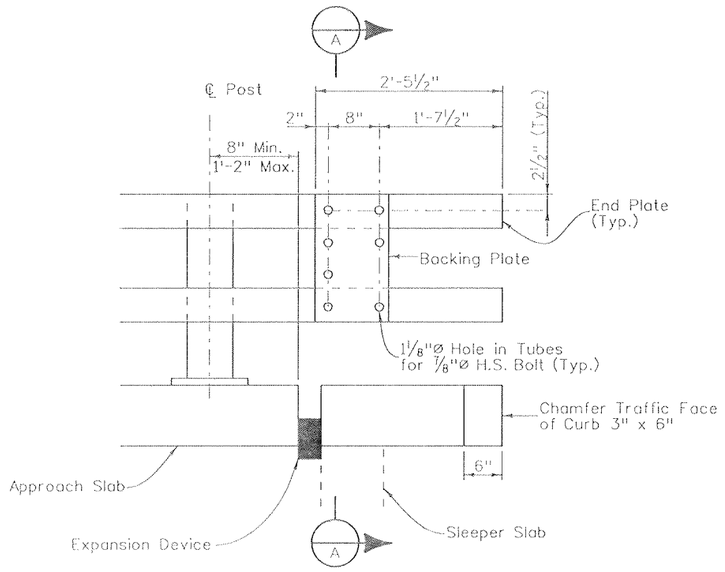
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
BRIDGE RAIL TYPE 10M (SPECIAL)
(1 OF 2)

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B27 of B34

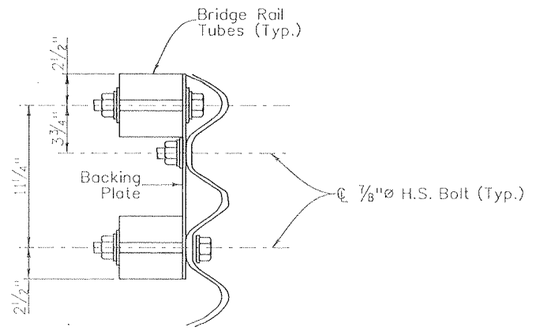
Project No./Code
NH 1602-114
16042
Sheet Number 293



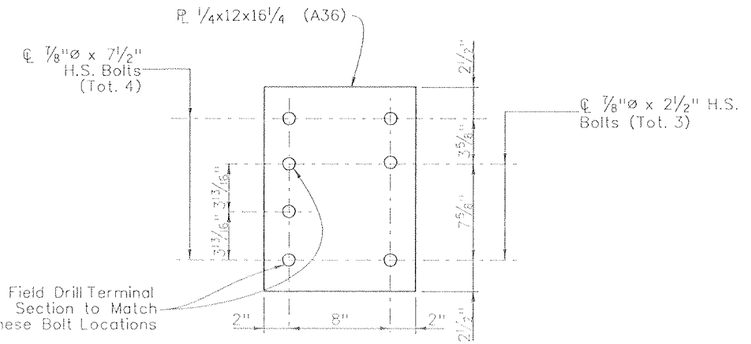

## RAIL TUBE DETAILS

(Thrie beam not shown)

(Req'd at approach slab ends only)

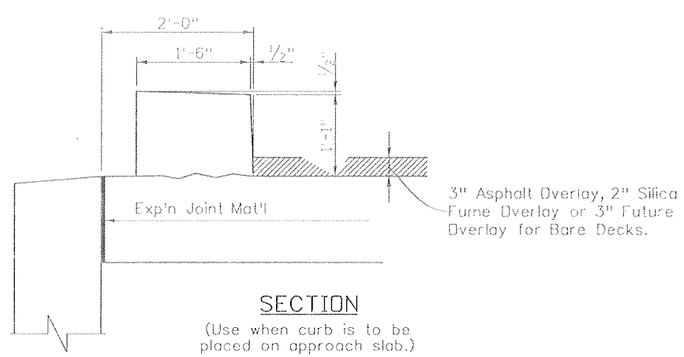



SECTION A




## BACKING PLATE

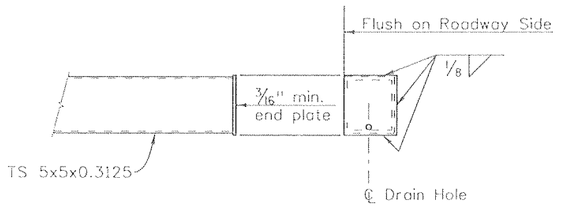
Holes are 1⅛"ø for ⅞"ø H. S. bolts with hex nuts, 2 PL washers, and 1 lock washer




## SECTION

(Use when curb is to be placed on approach slab.)

(Approach slab location only.)



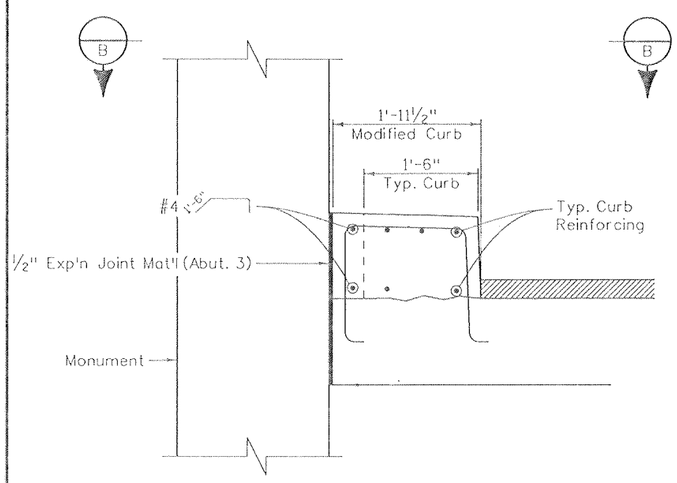

## END PLATE DETAIL

## NOTE

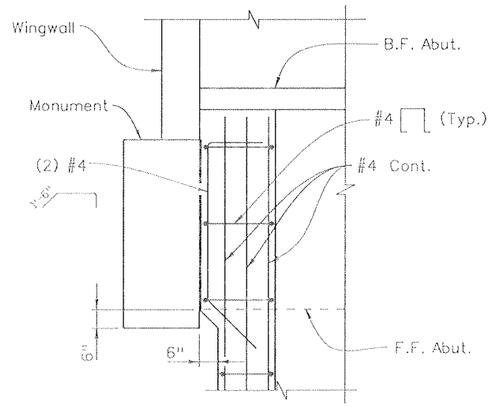
The information presented here is for information only. Approach slabs, Bridge Rail on the approach slabs, and expansion devices are not installed under this contract.

## NOTE

Details applicable to this contract only.




## CURB MODIFICATION DETAIL

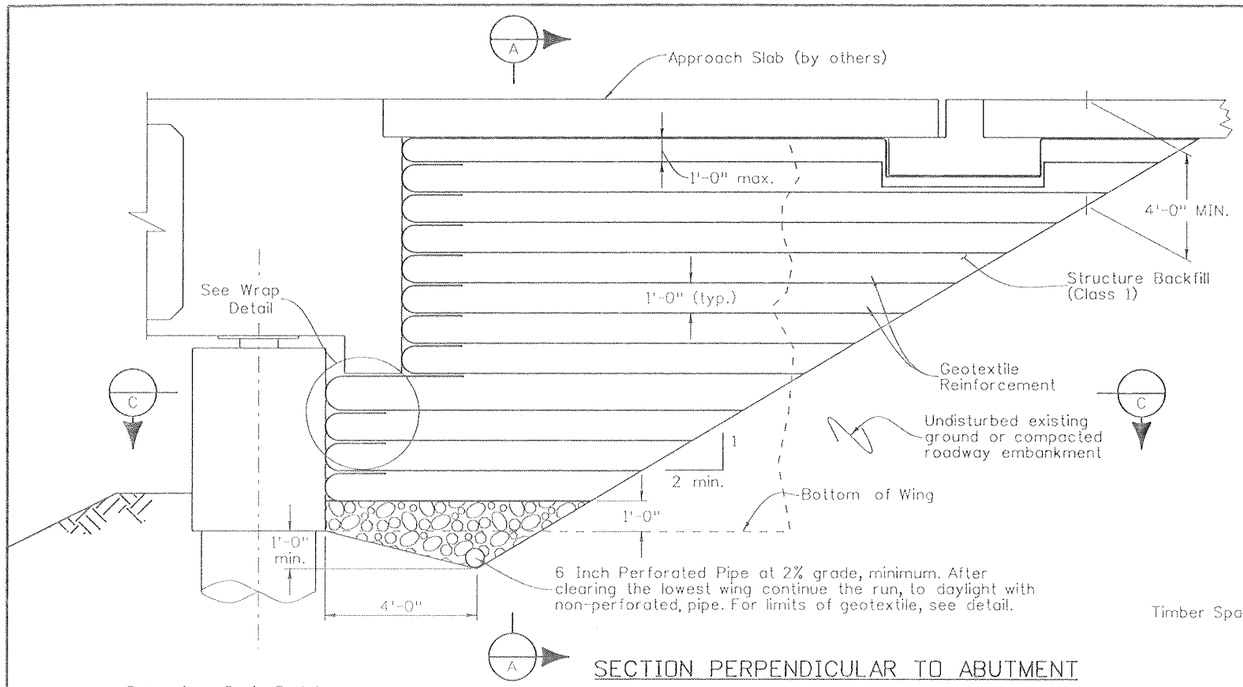



SECTION B

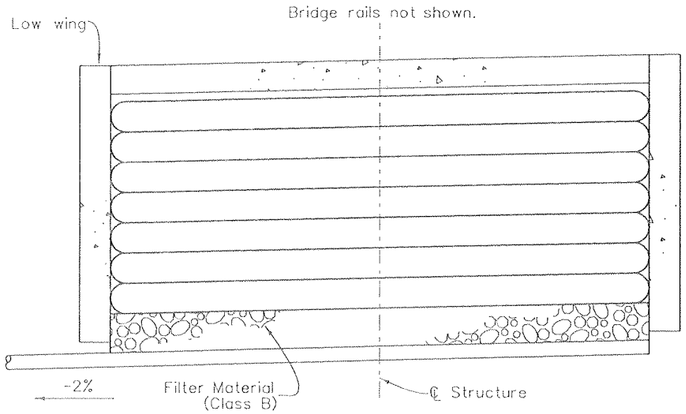
| Quantities | | | | | |
|---|---|---|---|---|---|
| Detail | INITIAL | DATE | Quantities By | Checked By | |
| | DRA | 10/09 | GWK | 10/09 | |
| Design | INITIAL | DATE | Detailed By | Checked By | |
| | AML | 10/09 | GWK | 10/09 | |
| Designed By | AML | 10/09 | Checked By | GWK | 10/09 |
| Checked By | GWK | 10/09 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Print Date: 9/22/2010 | | Sheet Revisions | | | Colorado Department of Transportation |
| File Name: 16042W_BridgeRailType10M_02.dgn | | Date: | Comments | Init. | 3803 North Main Avenue, Suite 200, Durango, CO 81301 |
| Horiz. Scale: 1:1 Vert. Scale: As Noted | | | | | Phone: 970-385-1440 FAX: 970-385-8365 |
| Unit Information 0221 Unit Leader STW | | | | | Region 5 EJA |
| SEMA CONSTRUCTION / WILSON & COMPANY | | | | | |

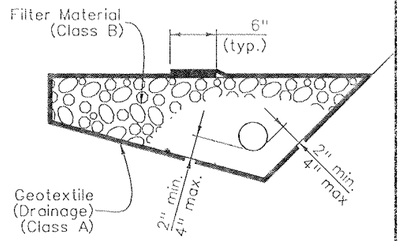
| As Constructed | RAMP C OVER WILSON GULCH BRIDGE RAIL TYPE 10M (SPECIAL) (2 OF 2) | | | Project No./Code |
|---|---|---|---|---|
| No Revisions: 9/10 | | | | NH 1602-114 |
| Revised: | Designer: A. Leifheit | Structure Numbers | P-05-W | 16042 |
| Void: | Detailer: D. Anderson | | | |
| | Sheet Subset: Bridge | Subset Sheets: 828 of 834 | | Sheet Number 294 |



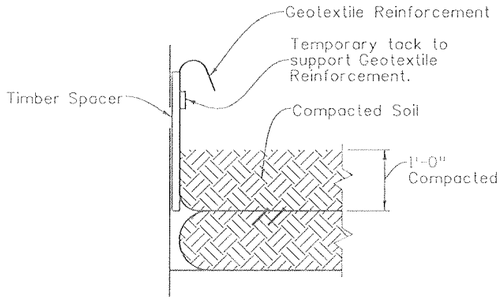

SECTION PERPENDICULAR TO ABUTMENT



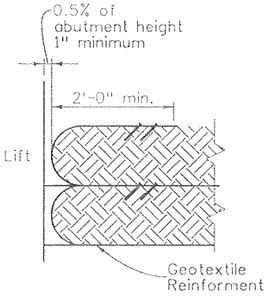

SECTION A




6 INCH PERFORATED PIPE UNDERDRAIN

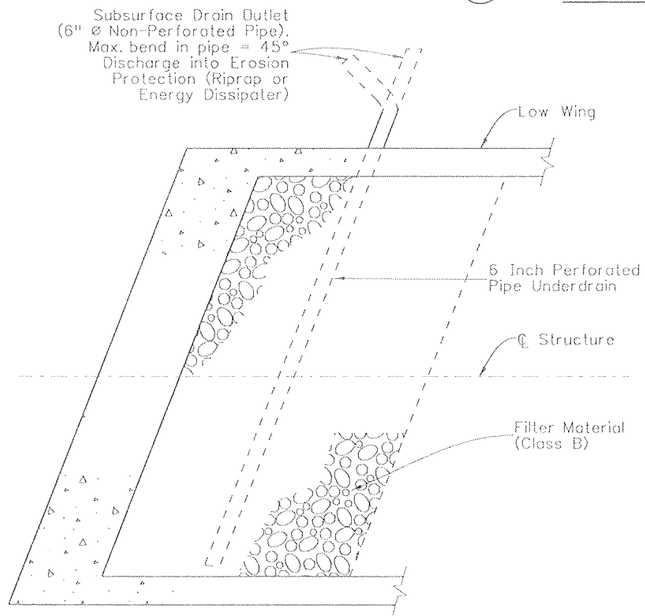



GAP DETAIL STEP 1

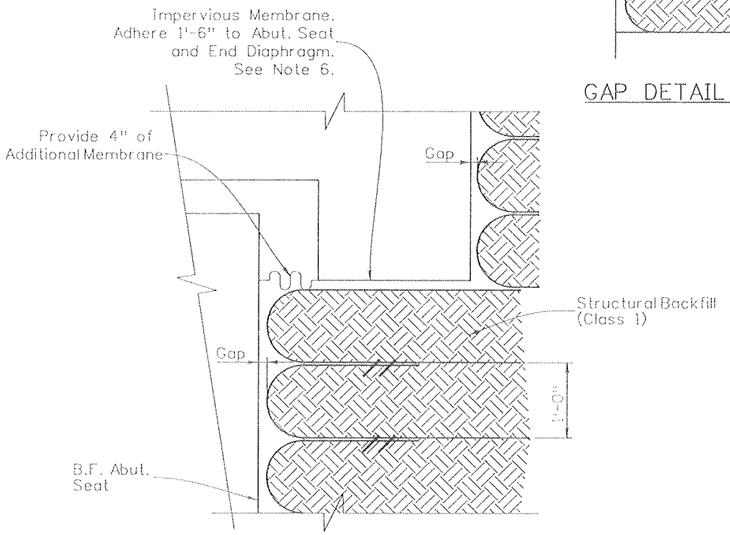



GAP DETAIL STEP 2

When required, the Geotextile Reinforcement wrap at Back Face of Abutment shall be temporarily hung with a spacer board and tack strip. After reaching a total of 1'-0" compacted lift, the tack strip shall be removed and Geotextile Reinforcement shall be pulled back slack free with its end anchored to soil underneath with staple or pins before the spacer board is pulled. Any alternate method to maintain the minimum gap between abutment concrete and Reinforced Soil may be proposed to the Engineer for approval.




SECTION C




WRAP DETAIL

## NOTES:

1. Geotextile reinforcement shall be woven fabric with a Minimum Average Roll Value of 4800 lb/ft for installations with a gap and 2400 lb/ft for installations without a gap based on ASTM D4595.
2. Geotextile Reinforcement shall be placed by alternating Machine Direction (MD) with Cross Machine Direction (XD) from layer to layer.
3. The Geotextile Reinforcement wrap at Back Face of Abutment shall be pulled back slack free with its end anchored to soil underneath with staples or pins.
4. Minimum splice of all Geofabric shall consist of 6" of overlap.
5. Installation of Pipe Underdrain and Subsurface Drain Outlet will conform to the Construction requirements of section 605.03 and 605.06, respectively.
6. Impervious Membrane shall be Carlisle Sure-Seal EPDM. Contractor may submit alternate membrane for approval.

| Design | INITIAL | DATE | Detailed By | Checked By |
|---|---|---|---|---|
| | ANL | 10/08 | DRA | GWK |
| | GWK | 10/08 | GWK | 10/08 |
| Designed By | | | | |
| Checked By | | | | |

| Quantities | INITIAL | DATE |
|---|---|---|
| | ANL | 10/08 |
| | LW | 10/08 |
| Quantities By | | |
| Checked By | | |

| Print Date: 9/22/2010 | | | |
|---|---|---|---|
| File Name: 16042W_MSB_01.dgn | | | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

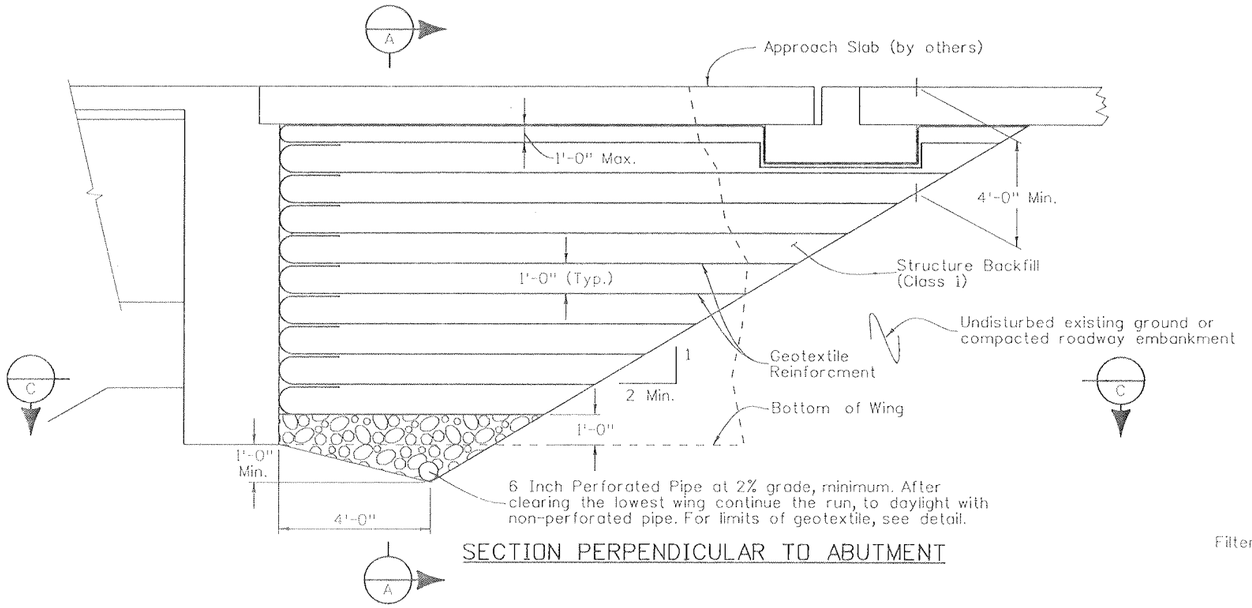
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

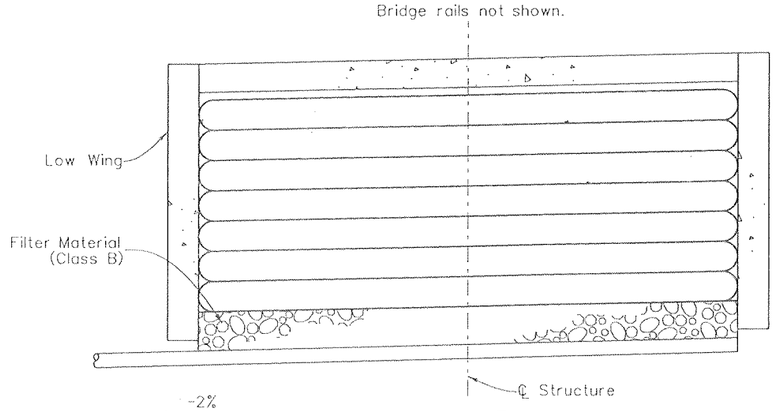
RAMP C OVER WILSON GULCH
ABUT. 1 MECHANICALLY STABILIZED BACKFILL

| Designer: A. Leifheit | Structure Numbers: P-05-AG |
|---|---|
| Detailer: D. Anderson | |
| Sheet Subset: Bridge | Subset Sheets: B29 of B34 |

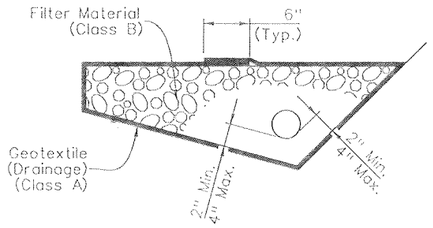
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 295 |




SECTION PERPENDICULAR TO ABUTMENT




SECTION A




6 INCH PERFORATED
PIPE UNDERDRAIN




SECTION C

## NOTES:

1. Geotextile reinforcement shall be woven fabric with a Minimum Average Roll Value of 4800 lb/ft for installations with a gap and 2400 lb/ft for installations without a gap based on ASTM D4595.
2. Geotextile Reinforcement shall be placed by alternating Machine Direction (MD) with Cross Machine Direction (XD) from layer to layer.
3. The Geotextile Reinforcement wrap at Back Face of Abutment shall Be pulled back slack free with its end anchored to soil underneath with staples or pins.
4. Minimum splice of all Geofabric shall consist of 6" of overlap.
5. Installation of Pipe Underdrain and Subsurface Drain Outlet will conform to the Construction requirements of section 605.03 and 605.06, respectively.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | TAH | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | ROA | 10/08 |
| Checked By | TAH | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| Print Date: 9/22/2010 | | | |
|---|---|---|---|
| File Name: 16042W_MSB_02.dgn | | | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

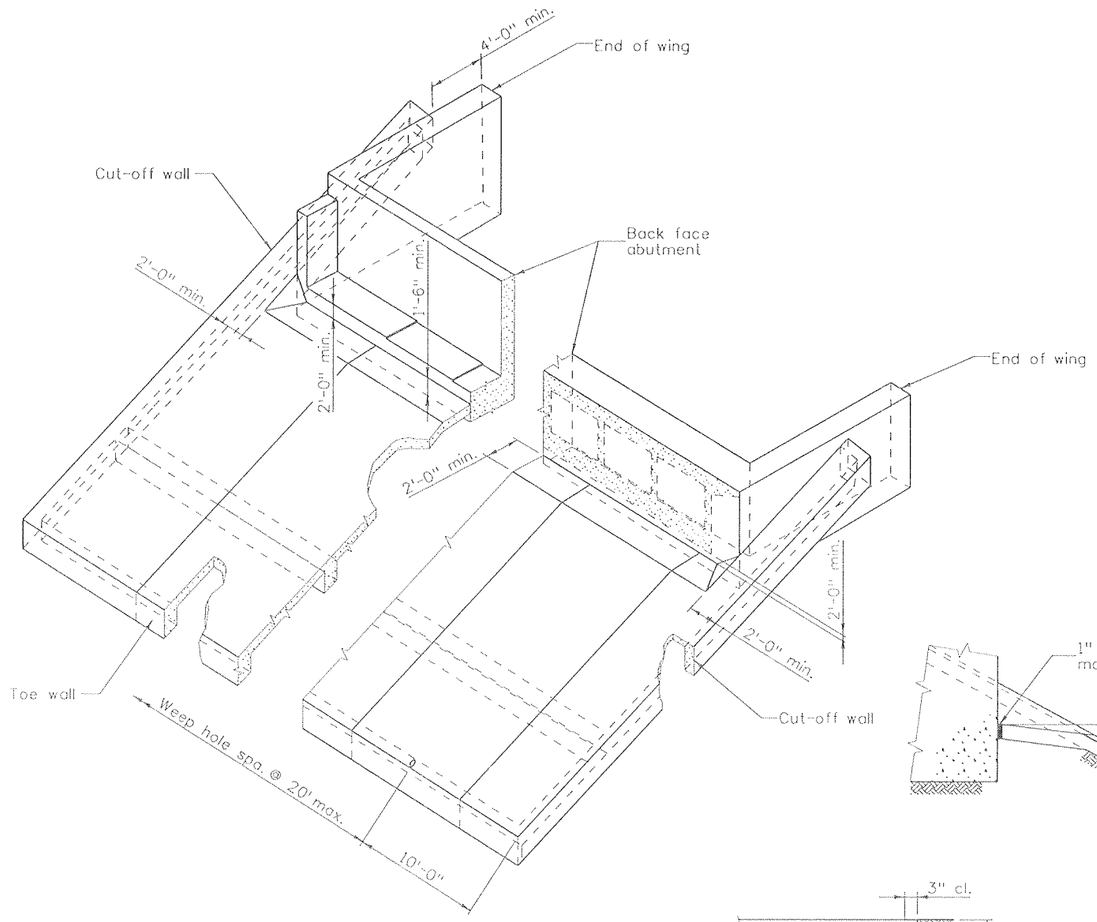
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 9/10 |
| Revised: | |
| Void: | |

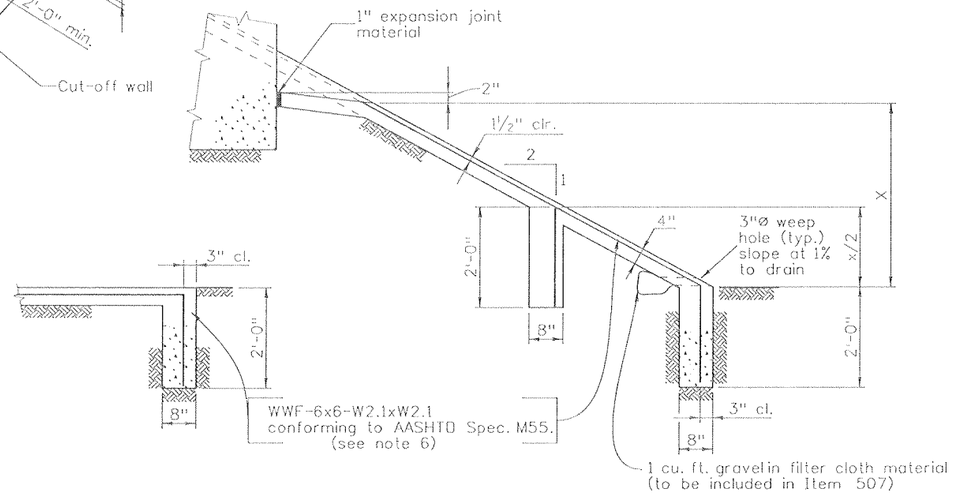
RAMP C OVER WILSON GULCH
ABUT. 3 MECHANICALLY
STABILIZED BACKFILL

| | | | |
|---|---|---|---|
| Designer: | A. Leifheit | Structure Numbers | P-05-W |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B30 of B34 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 295 |




TYPICAL SECTION
THRU CUT-OFF WALL




TYPICAL SECTION
THRU SLOPE PAVING

## NOTES:

1. Slope paving shall be poured in 10 ft. transverse sections with a tooled construction joint at each section.
2. Wire fabric shall be 2" from the end of joints and shall lap 8" at splices.
3. Where slope or berm paving butts against structural concrete, separate with 1" expansion joint material.
4. Expansion joint material and welded wire fabric shall not be paid for separately, but shall be included in the work.
5. Structure excavation for concrete slope and ditch paving shall be limited to the actual volume occupied by the slope paving concrete.
6. 2.5 lbs. of an approved polypropylene fiber, per cubic yard of concrete, may be substituted for the WWF in this slope paving. If this substitution is made, a continuous #5 reinforcing bar shall be added near the top and bottom of the cutoff wall. The fiber shall be added to the concrete mix in such a fashion that the fibers are uniformly dispersed in the concrete without visible balls or clumps in either the finished slope paving or in the plastic concrete delivered from the concrete truck.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Checked By | GWK | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| | |
|---|---|
| Print Date: 9/22/2010 | |
| File Name: 16042W_SlopePavingDet_01.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

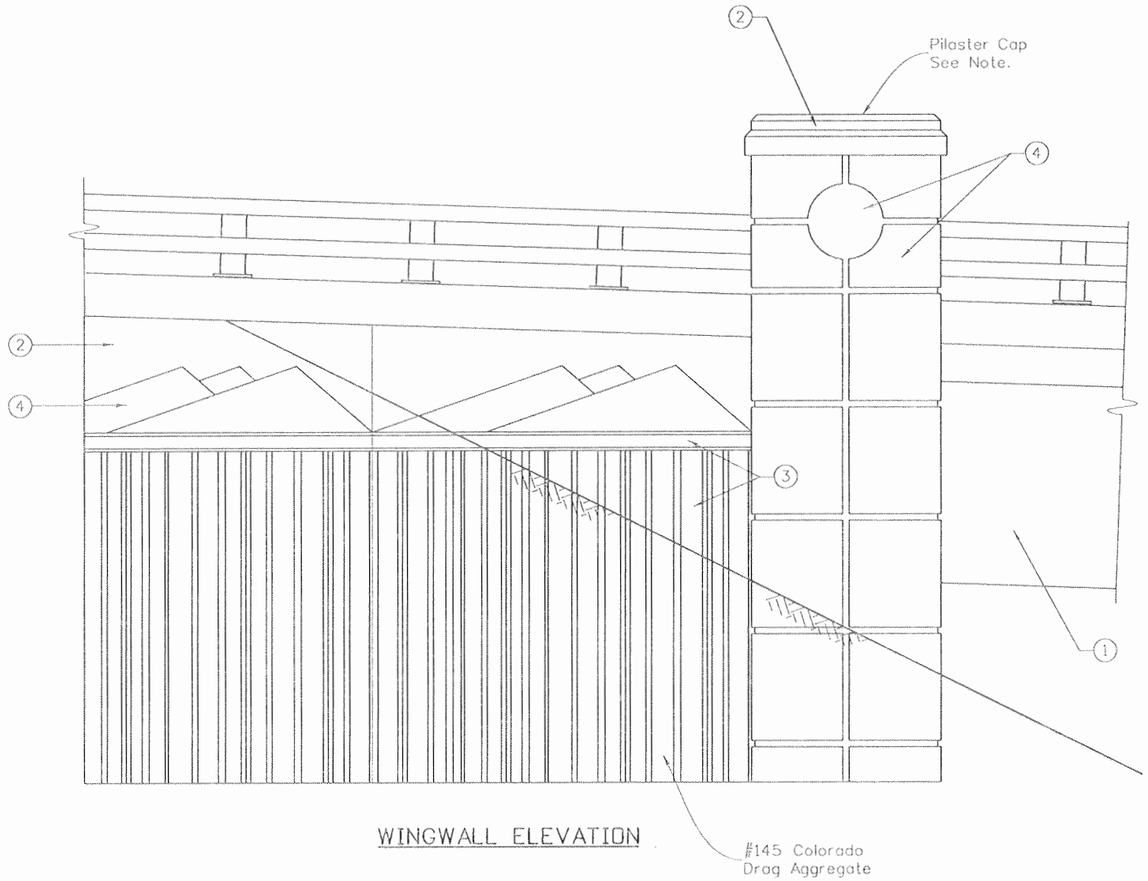

Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | |
|---|---|
| No Revisions: 9/10 | |
| Revised: | |
| Void: | |

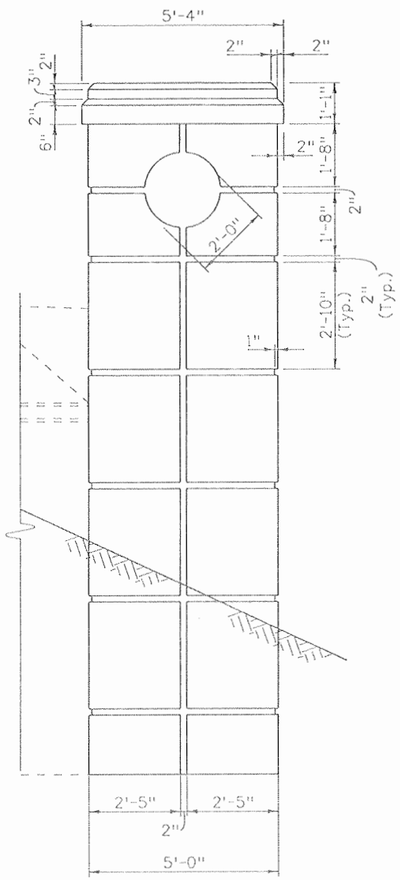
RAMP C OVER WILSON GULCH
SLOPE PAVING DETAILS

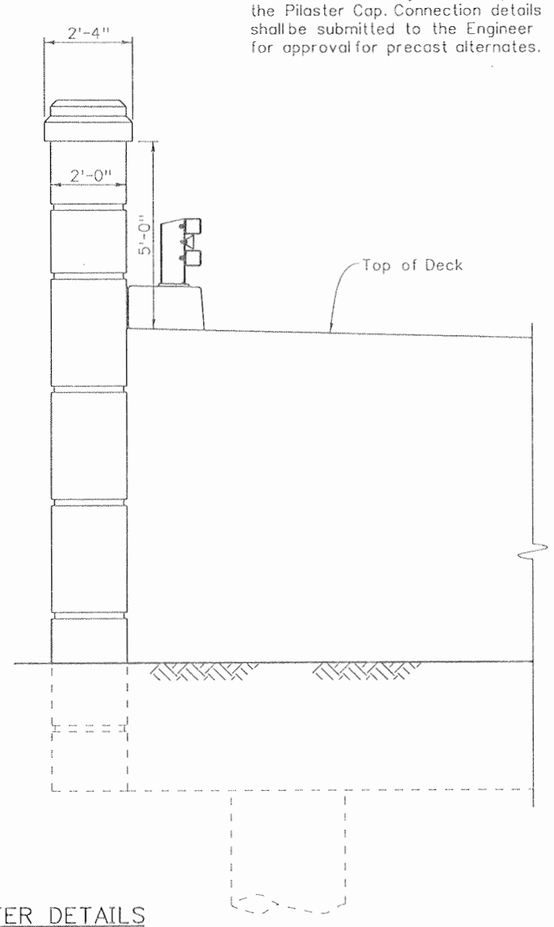
| | | | |
|---|---|---|---|
| Designer: A. Leifheit | Structure Numbers | P-05-W | |
| Detailer: D. Anderson | | | |
| Sheet Subset: Bridge | Subset Sheets: B31 of B34 | | |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 297 |




WINGWALL ELEVATION




PILASTER DETAILS

NOTE:

The Contractor may elect to precast the Pilaster Cap. Connection details shall be submitted to the Engineer for approval for precast alternates.

NOTES:

A colored structural concrete coating finish is required, as shown on the Plans, on all exposed concrete surfaces including piers, abutments, and wingwalls. Color numbers correspond to paint numbers as described by Diamond Vogel Paints. Coating shall extend to 1'-0" below ground surface.

(1) #8513

(2) #8515

(3) #8513

(4) #8511

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | ANL | 10/08 |
| Checked By | MJN | 10/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 10/08 |
| Checked By | MJN | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

Print Date: 9/22/2010
File Name: 16042W_ArchDet_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
ARCHITECTURAL DETAILS

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-AG
Subset Sheets: B32 of B34

Project No./Code
NH 1602-114
16042
Sheet Number 298

State of Colorado
Department of Transportation
Staff Bridge Design
Bridge Geometry Project Coordinate Converter
Version 1.00

Run date & time = Tue Nov 11 08:20:44 2008

Input Northing Offset = 1213708.810000
Input Easting Offset = 2320515.320000
Input Bearing = S 14 14 1.0000 W

DESCRIPTION

Units: feet;
Project: NH 1604-114; Subaccount: 16042;
Designer: AML; Detailer: ;
Location: Durango;
2 Span CIP Box Girder
Ramp C over Wilson Gulch

HORIZONTAL ALIGNMENT DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PC | 511+08.2760 | L | 370.3540 | | | | |
| PI | 514+78.6300 | Lc | 512.6503 | DELTA 106 48 35.29 RT | Dc 20 50 05.38 | RADIUS 275.000015 | |
| PT | 516+20.9263 | T | 370.3540 | | | | |

VERTICAL ALIGNMENT DATA

| ELEVATION AT PI | ELEVATION AT GRADE | STATION | | ELEVATION AT GRADE | ELEVATION AT PI | PERCENT GRADE |
|---|---|---|---|---|---|---|
| | | | | | | 0.710000 |
| | | 509+50.0000 | PC | 6665.5990 | | |
| | | 510+60.0000 | PI | 6666.8470 | 6666.3800 | |
| | | 511+70.0000 | PT | 6665.8283 | | -0.501675 |
| | | 514+35.0000 | PC | 6664.5810 | | |
| | | 515+25.0000 | PT | 6663.2897 | 6664.6500 | |
| | | 516+15.0000 | PT | 6660.5580 | | -3.869000 |

TABLE OF ROADWAY CROSS SLOPES (SUPERELEVATION: E= 0.0 )

| STATION | SLOPE LEFT | SLOPE RIGHT | VC LENGTH |
|---|---|---|---|
| (ON TANGENT) | 0.0800 | -0.0300 | 5.00 (MAX) |

OFFSET PROFILE CONTROL TO PIVOT POINT = 0.0000 FEET

LIMITS OF VALID ELEVATION AND CROSS-SLOPE DATA

| | BEGIN | END |
|---|---|---|
| | * UNLIMITED * | * UNLIMITED * |

LAYOUT LINE DATA

LAYOUT LINE DEFINED AS CHORD BETWEEN BENT LINES: CL BRG AB3
AND: "REF LINE"

LAYOUT LINE DEFINED AS CHORD ON HORIZONTAL CONTROL LINE

A CHORD PARALLEL TO HORIZONTAL CONTROL AT OFFSET 29.5458
IS TANGENT TO LAYOUT LINE AT STATION 513+22.0000
Y FROM REF LINE 142.245170

| | HCL STA | SKEW | Y FROM REF LINE |
|---|---|---|---|
| LAYOUT LINE INTERSECTS HORIZONTAL CONTROL AT | 511+72.5000 | 31 08 53.04 | 0.00000000 |
| | 514+71.5000 | -31 08 53.04 | 284.488341 |

| | HCL STA | OFFSET | X | Y |
|---|---|---|---|---|
| LAYOUT LINE INTERSECTS REF LINE AT | 511+72.5000 | 0.00000000 | 0.0000 | 0.0000 |

TYPE 4 GIRDER LINE DATA
(OFFSET VARIES WITH SKEW)

LINE OF CONSTANT OFFSET IS HORIZONTAL CONTROL

AVERAGE CROSS-SLOPE =-0.080000 FT/FT (RIGHT OF PROFILE CONTROL LINE)

DEAD LOAD DEFLECTION DATA

DEFLECTIONS AT TENTH POINTS FROM FITTED CURVE

| | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH | 0.0000 | 0.3908 | 0.8255 | 1.1933 | 1.3942 | 1.3790 | 1.1451 | 0.8301 | 0.4826 | 0.2094 | 0.0000 | INCH |
| FOOT | 0.0000 | 0.0326 | 0.0688 | 0.0994 | 0.1162 | 0.1149 | 0.0971 | 0.0692 | 0.0402 | 0.0174 | 0.0000 | FOOT |
| SLOPE | 0.284115 | | | | | | | | | | -0.186769 | SLOPE |

FOR BENT LINE: CL BRG AB1 97 CARD(S): 1 GIRDER LINES REFERENCED BY: (BLANK)

A4=-31.8948
A3=-48.7659
A2=-6.57039
A1=-9.13255
A0=-3.40938

| | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INCH | 0.0000 | -0.0686 | -0.2180 | -0.3615 | -0.4678 | -0.5314 | -0.5525 | -0.5250 | -0.4340 | -0.2612 | 0.0000 | INCH |
| FOOT | 0.0000 | -0.0057 | -0.0182 | -0.0301 | -0.0390 | -0.0443 | -0.0460 | -0.0438 | -0.0362 | -0.0218 | 0.0000 | FOOT |
| SLOPE | 0.018187 | | | | | | | | | | 0.250199 | SLOPE |

FOR BENT LINE: CL Pier2 97 CARD(S): 1 GIRDER LINES REFERENCED BY: (BLANK)

A4=-32.2034
A3= 30.4736
A2=-27.2891
A1= 12.2395
A0=-.218239

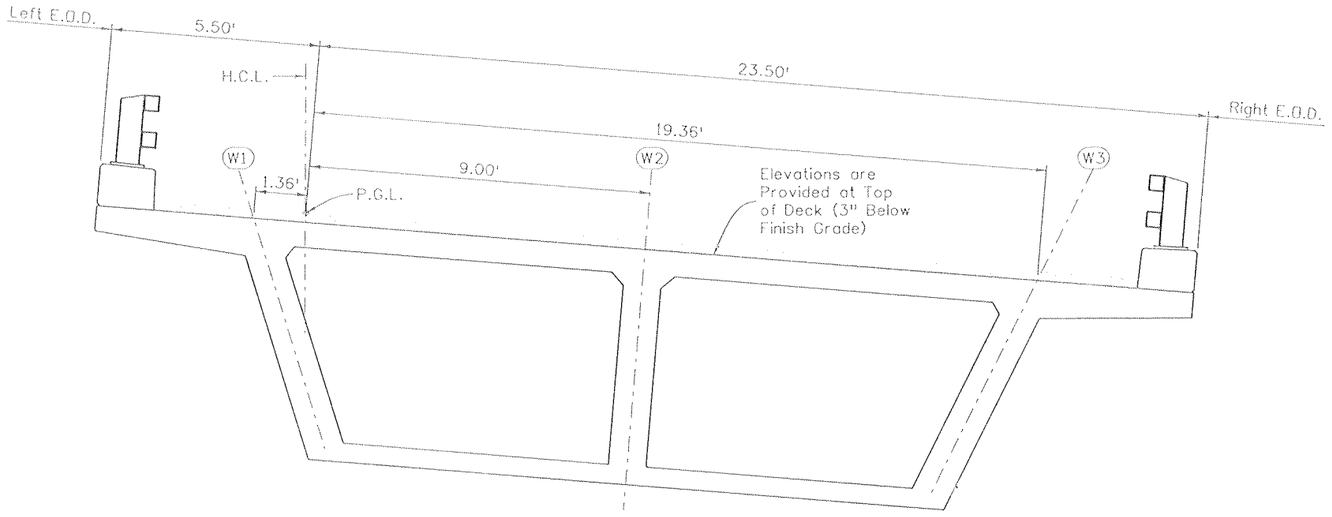
DEFLECTIONS SHOW SIGNIFICANT UPLIFT

| | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| BENT LINE DESCRIPTION | INTERSECTION POINT STATION | OFFSET | ELEVATION | FROM LAYOUT LINE OFFSET X | ORDINATE Y | PROJECT COORDINATES NORTHING | EASTING | BENT LINE LENGTH FROM Y-AXIS | SKEW D M S | GIRDER LINE LENGTH FROM REF LINE | ROADWAY CROSS-SLOPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * HORIZONTAL CONTROL LINE * AT FINISHED GRADE | | | | | | | | | | | |
| BP AB 1 | 511+68.7500 | 0.0000 | 6665.8350 | 1 | 1.3615 | -3.1961 | 1213712.3903 | 2320514.2046 | 2.3112 | 0 00 00.00 | -3.7500 | +/-.080000 |
| CL BRG AB1 | 511+72.5000 | 0.0000 | 6665.8163 | 10 | 0.0000 | 0.0000 | 1213708.8100 | 2320515.3200 | 0.0000 | 0 00 00.00 | 0.0000 | +/-.080000 |
| CL Pier2 | 513+35.0000 | 0.0000 | 6665.0020 | 10 | -99.5786 | 155.2393 | 1213548.6629 | 2320515.2813 | -99.3926 | 0 00 00.00 | 162.5000 | +/-.080000 |
| CL BRG AB3 | 514+71.5000 | 0.0000 | 6664.1930 | 1 | 0.0000 | 284.4883 | 1213433.0551 | 2320445.3711 | 0.0000 | 0 00 00.00 | 299.0000 | +/-.080000 |
| BP AB3 | 514+73.2500 | 0.0000 | 6664.1720 | 1 | 0.9099 | 285.9832 | 1213431.8298 | 2320444.1216 | 1.0674 | 0 00 00.00 | 300.7500 | +/-.080000 |
| * LAYOUT LINE * AT FINISHED GRADE | | | | | | | | | | | | |
| BP AB 1 | 511+68.7500 | -2.3112 | 6666.0199 | | 0.0000 | -4.4184 | 1213713.0928 | 2320516.4064 | 0.0000 | -31 55 45.74 | -4.4184 | +0.080000 |
| CL BRG AB1 | 511+72.5000 | 0.0000 | 6665.8163 | | 0.0000 | 0.0000 | 1213708.8100 | 2320515.3200 | 0.0000 | -31 08 53.04 | 0.0000 | +/-.080000 |
| CL Pier2 | 513+35.0000 | 39.3826 | 6661.8514 | | 0.0000 | 153.3783 | 1213546.1402 | 2320477.6080 | 0.0000 | 2 42 30.70 | 153.3783 | -0.080000 |
| CL BRG AB3 | 514+71.5000 | 0.0000 | 6664.1930 | | 0.0000 | 284.4883 | 1213433.0551 | 2320445.3711 | 0.0000 | 31 08 53.04 | 284.4883 | +/-.080000 |
| BP AB3 | 514+73.2500 | -1.0674 | 6664.2574 | | 0.0000 | 286.5411 | 1213431.8053 | 2320444.3664 | 0.0000 | 31 30 45.64 | 286.5411 | +0.080000 |

WINGWALL ELEVATIONS PARALLEL TO HORIZONTAL CONTROL 0.250000 FEET BELOW FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| End WWA | 511+47.4400 | -6.0830 | 6666.1645 | | 9.0328 | -24.4245 | 1213734.7129 | 2320512.5820 | 11.2055 | 0 00 00.00 | -25.6143 | +0.080000 |
| End WWB | 511+47.4400 | 24.0000 | 6663.7579 | | 33.2660 | -6.5956 | 1213723.3775 | 2320484.7163 | 41.2885 | 0 00 00.00 | -22.8729 | -0.080000 |
| End WWC | 514+94.8100 | -6.0000 | 6664.0955 | | 8.9339 | 307.4463 | 1213412.7935 | 2320431.5430 | 9.9310 | 0 00 00.00 | 329.3422 | +0.080000 |
| End WWD | 514+94.8100 | 23.9167 | 6661.7122 | | 32.8396 | 289.5435 | 1213435.7900 | 2320412.6083 | 39.8477 | 0 00 00.00 | 294.2788 | -0.080000 |




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | AML | 10/08 |
| Detailed By | ROA | 10/08 |
| Checked By | GWK | 10/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | AML | 10/08 |
| Checked By | LW | 10/08 |

| | |
|---|---|
| Print Date: 9/22/2010 | |
| File Name: 16042W_Brdg_Geometry_01.dgn | |
| Horiz. Scale: 1:1 Vert. Scale: As Noted | |
| Unit Information 0221 Unit Leader STW | |

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
BRIDGE DECK ELEVATIONS
(1 OF 2)

Designer: A. Leifheit
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-W
Subset Sheets: B33 of B34

Project No./Code: NH 1602-114
16042
Sheet Number 299

Left EOD — VARIES WITH SUPER — NOMINAL OFFSET = -5.5024 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | -5.5024 | 6666.0244 | | -2.7084 | -6.1961 | 1213714.0627 | 2320519.4466 | -3.1912 | 0 00 00.00 | -3.8250 | +0.080000 |
| CL BRG AB1 | 511+72.5000 | -5.5024 | 6666.0057 | 666.0057 | -4.7092 | -2.8461 | 1213710.4108 | 2320520.5844 | -5.5024 | 0 00 00.00 | 0.0000 | +0.080000 |
| F-1 | 511+88.7500 | -5.5024 | 6665.9243 | 665.9568 | -12.8587 | 11.5844 | 1213694.4196 | 2320524.9356 | | | 16.5751 | +0.080000 |
| F-2 | 512+05.0000 | -5.5024 | 6665.8428 | 665.9116 | -20.1418 | 26.4710 | 1213678.1992 | 2320528.3349 | | | 33.1503 | +0.080000 |
| F-3 | 512+21.2500 | -5.5024 | 6665.7614 | 665.8608 | -26.5330 | 41.7618 | 1213661.8064 | 2320530.7702 | | | 49.7254 | +0.080000 |
| F-4 | 512+37.5000 | -5.5024 | 6665.6800 | 665.7962 | -32.0101 | 57.4033 | 1213645.2984 | 2320532.2333 | | | 66.3006 | +0.080000 |
| F-5 | 512+53.7500 | -5.5024 | 6665.5986 | 665.7135 | -36.5538 | 73.3410 | 1213628.7328 | 2320532.7189 | | | 82.8757 | +0.080000 |
| F-6 | 512+70.0000 | -5.5024 | 6665.5171 | 665.6142 | -40.1484 | 89.5192 | 1213612.1674 | 2320532.2253 | | | 99.4509 | +0.080000 |
| F-7 | 512+86.2500 | -5.5024 | 6665.4357 | 665.5049 | -42.7813 | 105.9815 | 1217595.6400 | 2320530.7542 | | | 116.0260 | +0.080000 |
| F-8 | 513+02.5000 | -5.5024 | 6665.3543 | 665.3945 | -44.4433 | 122.3707 | 1213579.2684 | 2320528.3105 | | | 132.6011 | +0.080000 |
| F-9 | 513+18.7500 | -5.5024 | 6665.2729 | 665.2903 | -45.1286 | 138.9292 | 1213563.0497 | 2320524.9038 | | | 149.1763 | +0.080000 |
| CL Pier2 | 513+35.0000 | -5.5024 | 6665.1914 | 665.1914 | -44.8349 | 155.4993 | 1213547.0605 | 2320520.5450 | -44.8850 | 0 00 00.00 | 165.7514 | +0.080000 |
| F-1 | 513+48.6500 | -5.5024 | 6665.1230 | 665.1173 | -42.8321 | 169.3849 | 1213533.8477 | 2320516.1588 | | | 179.6746 | +0.080000 |
| F-2 | 513+62.3000 | -5.5024 | 6665.0546 | 665.0365 | -42.1416 | 183.2036 | 1213520.8689 | 2320511.1225 | | | 193.5977 | +0.080000 |
| F-3 | 513+75.9500 | -5.5024 | 6664.9862 | 664.9561 | -39.7676 | 196.9213 | 1213508.1560 | 2320505.4486 | | | 207.5208 | +0.080000 |
| F-4 | 513+89.6000 | -5.5024 | 6664.9179 | 664.8789 | -36.7159 | 210.5044 | 1213495.7403 | 2320499.1508 | | | 221.4439 | +0.080000 |
| F-5 | 514+03.2500 | -5.5024 | 6664.8495 | 664.8052 | -32.9940 | 223.9194 | 1213483.6522 | 2320492.2447 | | | 235.3670 | +0.080000 |
| F-6 | 514+16.9000 | -5.5024 | 6664.7811 | 664.7350 | -28.6111 | 237.1332 | 1213473.9217 | 2320484.7474 | | | 249.2902 | +0.080000 |
| F-7 | 514+30.5500 | -5.5024 | 6664.7127 | 664.6689 | -23.5780 | 250.1132 | 1213460.5777 | 2320476.6773 | | | 263.2133 | +0.080000 |
| F-8 | 514+44.2000 | -5.5024 | 6664.6363 | 664.6002 | -17.9071 | 262.8275 | 1213449.6480 | 2320468.0544 | | | 277.1364 | +0.080000 |
| F-9 | 514+57.8500 | -5.5024 | 6664.5269 | 664.5051 | -11.6123 | 275.2648 | 1213439.1597 | 2320458.8997 | | | 291.0595 | +0.080000 |
| CL BRG AB3 | 514+71.5000 | -5.5024 | 6664.3524 | 664.3826 | -4.7052 | 287.3345 | 1213429.1384 | 2320449.2360 | -5.5024 | 0 00 00.00 | 304.9826 | +0.080000 |
| BF AB3 | 514+73.2500 | -5.5024 | 6664.3614 | | -3.7810 | 288.8592 | 1213427.8388 | 2320447.9614 | -4.4351 | 0 00 00.00 | 306.7676 | +0.080000 |

W1 — VARIES WITH SUPER — NOMINAL OFFSET = -1.3766 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | -1.3766 | 6665.6944 | | 0.7932 | -3.9241 | 1213712.8087 | 2320515.5160 | 0.9346 | 0 00 00.00 | -3.7688 | -0.080000 |
| CL BRG AB1 | 511+72.5000 | -1.3766 | 6665.6756 | 665.6756 | -1.1781 | -0.7120 | 1213709.2105 | 2320516.6370 | -1.3766 | 0 00 00.00 | 0.0000 | +0.080000 |
| F-1 | 511+88.7500 | -1.3766 | 6665.5942 | 665.6268 | -9.2078 | 13.5062 | 1213693.4544 | 2320520.9243 | | | 16.3313 | +0.080000 |
| F-2 | 512+05.0000 | -1.3766 | 6665.5128 | 665.5816 | -16.3638 | 28.1739 | 1213677.4726 | 2320524.2736 | | | 32.6627 | +0.080000 |
| F-3 | 512+21.2500 | -1.3766 | 6665.4313 | 665.5308 | -22.6810 | 43.2298 | 1213661.3209 | 2320526.6731 | | | 48.9940 | +0.080000 |
| F-4 | 512+37.5000 | -1.3766 | 6665.3499 | 665.4661 | -28.0775 | 58.6512 | 1213645.0557 | 2320528.1146 | | | 65.3254 | +0.080000 |
| F-5 | 512+53.7500 | -1.3766 | 6665.2685 | 665.3834 | -32.5544 | 74.3545 | 1213628.7337 | 2320528.5930 | | | 81.6567 | +0.080000 |
| F-6 | 512+70.0000 | -1.3766 | 6665.1871 | 665.2842 | -36.0961 | 90.2947 | 1213612.4121 | 2320528.0967 | | | 97.9881 | +0.080000 |
| F-7 | 512+86.2500 | -1.3766 | 6665.1056 | 665.1748 | -38.6903 | 106.4163 | 1213596.1475 | 2320526.6573 | | | 114.3194 | +0.080000 |
| F-8 | 513+02.5000 | -1.3766 | 6665.0242 | 665.0644 | -40.3229 | 122.6630 | 1213579.9969 | 2320524.2500 | | | 130.6508 | +0.080000 |
| F-9 | 513+18.7500 | -1.3766 | 6664.9428 | 664.9602 | -41.0031 | 139.0760 | 1213563.8168 | 2320520.8930 | | | 146.9821 | +0.080000 |
| CL Pier2 | 513+35.0000 | -1.3766 | 6664.8614 | 664.8614 | -40.7137 | 155.5044 | 1213548.2627 | 2320516.5963 | -40.7592 | 0 00 00.00 | 163.3134 | +0.080000 |
| F-1 | 513+48.6500 | -1.3766 | 6664.7930 | 664.7673 | -38.7256 | 169.3857 | 1213535.2464 | 2320512.2765 | | | 177.0318 | +0.080000 |
| F-2 | 513+62.3000 | -1.3766 | 6664.7246 | 664.7064 | -38.0650 | 182.6851 | 1213522.4565 | 2320507.3144 | | | 190.7501 | +0.080000 |
| F-3 | 513+75.9500 | -1.3766 | 6664.6562 | 664.6261 | -35.7289 | 196.1171 | 1212509.9305 | 2320501.7238 | | | 204.4684 | +0.080000 |
| F-4 | 513+89.6000 | -1.3766 | 6664.5878 | 664.5488 | -32.7141 | 209.5004 | 1213497.6974 | 2320495.5187 | | | 218.1868 | +0.080000 |
| F-5 | 514+03.2500 | -1.3766 | 6664.5194 | 664.4751 | -29.0670 | 222.7181 | 1213485.7871 | 2320488.7142 | | | 231.9051 | +0.080000 |
| F-6 | 514+16.9000 | -1.3766 | 6664.4510 | 664.4049 | -24.7225 | 235.7375 | 1213474.2292 | 2320481.3272 | | | 245.6234 | +0.080000 |
| F-7 | 514+30.5500 | -1.3766 | 6664.3826 | 664.3388 | -19.7495 | 248.5206 | 1213463.0520 | 2320473.3759 | | | 259.3418 | +0.080000 |
| F-8 | 514+44.2000 | -1.3766 | 6664.3062 | 664.2761 | -14.1819 | 261.0539 | 1213452.2831 | 2320464.8756 | | | 273.0601 | +0.080000 |
| F-9 | 514+57.8500 | -1.3766 | 6664.1968 | 664.1808 | -8.0339 | 273.2885 | 1213441.9491 | 2320455.8598 | | | 286.7784 | +0.080000 |
| CL BRG AB3 | 514+71.5000 | -1.3766 | 6664.0524 | 664.0524 | -1.3781 | 285.2406 | 1213432.0752 | 2320446.3380 | -1.3766 | 0 00 00.00 | 300.4967 | +0.080000 |
| BF AB3 | 514+73.2500 | -1.3766 | 6664.0313 | | -0.2636 | 286.7027 | 1213430.8439 | 2320445.0823 | -0.3092 | 0 00 00.00 | 302.2555 | +0.080000 |

BCL — PARALLEL TO HORIZONTAL CONTROL — 0.250000 FEET BELOW FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | 0.0000 | 6665.5850 | | 1.3615 | -3.1961 | 1213712.3903 | 2320514.2046 | 2.3112 | 0 00 00.00 | -3.7500 | +/-.080000 |
| CL BRG AB1 | 511+72.5000 | 0.0000 | 6665.5663 | 665.5663 | 0.0000 | 0.0000 | 1213708.8100 | 2320515.3200 | 0.0000 | 0 00 00.00 | 0.0000 | +/-.080000 |
| F-1 | 511+88.7500 | 0.0000 | 6665.4849 | 665.5174 | -7.9867 | 14.1475 | 1213693.1323 | 2320519.5653 | | | 16.2500 | +/-.080000 |
| F-2 | 512+05.0000 | 0.0000 | 6665.4034 | 665.4722 | -15.1299 | 28.7621 | 1213677.2302 | 2320522.9184 | | | 32.5000 | +/-.080000 |
| F-3 | 512+21.2500 | 0.0000 | 6665.3220 | 665.4215 | -21.3957 | 43.7229 | 1213661.1590 | 2320525.3060 | | | 48.7500 | +/-.080000 |
| F-4 | 512+37.5000 | 0.0000 | 6665.2406 | 665.3568 | -26.7654 | 59.0676 | 1213644.9747 | 2320526.7464 | | | 65.0000 | +/-.080000 |
| F-5 | 512+53.7500 | 0.0000 | 6665.1592 | 665.2741 | -31.2200 | 74.6927 | 1213628.7360 | 2320527.2164 | | | 81.2500 | +/-.080000 |
| F-6 | 512+70.0000 | 0.0000 | 6665.0777 | 665.1748 | -34.7441 | 90.5535 | 1213612.4936 | 2320526.7326 | | | 97.5000 | +/-.080000 |
| F-7 | 512+86.2500 | 0.0000 | 6664.9963 | 665.0655 | -37.3253 | 106.5948 | 1213596.3101 | 2320525.2584 | | | 113.7500 | +/-.080000 |
| F-8 | 513+02.5000 | 0.0000 | 6664.9149 | 664.9531 | -38.9547 | 122.7605 | 1213580.2401 | 2320522.8950 | | | 130.0000 | +/-.080000 |
| F-9 | 513+18.7500 | 0.0000 | 6664.8335 | 664.8509 | -39.6266 | 138.9942 | 1213564.2395 | 2320519.5549 | | | 146.2500 | +/-.080000 |
| CL Pier2 | 513+35.0000 | 0.0000 | 6664.7520 | 664.7520 | -39.3386 | 155.2393 | 1213548.6639 | 2320515.2803 | -39.3826 | 0 00 00.00 | 162.5000 | +/-.080000 |
| F-1 | 513+48.6500 | 0.0000 | 6664.6836 | 664.6779 | -38.3555 | 168.8525 | 1213535.7104 | 2320510.9613 | | | 176.1500 | +/-.080000 |
| F-2 | 513+62.3000 | 0.0000 | 6664.6152 | 664.5971 | -36.6982 | 182.4001 | 1213522.9861 | 2320506.0438 | | | 189.8000 | +/-.080000 |
| F-3 | 513+75.9500 | 0.0000 | 6664.5469 | 664.5167 | -34.3708 | 195.8488 | 1213510.5226 | 2320500.4811 | | | 203.4500 | +/-.080000 |
| F-4 | 513+89.6000 | 0.0000 | 6664.4785 | 664.4295 | -31.3789 | 209.1654 | 1213498.3505 | 2320494.3068 | | | 217.1000 | +/-.080000 |
| F-5 | 514+03.2500 | 0.0000 | 6664.4101 | 664.3658 | -27.7300 | 222.3172 | 1213486.4995 | 2320487.5363 | | | 230.7500 | +/-.080000 |
| F-6 | 514+16.9000 | 0.0000 | 6664.3417 | 664.2956 | -23.4331 | 235.2758 | 1213474.9991 | 2320480.1840 | | | 244.4000 | +/-.080000 |
| F-7 | 514+30.5500 | 0.0000 | 6664.2733 | 664.2295 | -18.4987 | 247.9972 | 1213463.8776 | 2320472.2742 | | | 258.0500 | +/-.080000 |
| F-8 | 514+44.2000 | 0.0000 | 6664.1969 | 664.1608 | -12.9390 | 260.4621 | 1213453.1624 | 2320463.8284 | | | 271.7000 | +/-.080000 |
| F-9 | 514+57.8500 | 0.0000 | 6664.0875 | 664.0457 | -6.7677 | 272.6358 | 1213442.8798 | 2320454.8453 | | | 285.3500 | +/-.080000 |
| CL BRG AB3 | 514+71.5000 | 0.0000 | 6663.9430 | 663.9430 | 0.0000 | 284.4883 | 1213433.0551 | 2320445.3711 | 0.0000 | 0 00 00.00 | 299.0000 | +/-.080000 |
| BF AB3 | 514+73.2500 | 0.0000 | 6663.9220 | | 0.9099 | 285.9832 | 1213431.8298 | 2320444.1216 | 1.0674 | 0 00 00.00 | 300.7500 | +/-.080000 |

W2 — VARIES WITH SUPER — NOMINAL OFFSET = 8.9514 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | 8.9514 | 6664.8481 | | 9.5586 | 1.5381 | 1213709.6633 | 2320505.6767 | 11.2626 | 0 00 00.00 | -3.6279 | -0.080000 |
| CL BRG AB1 | 511+72.5000 | 8.9514 | 6664.8494 | 664.8494 | 7.6609 | 4.6301 | 1213706.2057 | 2320506.7558 | 8.9514 | 0 00 00.00 | 0.0000 | -0.080000 |
| F-1 | 511+88.7500 | 8.9514 | 6664.7680 | 664.8005 | -0.0467 | 18.3171 | 1213691.0383 | 2320510.8829 | | | 15.7211 | -0.080000 |
| F-2 | 512+05.0000 | 8.9514 | 6664.6865 | 664.7553 | -6.9765 | 32.4366 | 1213675.6538 | 2320514.1069 | | | 31.4421 | -0.080000 |
| F-3 | 512+21.2500 | 8.9514 | 6664.6051 | 664.7045 | -13.0384 | 46.5395 | 1213660.1057 | 2320516.4168 | | | 47.1632 | -0.080000 |
| F-4 | 512+37.5000 | 8.9514 | 6664.5237 | 664.6399 | -18.2332 | 61.7750 | 1213644.4483 | 2320517.8045 | | | 62.8842 | -0.080000 |
| F-5 | 512+53.7500 | 8.9514 | 6664.4423 | 664.5572 | -22.5428 | 76.8915 | 1213628.7362 | 2320518.2650 | | | 78.6053 | -0.080000 |
| F-6 | 512+70.0000 | 8.9514 | 6664.3608 | 664.4579 | -25.9522 | 92.2361 | 1213613.0244 | 2320517.7969 | | | 94.3263 | -0.080000 |
| F-7 | 512+86.2500 | 8.9514 | 6664.2794 | 664.3486 | -28.4495 | 107.7552 | 1213597.3677 | 2320516.4017 | | | 110.0474 | -0.080000 |
| F-8 | 513+02.5000 | 8.9514 | 6664.1980 | 664.2382 | -30.0258 | 123.3947 | 1213581.8207 | 2320514.0842 | | | 125.7684 | -0.080000 |
| F-9 | 513+18.7500 | 8.9514 | 6664.1166 | 664.1340 | -30.6758 | 139.1000 | 1213566.4377 | 2320510.8527 | | | 141.4895 | -0.080000 |
| CL Pier2 | 513+35.0000 | 8.9514 | 6664.0351 | 664.0351 | -30.3972 | 154.8163 | 1213551.2724 | 2320506.7164 | -30.4312 | 0 00 00.00 | 157.2105 | -0.080000 |
| F-1 | 513+48.6500 | 8.9514 | 6663.9667 | 663.9610 | -29.4461 | 167.9864 | 1213538.7405 | 2320502.5583 | | | 170.4162 | -0.080000 |
| F-2 | 513+62.3000 | 8.9514 | 6663.8983 | 663.8802 | -27.8427 | 181.0930 | 1213526.4305 | 2320497.7815 | | | 183.6219 | -0.080000 |
| F-3 | 513+75.9500 | 8.9514 | 6663.8299 | 663.7998 | -25.5911 | 194.1039 | 1213514.3726 | 2320492.4000 | | | 196.8276 | -0.080000 |
| F-4 | 513+89.6000 | 8.9514 | 6663.7615 | 663.7226 | -22.6966 | 206.9871 | 1213502.5966 | 2320486.4267 | | | 210.0333 | -0.080000 |
| F-5 | 514+03.2500 | 8.9514 | 6663.6931 | 663.6489 | -19.1665 | 219.7108 | 1213491.1315 | 2320479.8765 | | | 223.2390 | -0.080000 |
| F-6 | 514+16.9000 | 8.9514 | 6663.6268 | 663.5787 | -15.0094 | 232.2437 | 1213480.0054 | 2320472.7655 | | | 236.4446 | -0.080000 |
| F-7 | 514+30.5500 | 8.9514 | 6663.5564 | 663.5126 | -10.2357 | 244.5549 | 1213469.2659 | 2320465.1113 | | | 249.6503 | -0.080000 |
| F-8 | 514+44.2000 | 8.9514 | 6663.4800 | 663.4438 | -4.8569 | 256.6140 | 1213458.8795 | 2320456.9326 | | | 262.8560 | -0.080000 |
| F-9 | 514+57.8500 | 8.9514 | 6663.3706 | 663.3488 | 1.1135 | 268.3915 | 1213448.9316 | 2320448.2496 | | | 276.0617 | -0.080000 |
| CL BRG AB3 | 514+71.5000 | 8.9514 | 6663.2261 | 663.2261 | 7.6609 | 279.8582 | 1213439.4267 | 2320439.0839 | 8.9514 | 0 00 00.00 | 289.2674 | -0.080000 |
| BF AB3 | 514+73.2500 | 8.9514 | 6663.2051 | | 8.5412 | 281.3044 | 1213438.2414 | 2320437.8750 | 10.0168 | 0 00 00.00 | 290.9604 | -0.080000 |

W3 — VARIES WITH SUPER — NOMINAL OFFSET = 19.2794 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | 19.2794 | 6664.0419 | | 16.3240 | 7.0003 | 1213706.5300 | 2320495.8373 | 21.5906 | 0 00 00.00 | -2.4871 | -0.080000 |
| CL BRG AB1 | 511+72.5000 | 19.2794 | 6664.0231 | 664.0231 | 16.5000 | 9.9723 | 1213703.2008 | 2320496.8746 | 19.2794 | 0 00 00.00 | 0.0000 | -0.080000 |
| F-1 | 511+88.7500 | 19.2794 | 6663.9417 | 663.9743 | 9.0704 | 23.1279 | 1213688.6223 | 2320500.8415 | | | 15.1168 | -0.080000 |
| F-2 | 512+05.0000 | 19.2794 | 6663.8603 | 663.9291 | 2.4208 | 36.4954 | 1213673.8349 | 2320503.9403 | | | 30.2215 | -0.080000 |
| F-3 | 512+21.2500 | 19.2794 | 6663.7789 | 663.8783 | -3.3958 | 50.8392 | 1213658.8994 | 2320506.1606 | | | 45.3323 | -0.080000 |
| F-4 | 512+37.5000 | 19.2794 | 6663.6974 | 663.8176 | -8.3890 | 64.8989 | 1213643.8408 | 2320507.4964 | | | 60.4431 | -0.080000 |
| F-5 | 512+53.7500 | 19.2794 | 6663.6160 | 663.7309 | -12.5513 | 79.4265 | 1213628.7387 | 2320507.9370 | | | 75.5538 | -0.080000 |
| F-6 | 512+70.0000 | 19.2794 | 6663.5346 | 663.6317 | -15.8083 | 94.1774 | 1213613.6368 | 2320507.4870 | | | 90.6646 | -0.080000 |
| F-7 | 512+86.2500 | 19.2794 | 6663.4532 | 663.5223 | -18.2086 | 109.0941 | 1213598.5879 | 2320506.1460 | | | 105.7753 | -0.080000 |
| F-8 | 513+02.5000 | 19.2794 | 6663.3717 | 663.4130 | -19.7236 | 124.1264 | 1213583.6445 | 2320503.9186 | | | 120.8861 | -0.080000 |
| F-9 | 513+18.7500 | 19.2794 | 6663.2903 | 663.3078 | -20.3485 | 139.2221 | 1213568.8586 | 2320500.8124 | | | 135.9968 | -0.080000 |
| CL Pier2 | 513+35.0000 | 19.2794 | 6663.2089 | 663.2089 | -20.0807 | 154.3283 | 1213554.2820 | 2320496.8386 | -20.1032 | 0 00 00.00 | 151.1076 | -0.080000 |
| F-1 | 513+48.6500 | 19.2794 | 6663.1405 | 663.1348 | -19.1666 | 167.9871 | 1213542.2366 | 2320492.6401 | | | 163.8007 | -0.080000 |
| F-2 | 513+62.3000 | 19.2794 | 6663.0721 | 663.0539 | -17.6254 | 179.5849 | 1213530.4045 | 2320488.3487 | | | 176.4937 | -0.080000 |
| F-3 | 513+75.9500 | 19.2794 | 6663.0037 | 662.9736 | -15.4612 | 192.0907 | 1213518.8147 | 2320483.0761 | | | 189.1867 | -0.080000 |
| F-4 | 513+89.6000 | 19.2794 | 6662.9353 | 662.8963 | -12.6791 | 204.4738 | 1213507.4958 | 2320477.0247 | | | 201.8798 | -0.080000 |
| F-5 | 514+03.2500 | 19.2794 | 6662.8669 | 662.8226 | -9.2868 | 216.7035 | 1213496.4758 | 2320471.0367 | | | 214.5728 | -0.080000 |
| F-6 | 514+16.9000 | 19.2794 | 6662.7986 | 662.7525 | -5.2903 | 228.7459 | 1213485.7817 | 2320466.2038 | | | 227.2659 | -0.080000 |
| F-7 | 514+30.5500 | 19.2794 | 6662.7301 | 662.6864 | -0.7019 | 240.5582 | 1213475.4498 | 2320496.8467 | | | 239.9589 | -0.080000 |
| F-8 | 514+44.2000 | 19.2794 | 6662.6538 | 662.6176 | 4.4681 | 252.1742 | 1213465.4758 | 2320448.9855 | | | 252.6519 | -0.080000 |
| F-9 | 514+57.8500 | 19.2794 | 6662.5443 | 662.5226 | 10.2067 | 263.4945 | 1213455.9140 | 2320440.6396 | | | 265.3450 | -0.080000 |
| CL BRG AB3 | 514+71.5000 | 19.2794 | 6662.3999 | 662.3999 | 16.5800 | 274.5160 | 1213446.7782 | 2320431.8296 | 19.2794 | 0 00 00.00 | 278.0380 | -0.080000 |
| BF AB3 | 514+73.2500 | 19.2794 | 6662.3788 | | 17.3461 | 275.9061 | 1213445.6389 | 2320430.6677 | 20.9468 | 0 00 00.00 | 279.6653 | -0.080000 |

Right EOD — VARIES WITH SUPER — NOMINAL OFFSET = 23.4052 FT — -0.2500 NORMAL FROM FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV+DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF AB 1 | 511+68.7500 | 23.4052 | 6663.7118 | | 21.8255 | 9.1824 | 1213705.2759 | 2320491.9968 | 25.7164 | 0 00 00.00 | -3.4308 | -0.080000 |
| CL BRG AB1 | 511+72.5000 | 23.4052 | 6663.6971 | 663.6971 | 20.6310 | 12.1064 | 1213702.0054 | 2320492.9273 | 23.4052 | 0 00 00.00 | 0.0000 | -0.080000 |
| F-1 | 511+88.7500 | 23.4052 | 6663.6116 | 663.6442 | 12.7215 | 25.0695 | 1213687.4571 | 2320496.6701 | | | 14.8470 | -0.080000 |
| F-2 | 512+05.0000 | 23.4052 | 6663.5302 | 663.5590 | 6.1889 | 38.4052 | 1213673.1084 | 2320499.8790 | | | 29.7339 | -0.080000 |
| F-3 | 512+21.2500 | 23.4052 | 6663.4488 | 663.5482 | 0.4562 | 52.1172 | 1213658.4049 | 2320502.0634 | | | 44.6209 | -0.080000 |
| F-4 | 512+37.5000 | 23.4052 | 6663.3674 | 663.4636 | -4.4564 | 66.1408 | 1213643.5981 | 2320503.3757 | | | 59.4679 | -0.080000 |
| F-5 | 512+53.7500 | 23.4052 | 6663.2860 | 663.4009 | -8.5315 | 80.4420 | 1213628.7397 | 2320503.8112 | | | 74.3348 | -0.080000 |
| F-6 | 512+70.0000 | 23.4052 | 6663.2045 | 663.3016 | -11.7560 | 94.9529 | 1213613.9815 | 2320503.3685 | | | 89.2018 | -0.080000 |
| F-7 | 512+86.2500 | 23.4052 | 6663.1231 | 663.1923 | -14.1178 | 109.6289 | 1213599.0754 | 2320502.0491 | | | 104.0687 | -0.080000 |
| F-8 | 513+02.5000 | 23.4052 | 6663.0417 | 663.0819 | -15.6083 | 124.4168 | 1213584.1730 | 2320499.8575 | | | 118.9357 | -0.080000 |
| F-9 | 513+18.7500 | 23.4052 | 6662.9603 | 662.9777 | -16.2230 | 139.2709 | 1213569.3258 | 2320496.8016 | | | 133.8027 | -0.080000 |
| CL Pier2 | 513+35.0000 | 23.4052 | 6662.8788 | 662.8788 | -15.9595 | 154.1333 | 1213555.4843 | 2320492.8515 | -15.9774 | 0 00 00.00 | 148.6696 | -0.080000 |
| F-1 | 513+48.6500 | 23.4052 | 6662.8104 | 662.8047 | -15.0601 | 166.5878 | 1213543.8332 | 2320488.9578 | | | 161.1579 | -0.080000 |
| F-2 | 513+62.3000 | 23.4052 | 6662.7420 | 662.7239 | -13.5438 | 178.9824 | 1213531.3920 | 2320484.6405 | | | 173.6461 | -0.080000 |
| F-3 | 513+75.9500 | 23.4052 | 6662.6736 | 662.6435 | -11.4145 | 191.2845 | 1213520.5832 | 2320475.9412 | | | 186.1344 | -0.080000 |
| F-4 | 513+89.6000 | 23.4052 | 6662.6052 | 662.5663 | -8.6773 | 203.4658 | 1213509.4529 | 2320473.7026 | | | 198.6226 | -0.080000 |
| F-5 | 514+03.2500 | 23.4052 | 6662.5368 | 662.4926 | -5.3390 | 215.5022 | 1213498.8107 | 2320467.5083 | | | 211.1109 | -0.080000 |
| F-6 | 514+16.9000 | 23.4052 | 6662.4684 | 662.4224 | -1.4077 | 227.3542 | 1213488.0892 | 2320460.7835 | | | 223.5991 | -0.080000 |
| F-7 | 514+30.5500 | 23.4052 | 6662.4000 | 662.3563 | 3.1067 | 238.9966 | 1213477.9142 | 2320453.5451 | | | 236.0874 | -0.080000 |
| F-8 | 514+44.2000 | 23.4052 | 6662.3237 | 662.2875 | 8.1932 | 250.4006 | 1213468.1309 | 2320445.8108 | | | 248.5756 | -0.080000 |
| F-9 | 514+57.8500 | 23.4052 | 6662.2142 | 662.1926 | 13.8393 | 261.5482 | 1213458.7034 | 2320437.5996 | | | 261.0639 | -0.080000 |
| CL BRG AB3 | 514+71.5000 | 23.4052 | 6662.0698 | 662.0698 | 20.0310 | 272.3820 | 1213449.7149 | 2320428.9317 | 23.4052 | 0 00 00.00 | 273.5521 | -0.080000 |
| BF AB3 | 514+73.2500 | 23.4052 | 6662.0488 | | 20.8835 | 273.7495 | 1213448.5941 | 2320427.7885 | 24.4726 | 0 00 00.00 | 275.1532 | -0.080000 |

Quantities — Initial: AML 10/08 — Date: LW 10/08 — Checked By: —

Design — Initial: AML 10/08 — Date: MJN 10/08 — Designed By: — Detailed By: RGA — Checked By: MJN

Print Date: 9/22/2010
File Name: 16042W_Brdg_Geometry_02.dgn
Horiz. Scale: 1:1 — Vert. Scale: As Noted
Unit Information 0221 — Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 — EJA

As Constructed
No Revisions: 9/10
Revised:
Void:

RAMP C OVER WILSON GULCH
BRIDGE DECK ELEVATIONS
(2 OF 2)

Designer: A. Leifheit — Structure Numbers: P-05-W
Detailer: R. Artman
Sheet Subset: Bridge — Subset Sheets: B34 of B34

Project No./Code: NH 1602-114
16042
Sheet Number 300

## GENERAL NOTES

EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-2 FOR BRIDGES.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

A COLORED STRUCTURAL CONCRETE COATING FINISH WILL BE REQUIRED, AS SHOWN ON THE PLANS, ON EXPOSED CONCRETE SURFACES. THE COLORED STRUCTURAL CONCRETE COATING IS TO BE SELECTED FROM TEST PANELS PROVIDED BY THE CONTRACTOR.

ALL BOLTS SHALL BE ⅞" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

LEVELING PADS ARE UNLAMINATED BEARINGS. THEY SHALL BE CUT OR MOLDED FROM AASHTO ELASTOMER GRADE 3, 4, OR 5 AS DESCRIBED IN TABLES 705-1 AND 705-2 WITH A DUROMETER (SHORE "A") HARDNESS OF 60.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

Ⓝ DENOTES NON COATED REINFORCING STEEL.

ALL THE PROVISIONS FOR BRIDGE DECK CONCRETE SHALL ALSO APPLY TO APPROACH SLAB CONCRETE.

AN EMERGENCY DECK CONSTRUCTION JOINT MAY BE LOCATED AT THE ONE QUARTER SPAN POINT BACK FROM A PIER OR ABUTMENT WITH RESPECT TO THE DIRECTION OF THE DECK PLACEMENT.

ALL CONCRETE SHALL BE LEVEL II SULFATE RESISTANT.

## DESIGN DATA

DESIGN CODE: AASHTO LRFD, 4TH EDITION WITH 2008 INTERIMS

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

LIVE LOAD: HL-93 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)
DEAD LOAD: ASSUMES 36 LBS. PER SQ. FT. FOR BRIDGE DECK OVERLAY. ASSUMES 5 LBS. PER SQ. FT. FOR PERMANENT STEEL DECK FORMS
SEISMIC: ZONE 1, SITE CLASS D, As = 0.098g, SD1 = 0.098g

REINFORCED CONCRETE:
CLASS D/H CONCRETE: f'c = 4,500 psi (FOR CLASS H CONCRETE, f'c IS TAKEN AT 56 DAYS)
REINFORCING STEEL: fy = 60,000 psi

CAISSON CONCRETE:
CLASS BZ CONCRETE: f'c = 4,000 psi
REINFORCING STEEL: fy = 60,000 psi

PRECAST PRESTRESSED CONCRETE:
CLASS PS CONCRETE f'c = (SEE DETAILS)
f's = 270,000 psi

ALL GIRDERS SHALL BE 35 DAYS OLD (MIN.) AT TIME OF PIER AND ABUTMENT DIAPHRAGM PLACEMENT.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

| BAR SIZE | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|---|---|---|---|---|---|---|---|---|
| SPLICE LENGTH FOR CLASS D/H CONCRETE | 1'-3" | 1'-7" | 2'-5" | 2'-10" | 3'-8" | 4'-8" | 5'-11" | 7'-3" |

WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

| BAR SIZE | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|---|---|---|---|---|---|---|---|---|
| SPLICE LENGTH FOR CLASS D/H CONCRETE | 1'-1" | 1'-4" | 1'-7" | 1'-11" | 2'-6" | 3'-1" | 3'-11" | 4'-10" |

THE ABOVE SPLICE LENGTHS MAY BE REDUCED BY 20% WHEN 3" OF CLEAR COVER EXISTS AND BAR SPACING IS 6" OR GREATER ON CENTER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

PERMANENT DECK FORMS ARE REQUIRED. DECK FORMS MAY BE STEEL OR PRECAST CONCRETE.

FOR STRUCTURE NUMBER INSTALLATION, SEE STANDARD S-614-12.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

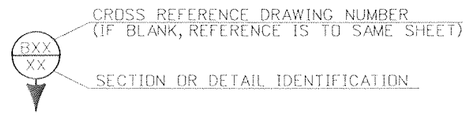
THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

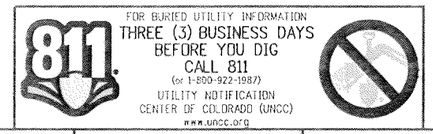
## INDEX OF DRAWINGS



## BRIDGE DESCRIPTION

2 - SPAN (122'-9", 103'-9") BRIDGE
CONCRETE PRESTRESSED GIRDER, CONTINUOUS (PRECAST) OVER WILSON GULCH.
25'-0" ROADWAY CURB-TO-CURB, NO SKEW, (2) 1'-6" TYPE 10M (SPECIAL) BRIDGE RAILS




Quantities — INITIAL: BJA, TAH; DATE: 08/08, 08/08; Quantities By; Checked By
Detail — INITIAL: RGA, TAH; DATE: 08/08, 08/08; Detailed By; Checked By
Design — INITIAL: BJA, TAH; DATE: 08/08, 08/08; Designed By; Checked By

Print Date: 9/24/2010
File Name: 16042Y_GenNotes_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No. Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
GENERAL NOTES

Designer: B. Allen
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B1 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 301

## SUMMARY OF QUANTITIES

| Item No. | Description | Units | Superstructure | Abut. 1 | Pier 2 | Abut. 3 | Total |
|---|---|---|---|---|---|---|---|
| 206 | Structure Excavation | CY | - | - | 14 | - | 14 |
| 206 | Structure Backfill (Class 1) | CY | - | 175 | 11 | 193 | 379 |
| 206 | Mechanical Reinforcement of Soil | CY | - | 140 | - | 155 | 295 |
| 206 | Driven Pile (HP 14x89) | LF | - | 363 | - | 198 | 561 |
| 503 | Drilled Caisson (36") | LF | - | - | 49 | - | 49 |
| 507 | Concrete Slope and Ditch Paving (Reinforced) | CY | - | 57 | - | 88 | 145 |
| 518 | Waterstop | LF | 229 | - | - | - | 229 |
| 601 | Concrete Class D (Bridge) | CY | - | 32 | 56 | 34 | 122 |
| 602 | Concrete Class H | CY | 226 | - | - | - | 226 |
| 601 | Structural Concrete Coating | SY | 884 | 82 | 358 | 82 | 1,406 |
| 602 | Reinforcing Steel (Epoxy Coated) | LBS | 55,827 | 3,344 | 9,965 | 3,545 | 72,681 |
| 606 | Bridge Rail Type 10M (Special) | LF | 458 | - | - | - | 458 |
| 613 | 2" Electrical Conduit | LF | 466 | - | - | - | 466 |
| 613 | 6" Electrical Conduit | LF | 466 | - | - | - | 466 |
| 613 | 1" Conduit (Anti-Icing System) | LF | 233 | - | - | | 233 |
| 613 | 1 1/2" Conduit (Anti-Icing System) | LF | 233 | - | - | | 233 |
| 613 | 2" Conduit (Anti-Icing System) | LF | 233 | - | - | | 233 |
| 618 | Prestressed Concrete I (BT 63) | LF | 678 | - | - | - | 678 |

| Design | | | Detail | | | Quantities | | |
|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | BJA | 08/08 | Detailed By | RGA | 08/08 | Quantities By | BJA | 08/08 |
| Checked By | TAH | 08/08 | Checked By | TAH | 08/08 | Checked By | TAH | 08/08 |

Print Date: 9/24/2010
File Name: 16042Y_SumApproxQuant_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

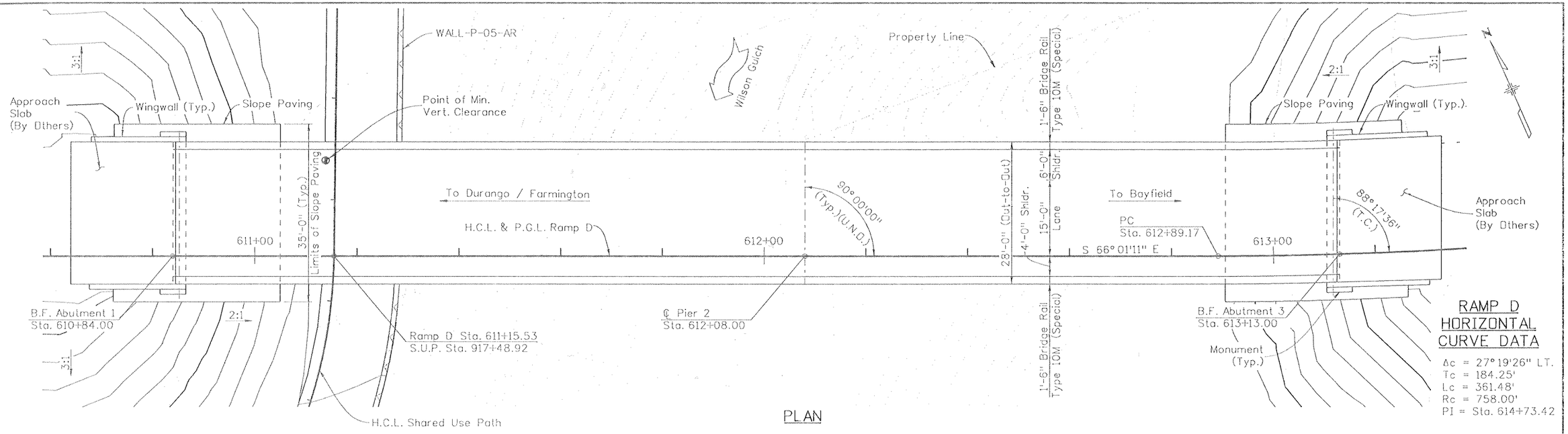
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
SUMMARY OF QUANTITIES

Designer: B. Allen
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B2 of B26

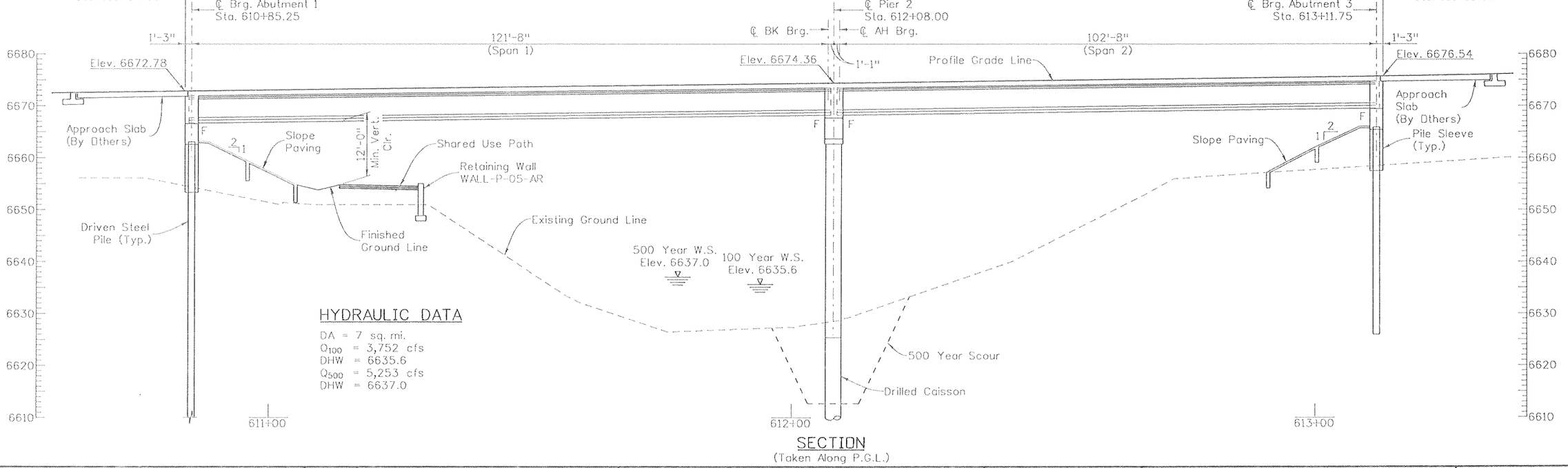
Project No./Code
NH 1602-114
16042
Sheet Number 302




PLAN

## RAMP D HORIZONTAL CURVE DATA

Δc = 27°19'26" LT.
Tc = 184.25'
Lc = 361.48'
Rc = 758.00'
PI = Sta. 614+73.42




## HYDRAULIC DATA

DA = 7 sq. mi.
$Q_{100}$ = 3,752 cfs
DHW = 6635.6
$Q_{500}$ = 5,253 cfs
DHW = 6637.0

SECTION
(Taken Along P.G.L.)

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | EJA | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 08/08 |
| Checked By | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | EJA | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/24/2010
File Name: 16042Y_GenLayout_01.dgn
Horiz. Scale: 1:20 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |

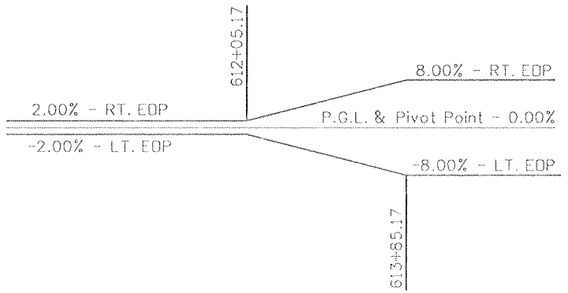
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

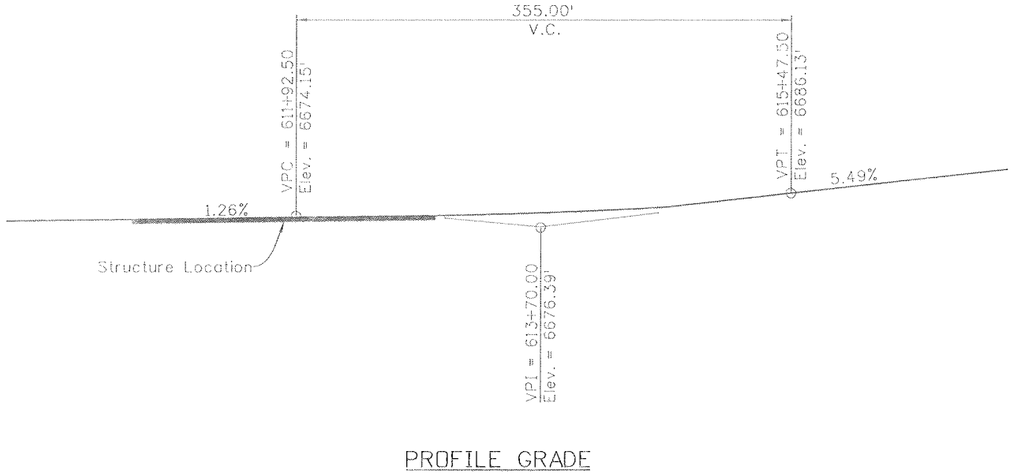
RAMP D OVER WILSON GULCH
GENERAL LAYOUT

| | | | |
|---|---|---|---|
| Designer: | B. Allen | Structure Numbers | P-05-Y |
| Detailer: | D. Anderson | | |
| Sheet Subset: | Bridge | Subset Sheets: | B3 of B26 |

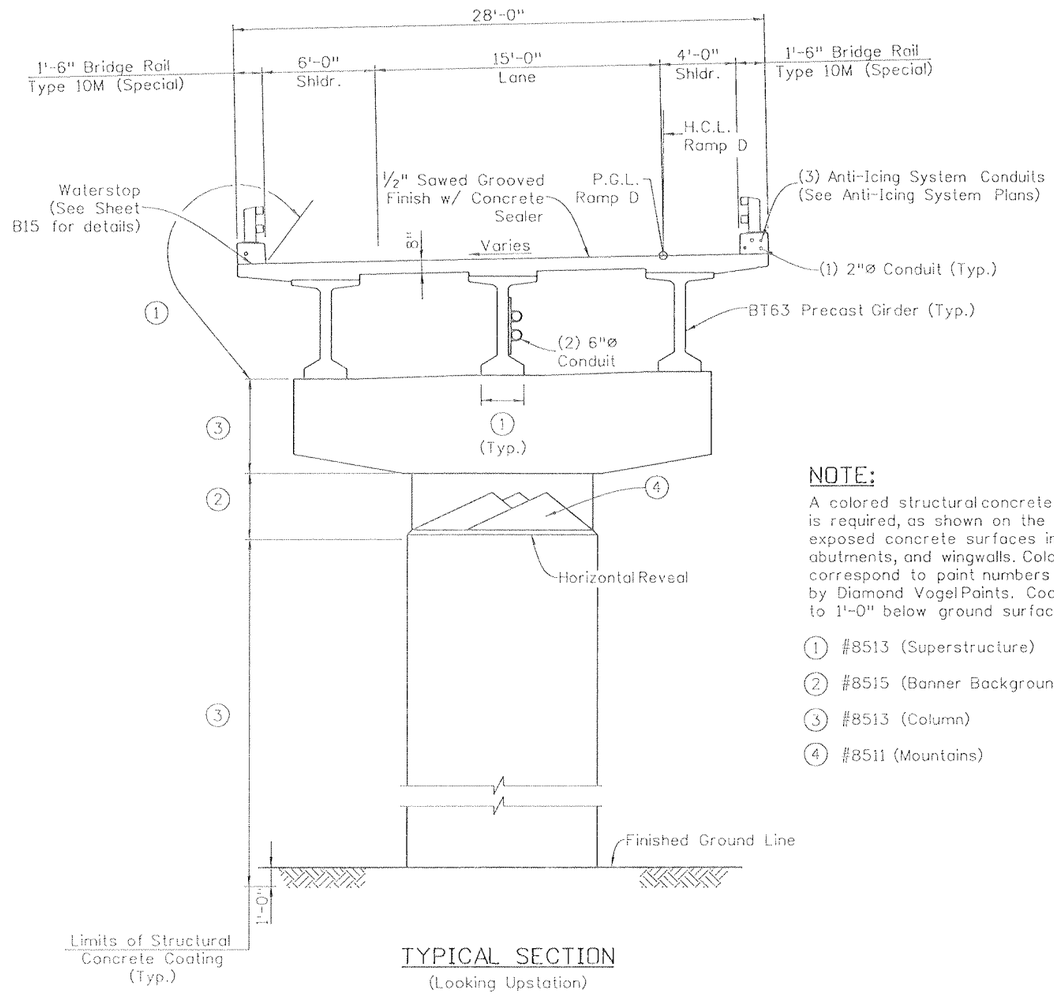
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 303 |




SUPERELEVATION DIAGRAM




PROFILE GRADE




TYPICAL SECTION
(Looking Upstation)

## NOTE:

A colored structural concrete coating finish is required, as shown on the Plans, on all exposed concrete surfaces including piers, abutments, and wingwalls. Color numbers correspond to paint numbers as described by Diamond Vogel Paints. Coating shall extend to 1'-0" below ground surface.

(1) #8513 (Superstructure)
(2) #8515 (Banner Background)
(3) #8513 (Column)
(4) #8511 (Mountains)

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | BJA | 08/08 |
| Detailed By | ORA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | BJA | 08/08 |
| Checked By | TAH | 08/08 |

| Print Date: 9/24/2010 | |
|---|---|
| File Name: 16042Y_TypSection_01.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

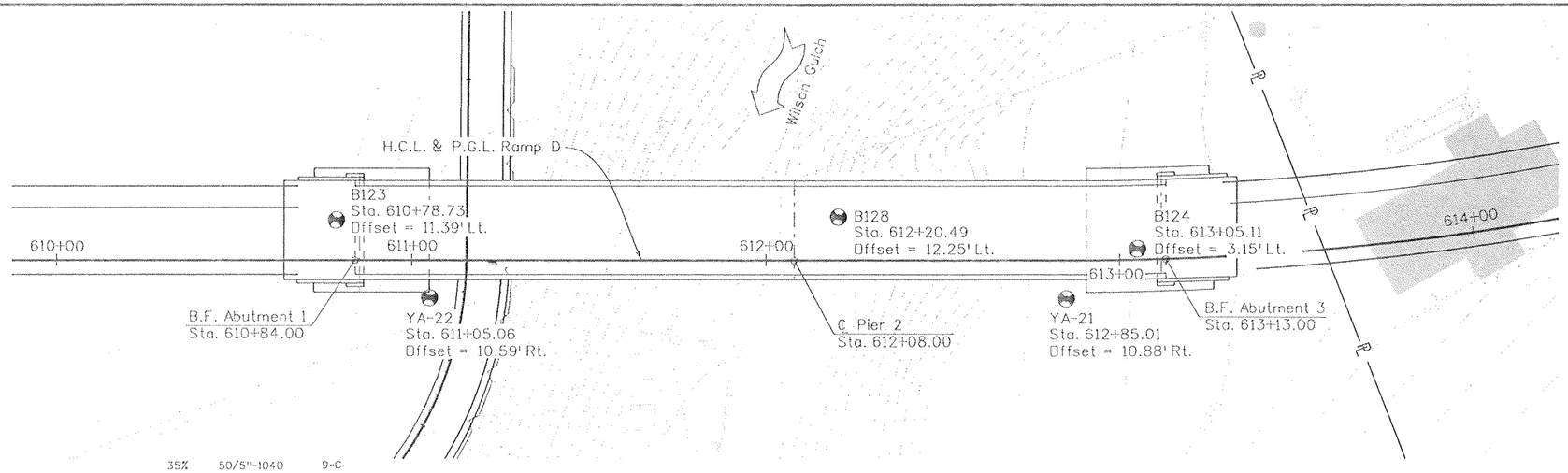
Colorado Department of Transportation
DOT
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

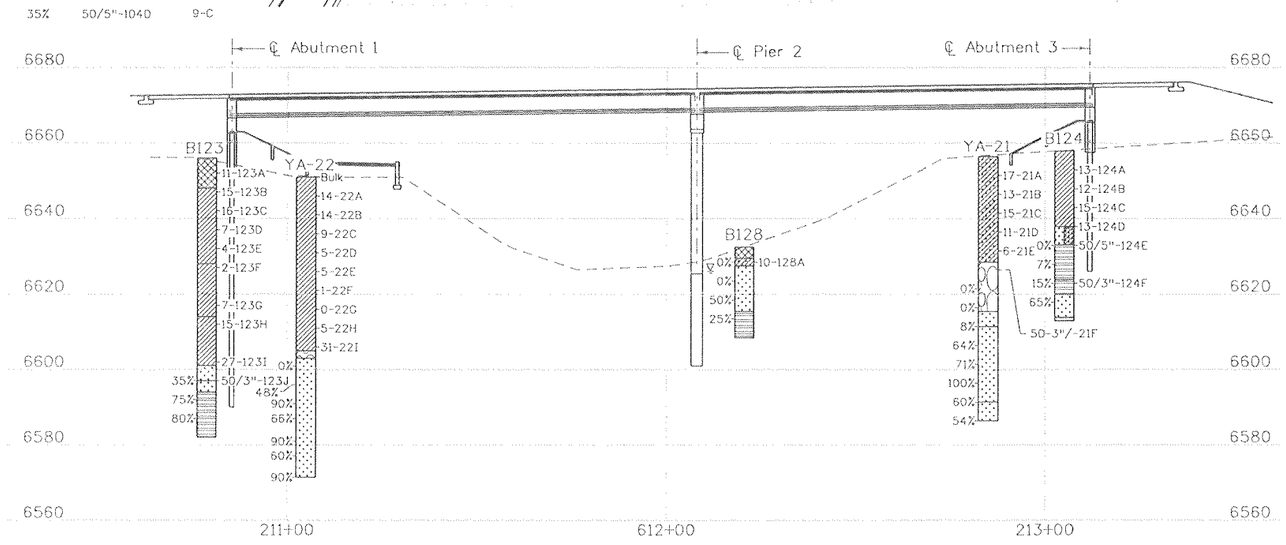
| As Constructed | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

RAMP D OVER WILSON GULCH
TYPICAL SECTION

| | | | |
|---|---|---|---|
| Designer: | B. Allen | Structure Numbers | P-05-Y |
| Detailer: | D. Anderson | | |
| Sheet Subset: | Bridge | Subset Sheets: | B4 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 304 |




## SUMMARY OF TEST RESULTS

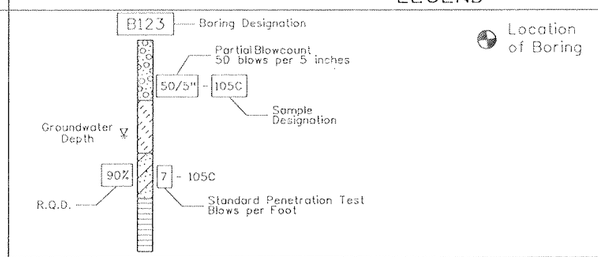
| Sample No. | Depth | Classification: Corps of Engrs. or Visual | Classification: AASHTO | Grading Analysis (AASHTO) Percent: Gravel | Coarse Sand | Fine Sand | Silt and Clay | Atterberg Limits: Liquid Limit % | Plastic Limit % | Plastic Limit % | Water Content % | Dry Unit Weight P.C.F. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21A | 5-6 | | | | | | | | | | 14.5 | 86.0 |
| BULK | 0-5 | SANDY CLAY | A-7-6(18) | 2 | 10 | 21 | 67 | 52 | 23 | 29 | 10.7 | |
| 22A | 5-6 | | | | | | | | | | 19.8 | 81.5 |
| 22B | 10-11 | | | | | | | | | | 17.6 | 85.4 |

## TYPE OF MATERIAL

- Sandy Clay
- Shale
- Sandstone
- Clayey Sand
- Fill
- Coarse Sand - Clay
- Gravel and Cobbles

Note: Boulders may be encountered at any depth

## LEGEND




Deign: Designed By: KAK 08/08 Checked By: TAH 08/08
Detail: Detailed By: RCA 08/08 Checked By: TAH 08/08
Depth: Designed By: KAK 08/08 Checked By: TAH 08/08
Quantities: Quantities By: INITIAL DATE Checked By: INITIAL DATE

Print Date: 9/24/2010
File Name: 16042Y_EngGeology_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

### Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

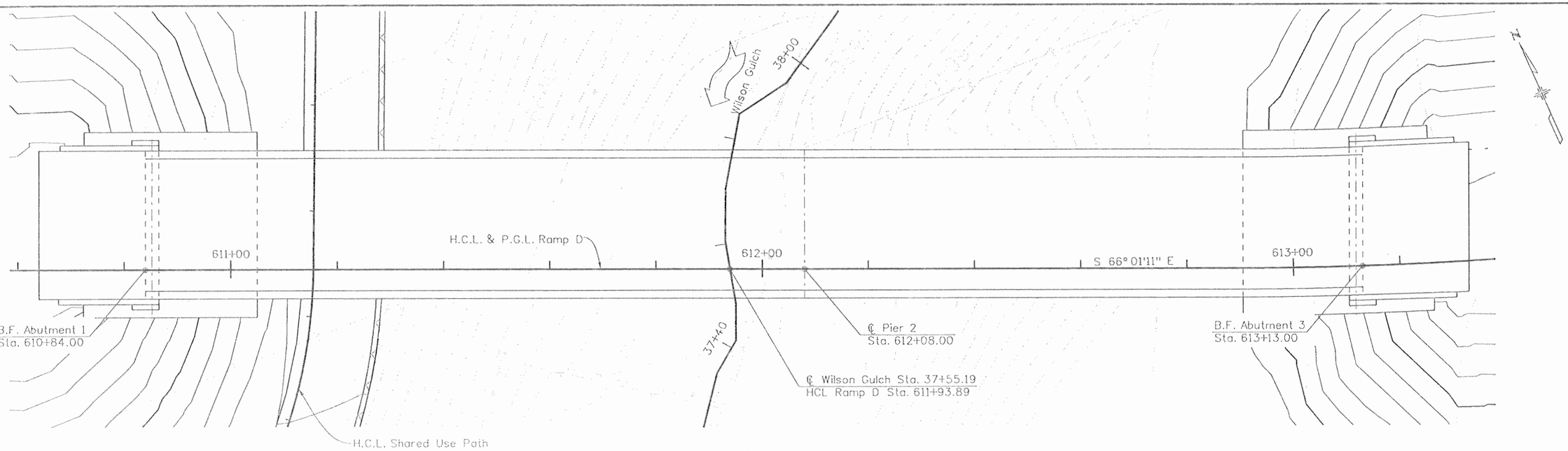

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
ENGINEERING GEOLOGY

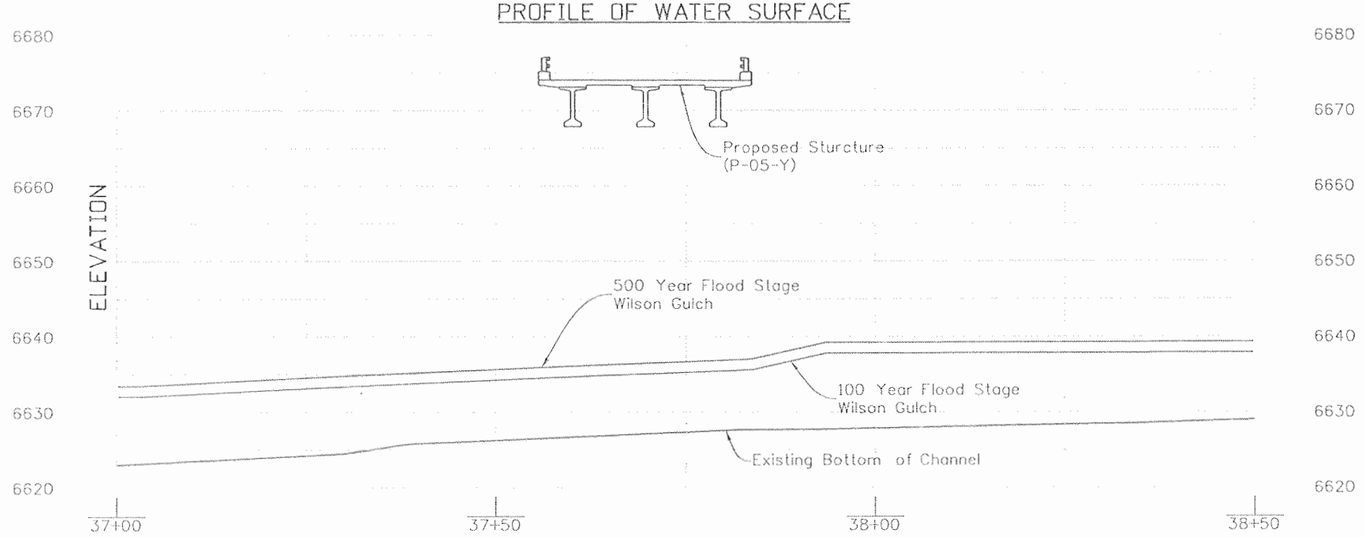
Designer: K. Kershaw
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: 85 of 826

Project No./Code
NH 1602-114
16042
Sheet Number 305




PLAN

PROFILE OF WATER SURFACE




STATIONS ARE ALONG CHANNEL CENTERLINE IN FEET

NOTE:

See Stage Discharge Chart on Sheet B7.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | VSF | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | VSF | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_BHR_01.dgn
Horiz. Scale: 1:20 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

0000

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
BRIDGE HYDRAULIC INFORMATION
(1 OF 2)

Designer: E. Schmitz
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B6 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 306

DRAINAGE AREA 7 SQUARE MILES

## CHANNEL DESCRIPTION

BOTTOM MATERIAL: COHESIVE ☐ NON-COHESIVE ■
BOTTOM MATERIAL SIZE: CLAY ☐ SILT SAND ☐ GRAVEL ■
COBBLES ☐ OTHER ☐
STREAM FORM: STRAIGHT ☐ MEANDERING ■ BRAIDED ☐
MANNINGS "n" FOR DESIGN: CHANNEL = 0.068 OVERBANK = 0.104
DEBRIS: BRUSH ☐ TREES/LOGS ☐ ICE ☐ OTHER ☐

## COMPARISON OF HYDRAULICS △

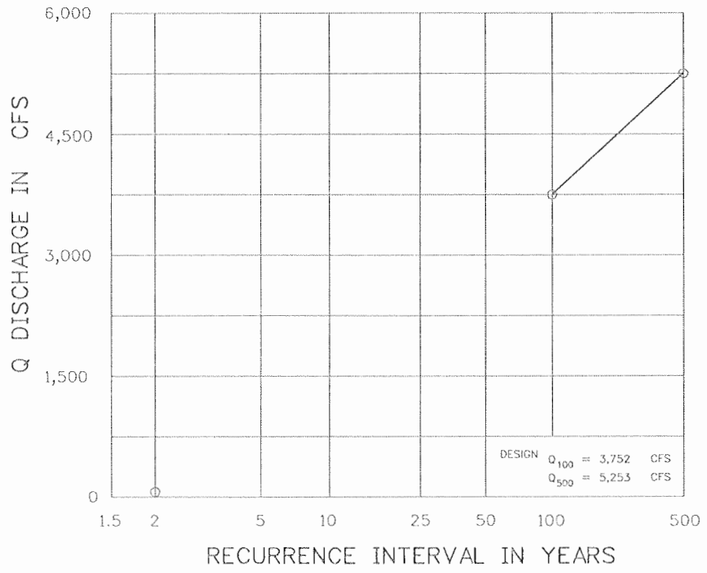
| | VELOCITY | FREEBOARD | MAX. BACKWATER |
|---|---|---|---|
| NATURAL CHANNEL | N/A fps. | N/A ft. | N/A ft. |
| EXISTING CHANNEL | 13.1 fps | N/A ft. | N/A ft. |
| PROPOSED CHANNEL | 13.3* fps | 29.8 ft. | 0.4* ft. |

△ AT PROPOSED BRIDGE LOCATION DURING DESIGN DISCHARGE (Q100)

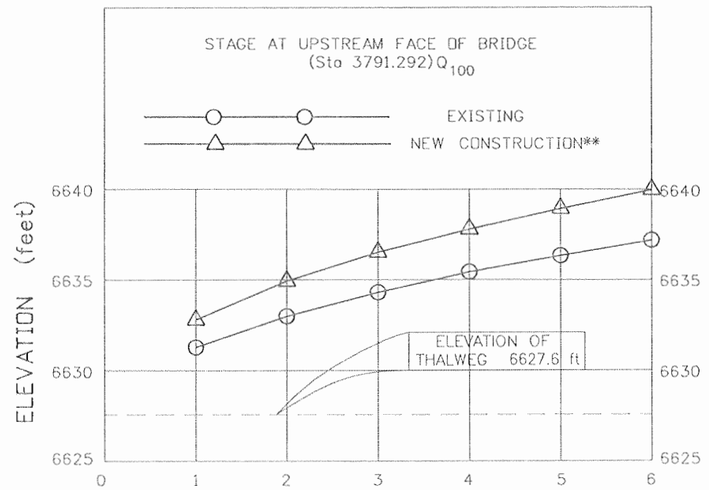
*THE SCOUR LIMITS AND RIVER FLOW RATES MAY BE FOUND IN THE REPORT BY WILSON & COMPANY, DATED JULY 2008, ENTITLED "FINAL DRAINAGE REPORT FOR US 550 & US 160 INTERCHANGE".*

**VELOCITY & BACKWATER DEPTHS CALCULATED BY HEC-RAS MODEL SIMULATING BRIDGE PIERS AS OBSTRUCTIONS IN OPEN CHANNEL.*

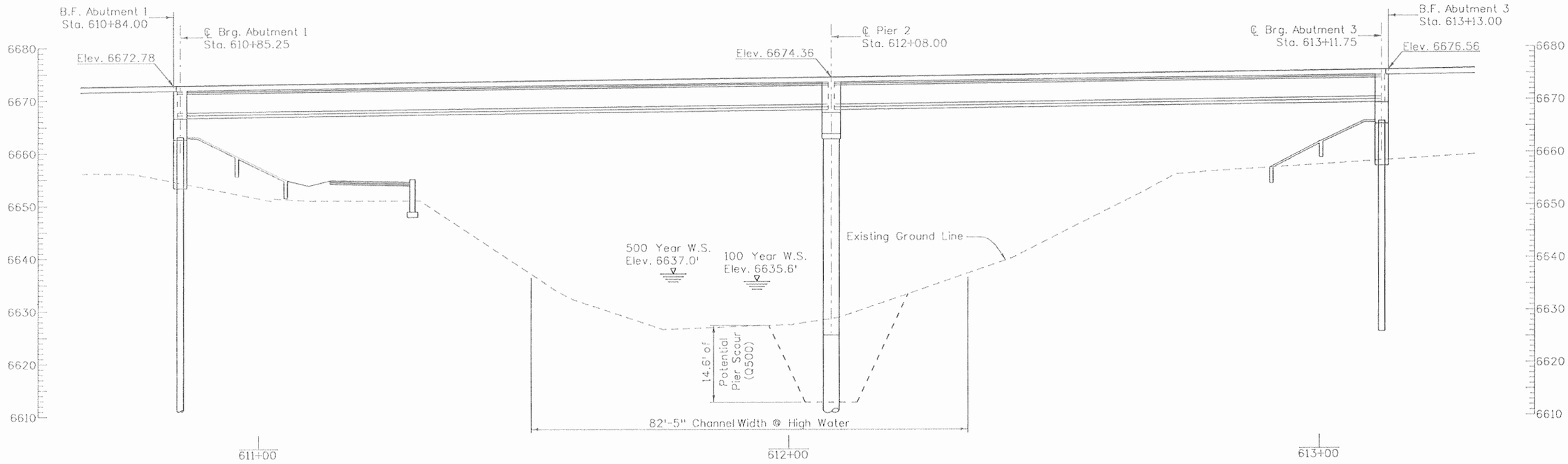
## DISCHARGE-FREQUENCY




## STAGE-DISCHARGE




***WATER SURFACE ELEVATIONS CALCULATED BY HEC-RAS MODEL SIMULATING BRIDGE PIERS WITH BRIDGE ROUTINE.*




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | VSF | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | DRA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | VSF | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_BHR_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

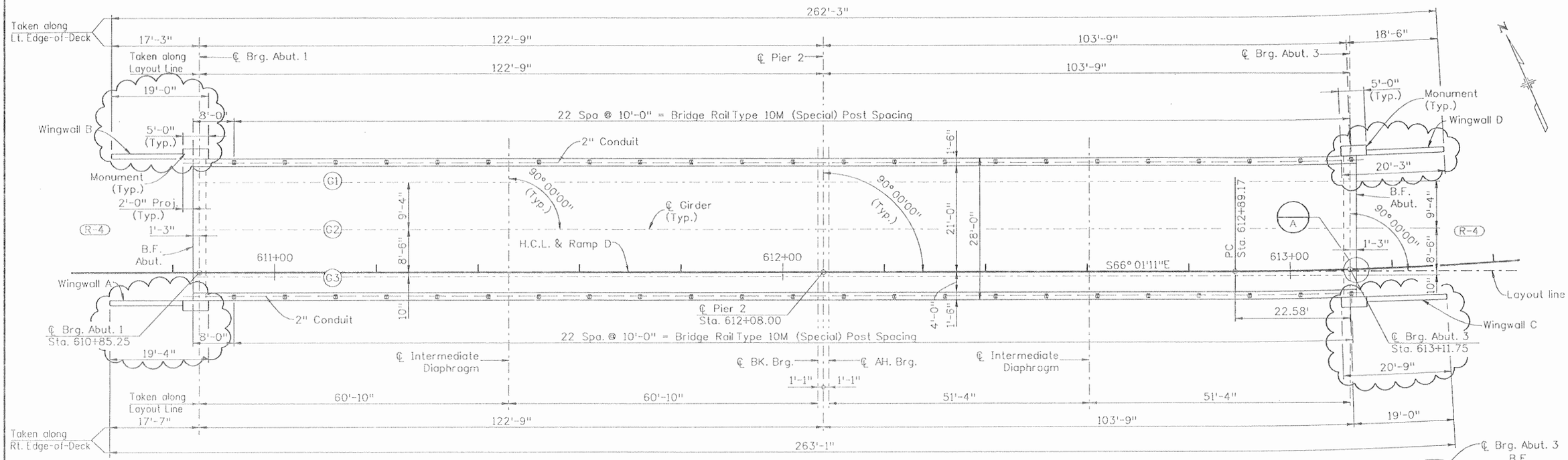
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

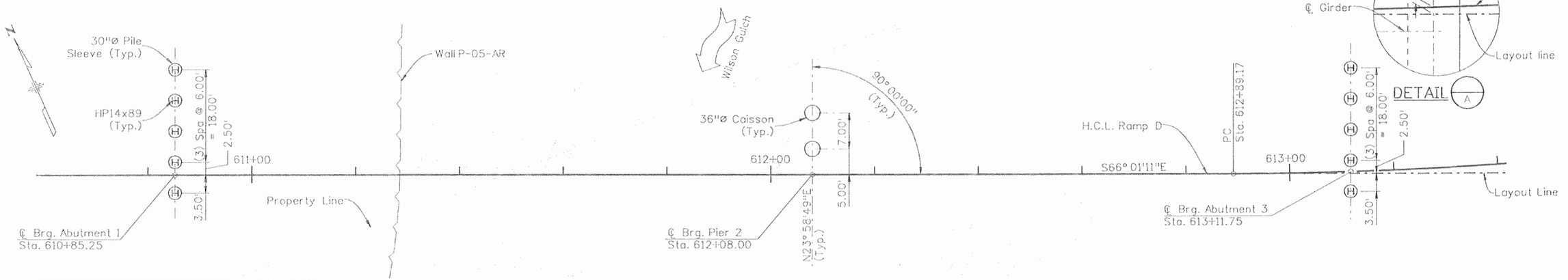
RAMP D OVER WILSON GULCH
BRIDGE HYDRAULIC INFORMATION
(2 OF 2)

Designer: V. Fossinger
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B7 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 307




## CONSTRUCTION LAYOUT




## FOUNDATION LAYOUT

FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS BEFORE YOU DIG
CALL 811
(or 1-800-922-1987)
UTILITY NOTIFICATION CENTER OF COLORADO (UNCC)
www.uncc.org

**NOTE:**

1. Layout Line is back tangent from PC Sta. 612+89.17
2. For Anti-icing System details, see Anti-icing System Plans.

| Quantities | INITIAL | DATE |
|---|---|---|
| | BJA | 08/08 |
| Quantities By | TAH | 08/08 |
| Checked By | | |

| Detail | INITIAL | DATE |
|---|---|---|
| | RGA | 08/08 |
| Detailed By | TAH | 08/08 |
| Checked By | | |

| Design | INITIAL | DATE |
|---|---|---|
| | BJA | 08/08 |
| Designed By | TAH | 08/08 |
| Checked By | | |

Print Date: 9/27/2010
File Name: 16042Y_FoundLay_01.dgn
Horiz. Scale: 1:20 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

R-4

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| 10/01/08 | Monument Revisions | BJA |
| | | |
| | | |
| | | |

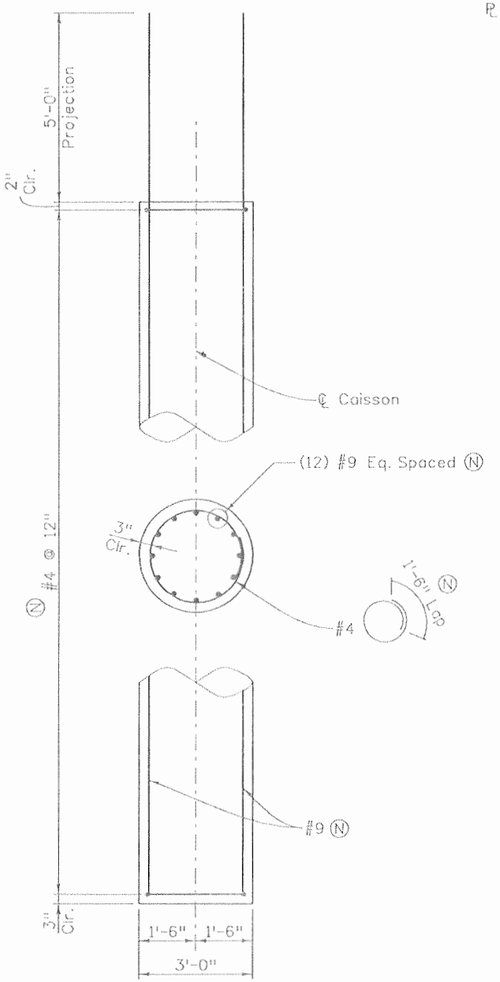
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

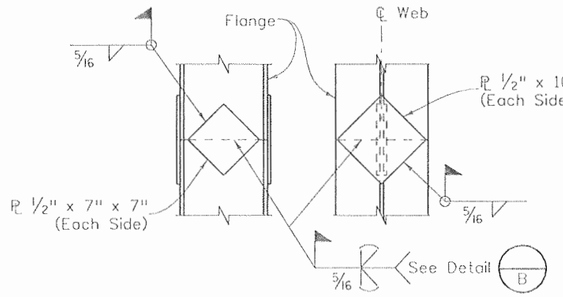
RAMP D OVER WILSON GULCH
CONSTRUCTION & FOUNDATION LAYOUT

Designer: B. Allen
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B8 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 308

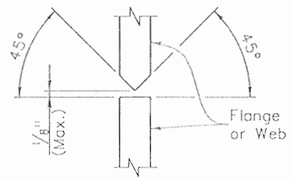



36" CAISSON ELEVATION




## HP 14x89 SPLICE DETAIL

Reinforcing plates are required when pile splice is within 15 feet of the finished groundline. Reinforcing plates may be omitted only when pile splice is below 15 feet of the finished groundline. Before reinforcing plates are installed, grind the weld contours which will be covered by the reinforcing plates.




DETAIL B

## CAISSON DATA

| Location | Caisson Size | Top of Caisson Elevation | Estimated Tip Elevation | Min. Penetration Into Bedrock (ft) | Max. Factored Load (kip) | Estimated Bedrock Elevation | Measured Bedrock Elevation |
|---|---|---|---|---|---|---|---|
| Pier 2 | 36" | 6625.22 | 6601 | 21 | 1783 | 6622 | 6620.26 |

## CAISSON NOTES

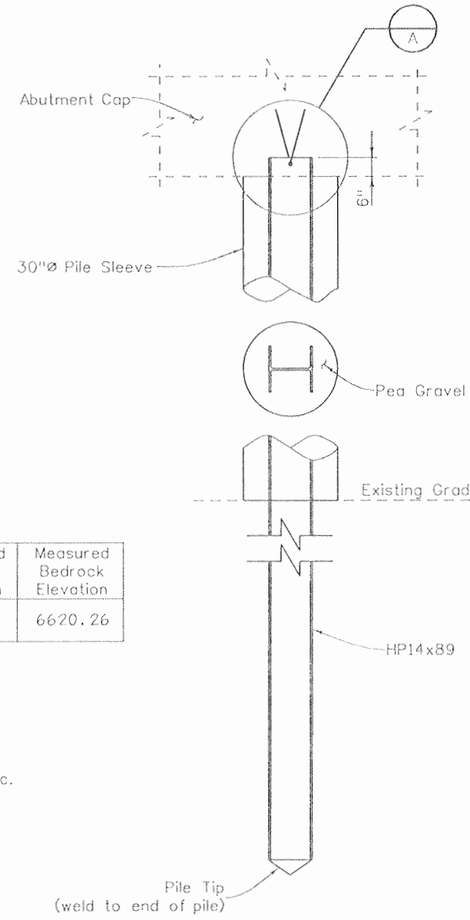
1. Caisson concrete shall be concrete Class BZ ($f'_c$ = 4000 psi).
2. Lap splices in cassion tie bar shall alternate 180°.
3. Caisson design based upon recommendation provided by Shannon & Wilson, Inc.

   Nominal End Bearing: 120 ksf
   End Bearing Resistance Factor: 0.55

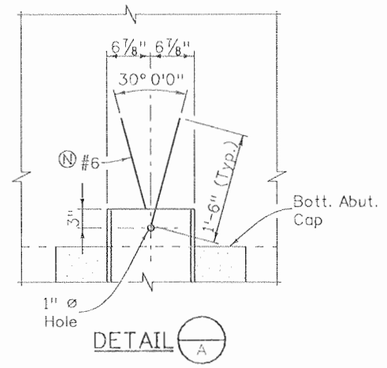
   Nominal Side Shear: 9 ksf
   Side Shear Resistance Factor: 0.75
4. All caissons shall be tested using Impact Echo Method in accordance with contract requirements. All test data shall be submitted to the engineer.
5. The Contractor shall roughen the side of the rock socket to an amplitude of 2" prior to placing caisson concrete.
6. Lateral Reduction Factors (P-Multipliers) of 0.825 (longitudinal) and 0.427 (lateral) were used in the design.

## TABLE 1

| US Standard Sieve Size | % Passing by Weight |
|---|---|
| 3/8" | 100 |
| No. 4 | 0-15 |
| No. 200 | 0-1 |




HP 14x89 ELEVATION




DETAIL A

## PILE DATA

| Location | Pile Size | Top of Pile Elevation | Est. Tip Elevation | Max. Factored Load (kip) | Measured Bedrock Elevation |
|---|---|---|---|---|---|
| Abut 1 | HP14x89 | 6662.44 | 6590.00 | 382.2 | |
| Abut 3 | HP14x89 | 6665.53 | 6626.00 | 365.6 | |

## PILE NOTES

1. Steel Piles shall be AASHTO M270, Grade 50 (Fy = 50 ksi).
2. All piles shall be driven to practical refusal.
3. A protective pile tip shall be used on all piles. Pile tip as manufactured by VersaSteel or approved equal.
4. Pipe sleeve shall be smooth walled steel or PVC pipe. Corrugated pipe will not be allowed.
5. Void space between pile sleeve and pile shall be filled with Pea Gravel prior to placing abutment cap. Pea Gravel shall conform to Table 1.
6. Pile design based upon recommendation provided by Shannon & Wilson, Inc. Structural capacity of pile governs.

   Strength Reduction Factors:
   - End Bearing: 0.5
   - Compression: 0.5
   - Compression & Flexure: 0.7
7. A minimum of one pile per abutment shall be dynamically monitored in accordance with contract requirements. All data shall be submitted to the engineer.
8. A factored downdrag axial load of 161 kips per pile is included in the Max. Factored Load at Abutment 1 and a factored downdrag axial load of 168 kips per pile is included in the Max. Factored Load at Abutment 3.

| Design | | | | Detail | | | |
|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | | INITIAL | DATE | |
| Designed By | TRJ | 08/08 | | Detailed By | RGA | 08/08 | |
| Checked By | TAH | 08/08 | | Checked By | TAH | 08/08 | |

| Quantities | | | |
|---|---|---|---|
| | INITIAL | DATE | |
| Quantities By | TRJ | 08/08 | |
| Checked By | TAH | 08/08 | |

| | | | |
|---|---|---|---|
| Print Date: 9/27/2010 | | | |
| File Name: 16042Y_DrillShaftDet_01.dgn | | | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted | | |
| Unit Information 0221 | Unit Leader STW | | |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

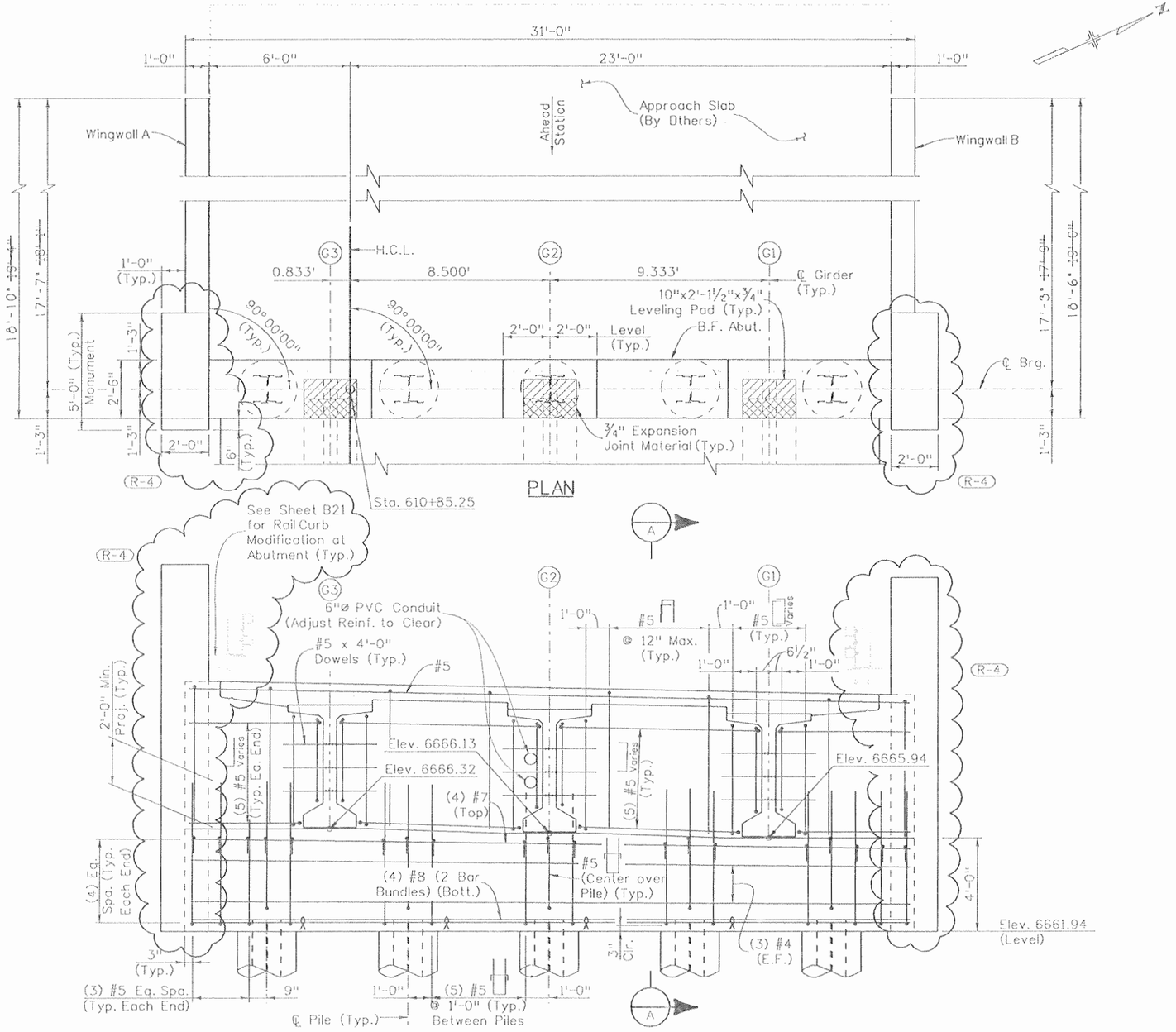
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | |
| Revised: | 09/10 |
| Void: | |

RAMP D OVER WILSON GULCH
DRILLED CAISSON & PILE DETAILS

| | | | |
|---|---|---|---|
| Designer: | T. Johnson | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B9 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 309 |




NOTES:

1. All cover is 2" unless noted otherwise.
2. Abutment, Wingwall & Monument concrete shall be Class D (Bridge), f'c = 4,500 psi at 28 days.
3. Elevations shown are taken at ℄ Abutment except as noted.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | TRJ | 08/08 |
| Checked By: | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 08/08 |
| Checked By: | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | TRJ | 08/08 |
| Checked By: | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_AbutmentDet_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

R-4

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| 9/29/08 | Monument Revisions | BJA |

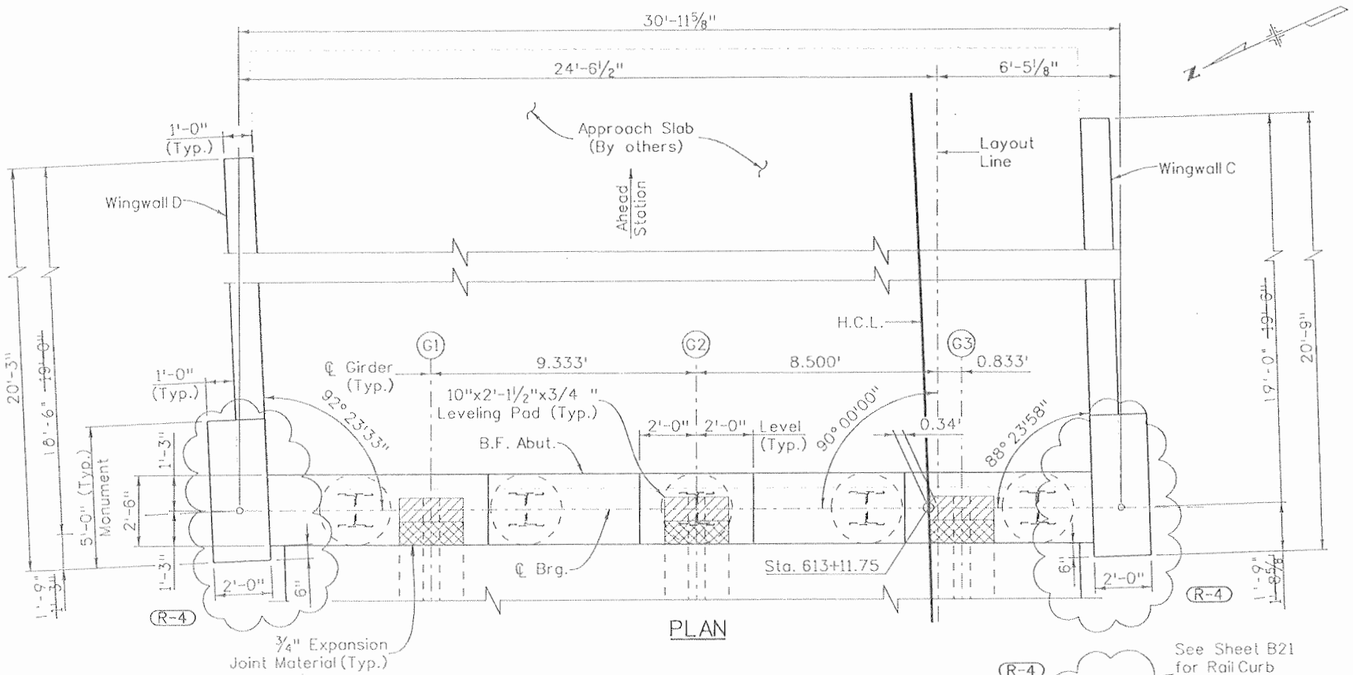
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions:
Revised: 09/10
Void:

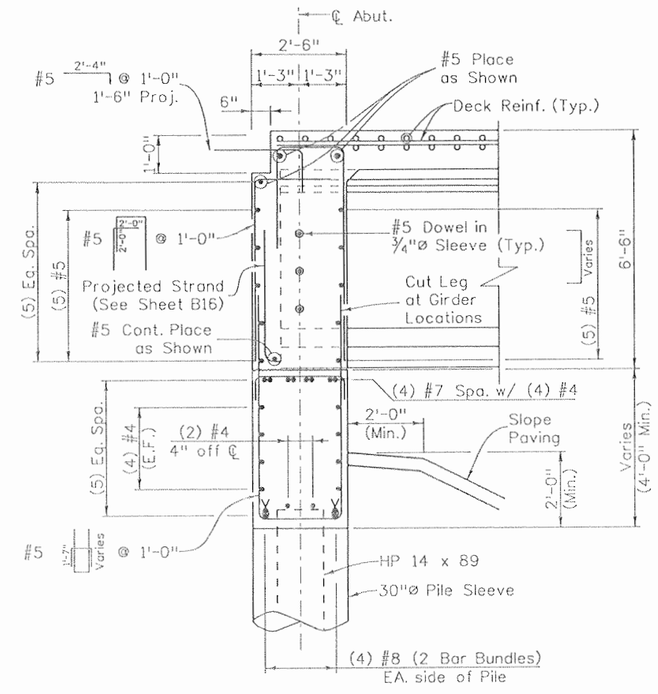
RAMP D OVER WILSON GULCH
ABUTMENT 1 DETAILS

Designer: T. Johnson
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B10 of B26

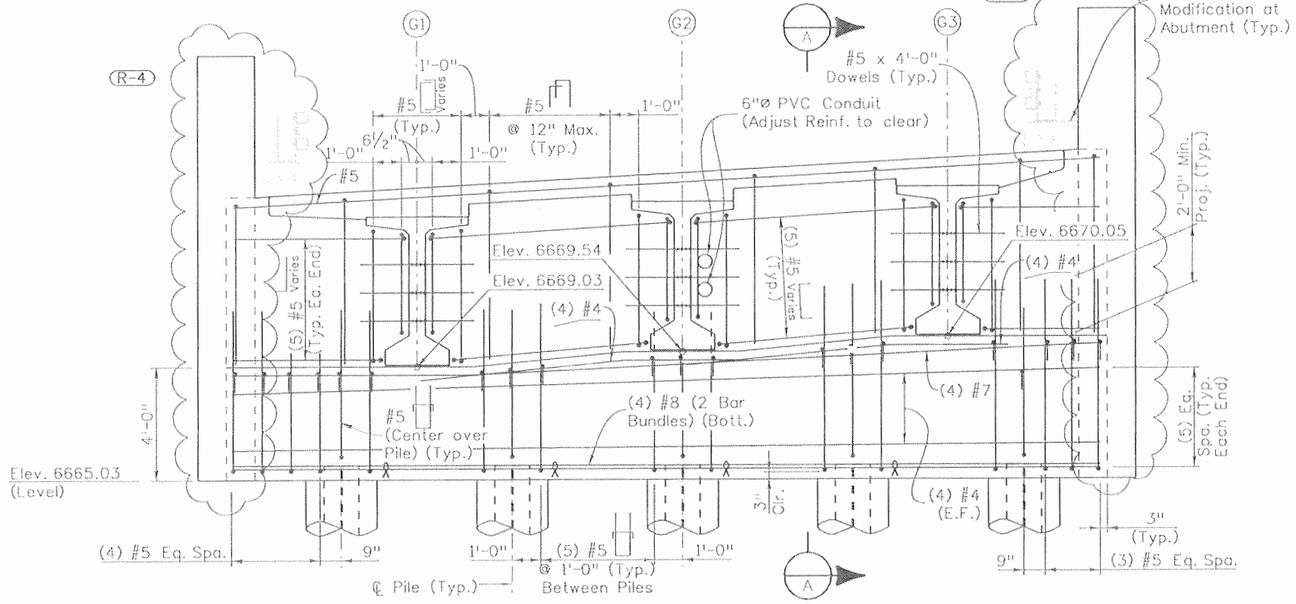
Project No./Code
NH 1602-114
16042
Sheet Number 310




PLAN




SECTION A




ELEVATION
(Looking Ahead Station)

## NOTES:

1. All cover is 2" unless noted otherwise.
2. Abutment, Wingwall & Monument concrete shall be Class D (Bridge), f'c = 4,500 psi at 28 days.
3. Elevations shown are taken at ℄ Abutment except as noted.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | TRJ | 05/08 |
| Checked By | TAH | 05/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |
| Designed By | TRJ | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_Abutment3Det_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

R-4

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| 9/29/08 | Monument Revisions | BJA |

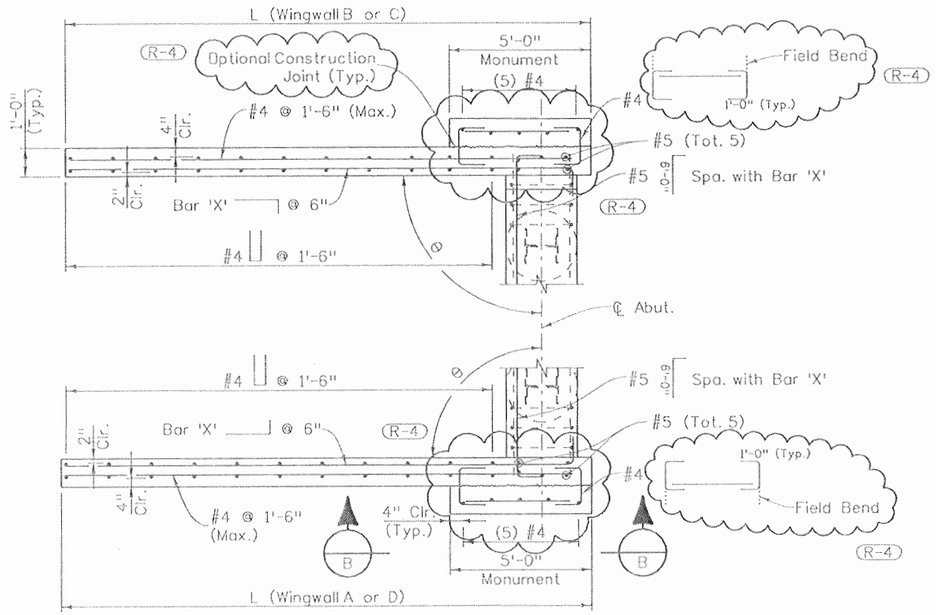
Colorado Department of Transportation
DOT — Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions:
Revised: 09/10
Void:

RAMP D OVER WILSON GULCH
ABUTMENT 3 DETAILS

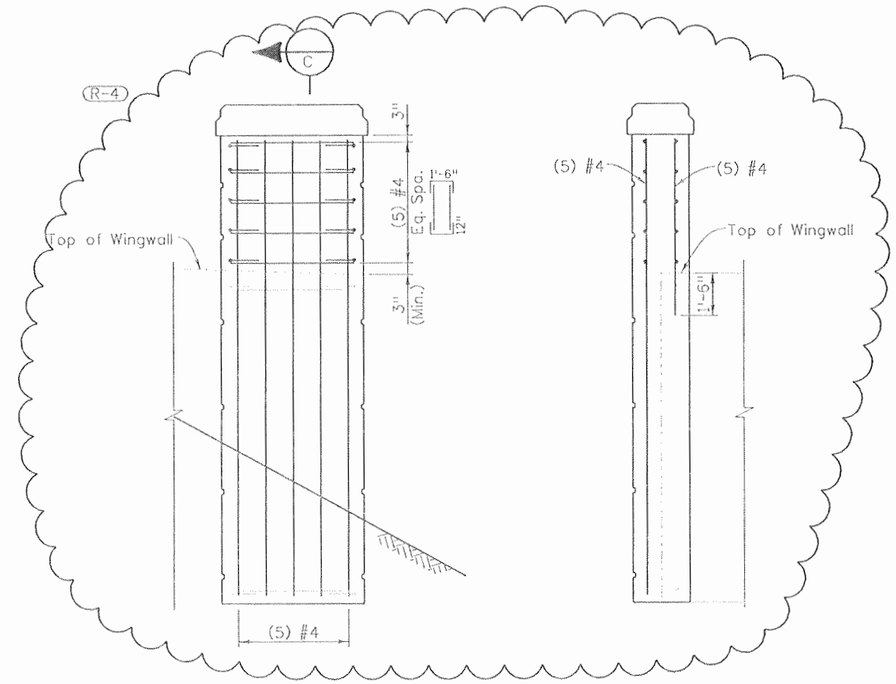
Designer: T. Johnson
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B11 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 311



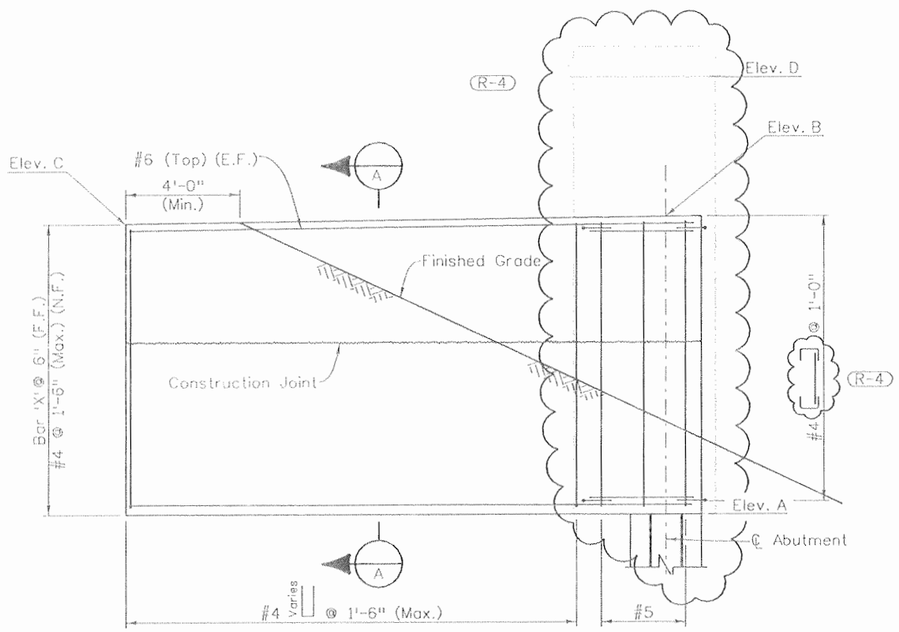

PLAN

(Wingwalls A & B Shown, C and D Similar)

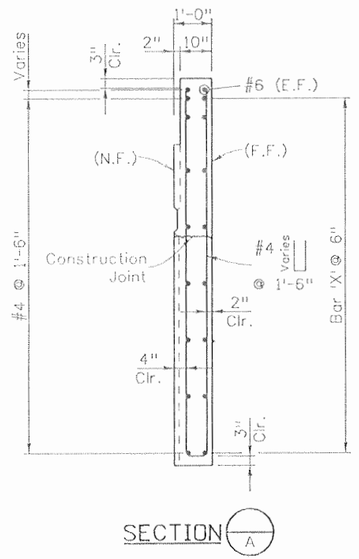



VIEW B

SECTION C




ELEVATION




SECTION A

| (R-4) TABLE OF VARIABLES | | | | | | | |
|---|---|---|---|---|---|---|---|
| Wingwall | L | Bar 'X' | Ø | Elev. A | Elev. B | Elev. C | Elev. D |
| A | 19'-4" | #5 | 90° 00'00" | 6661.94 | 6672.92 | 6672.70 | 6677.92 |
| B | 19'-0" | #5 | 90° 00'00" | 6661.94 | 6672.34 | 6672.12 | 6677.34 |
| C | 20'-9" | #5 | 88° 23'58" | 6665.03 | 6676.86 | 6677.36 | 6681.86 |
| D | 20'-3" | #5 | 92° 23'33" | 6665.03 | 6675.21 | 6675.69 | 6680.21 |

Elevations taken at F.F. of wall.

| Quantities | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |
| Quantities By | BJA | 08/08 |
| Checked By | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | BJA | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_WingwallDet_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

R-4 0000

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| 9/29/08 | Monument Revisions | BJA |

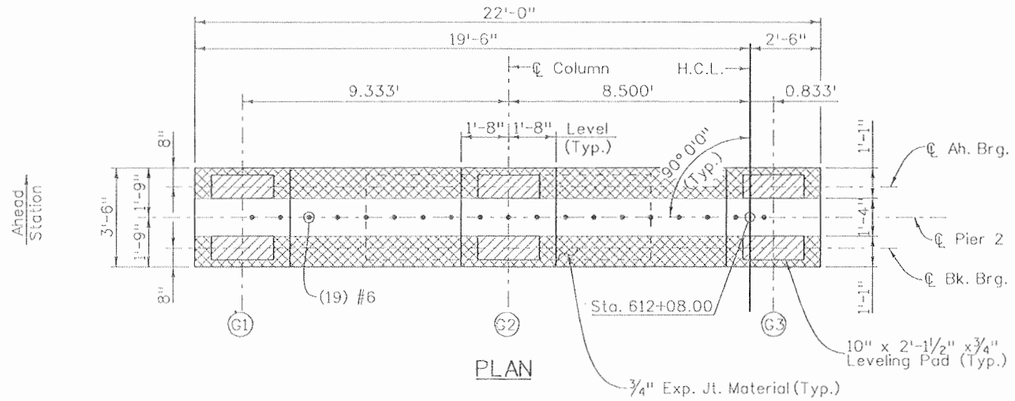

Colorado Department of Transportation
CDOT — Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 09/10
Revised:
Void:

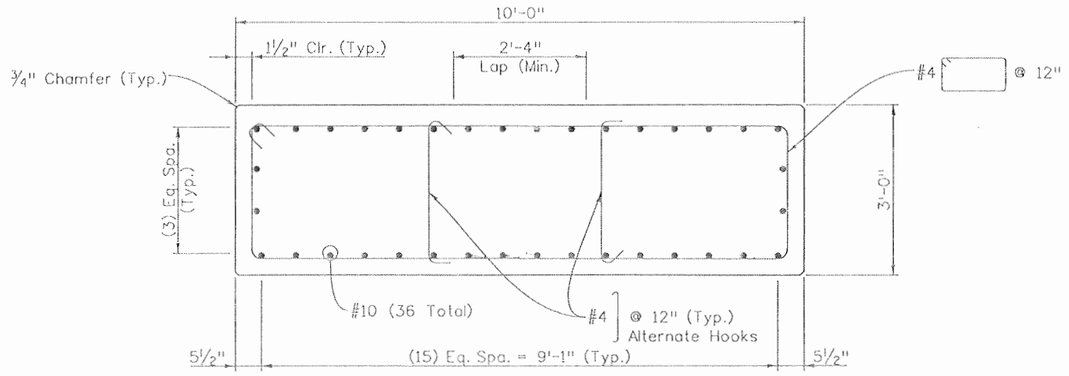
RAMP D OVER WILSON GULCH
WINGWALL DETAILS

Designer: T. Johnson
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B12 of B26

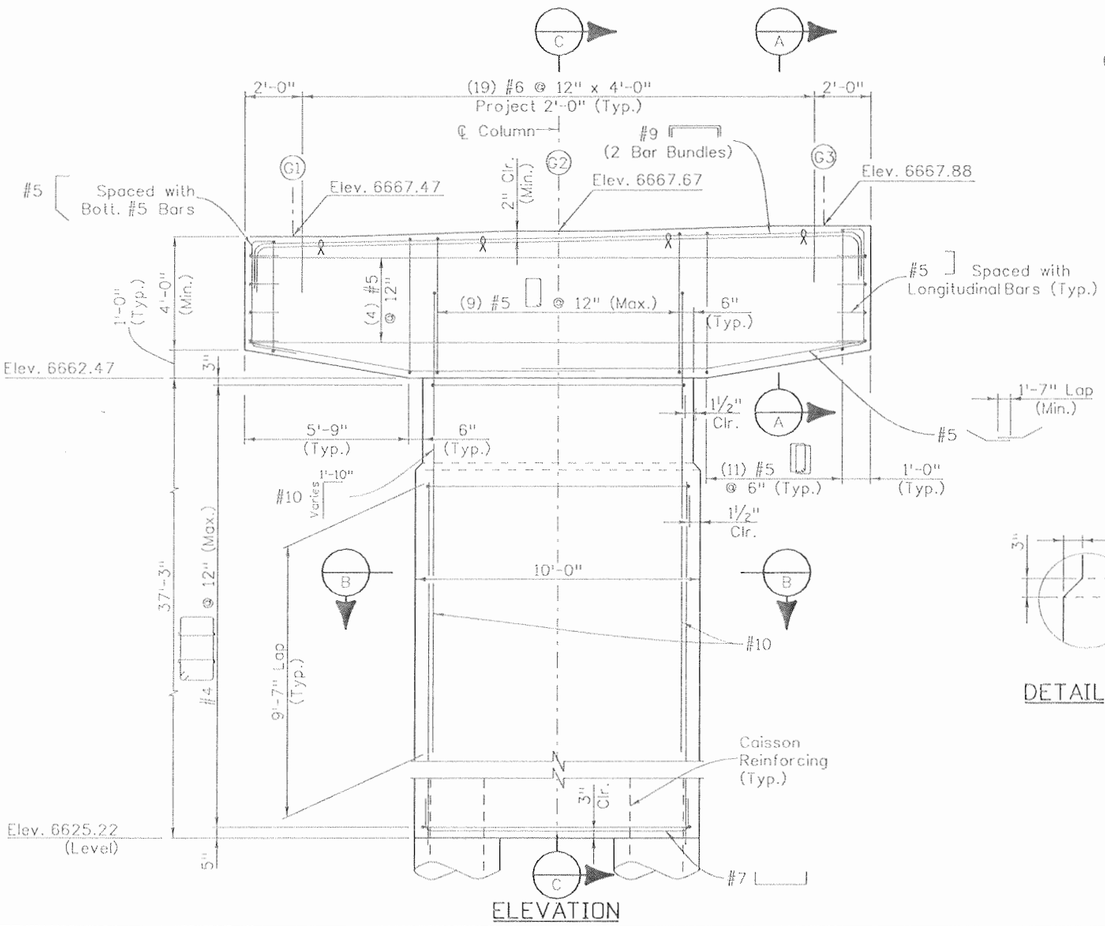
Project No./Code
NH 1602-114
16042
Sheet Number 312



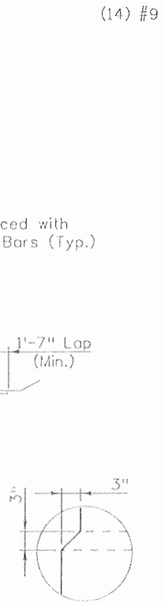

PLAN



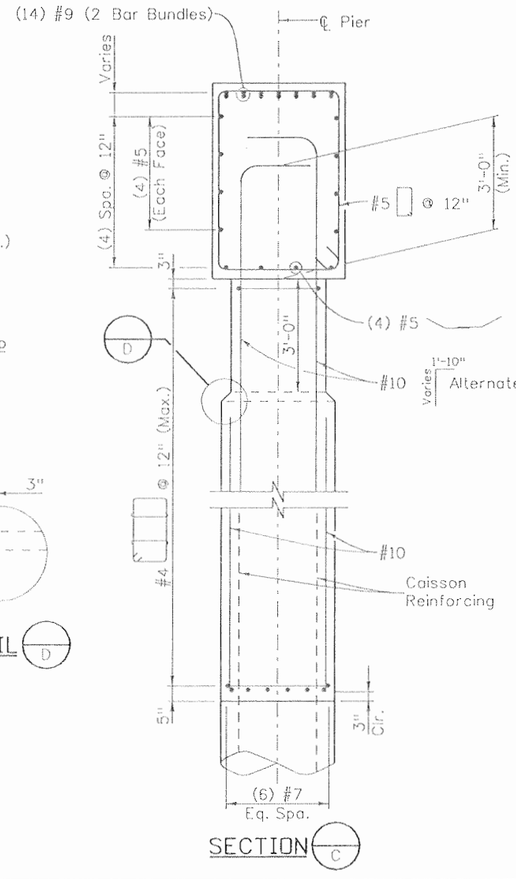

SECTION B



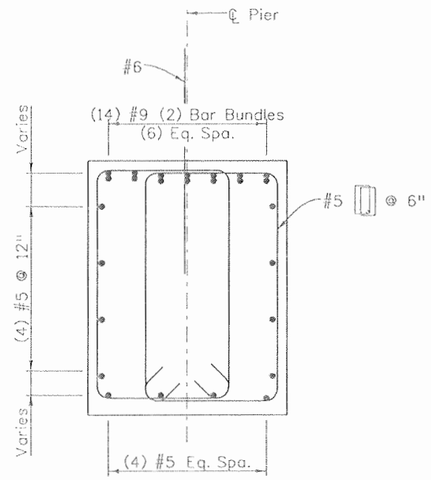

ELEVATION




DETAIL D




SECTION C




SECTION A

## NOTES:

1. All cover is 2" unless noted otherwise.
2. All concrete shall be Class D, f'c = 4,500 psi at 28 days.
3. See B4 for Architectural details

| Detail | | | | | |
|---|---|---|---|---|---|
| | INITIAL | DATE | Detailed By | Checked By | |
| | ROA | 08/08 | TAH | 08/08 | |
| Design | | | | | |
| | INITIAL | DATE | Designed By | Checked By | |
| | TRJ | 08/08 | TAH | 08/08 | |
| Quantities | | | | | |
| | INITIAL | DATE | Quantities By | Checked By | |
| | TRJ | 08/08 | TAH | 08/08 | |

| | | | |
|---|---|---|---|
| Print Date: 9/27/2010 | Sheet Revisions | | |
| File Name: 16042Y_PierDet_01.dgn | Date: | Comments | Init. |
| Horiz. Scale: 1:1 Vert. Scale: As Noted | | | |
| Unit Information 0221 Unit Leader STW | | | |
| SEMA CONSTRUCTION WILSON & COMPANY | | | |

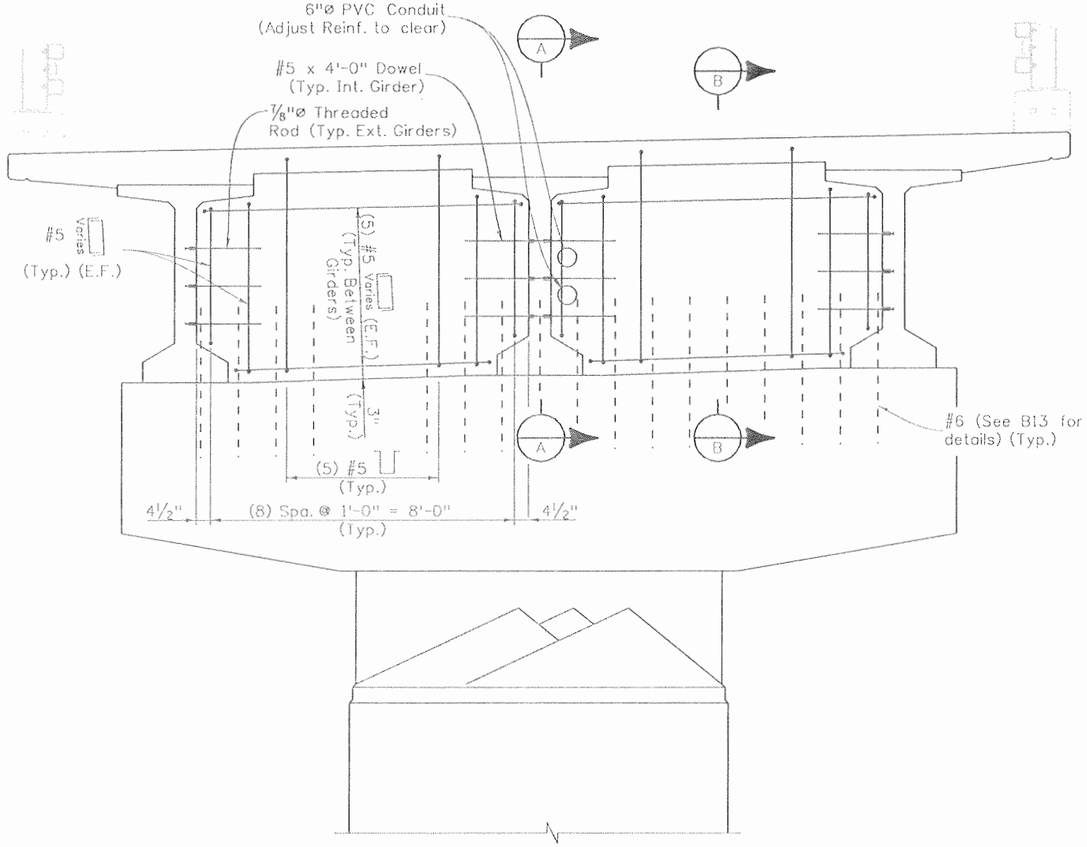

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | | | |
|---|---|---|---|
| No Revisions: | 09/10 | | |
| Revised: | | | |
| Void: | | | |

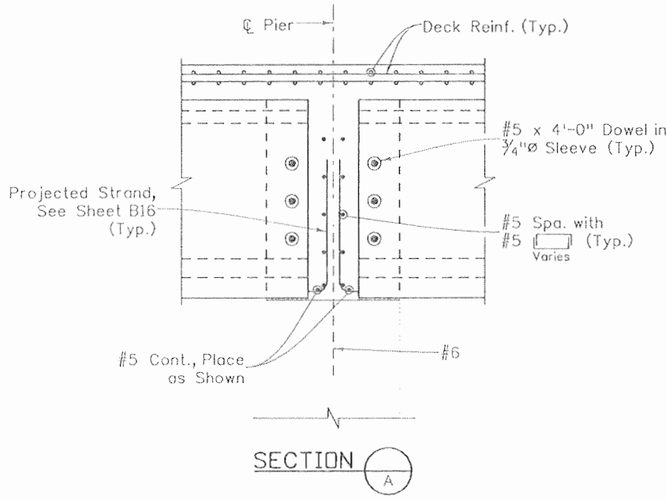
RAMP D OVER WILSON GULCH
PIER 2 DETAILS
(1 OF 2)

| | | | |
|---|---|---|---|
| Designer: | T. Johnson | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B13 of B26 |

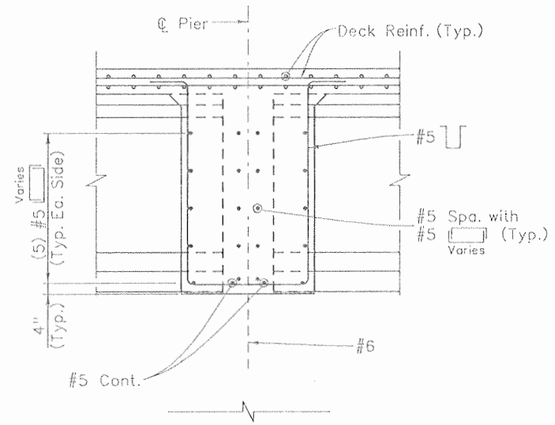
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 313 |




ELEVATION - PIER DIAPHRAGM
(Looking Ahead Station)




SECTION A




SECTION B

NOTES:

1. All cover is 2" unless noted otherwise.
2. Pier Diaphragm concrete shall be Class H (Bridge), f'c = 4,500 psi at 56 days.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | TRJ | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | TRJ | 08/08 |
| Checked By | TAH | 08/08 |

| Print Date: 9/27/2010 | |
|---|---|
| File Name: 16042Y_PierDet_02.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

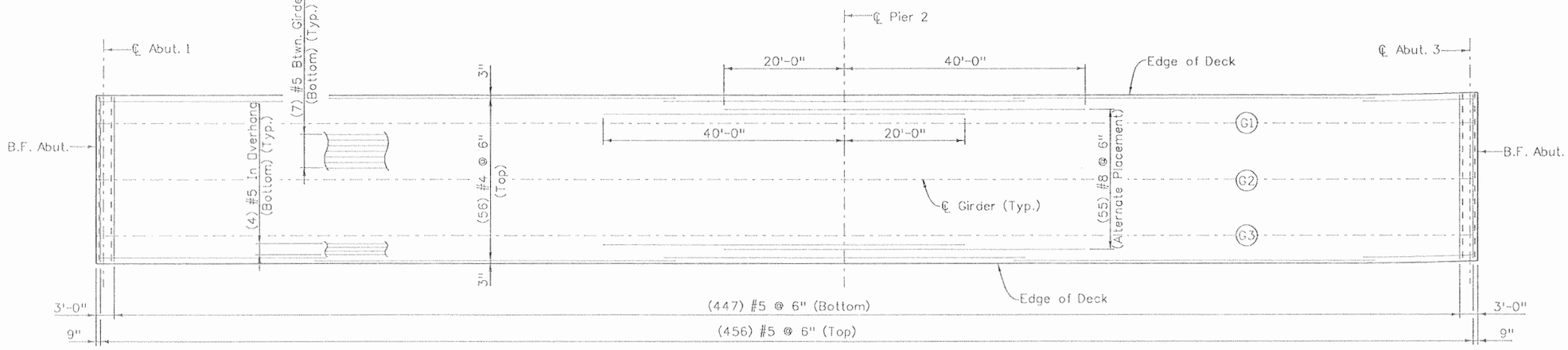
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

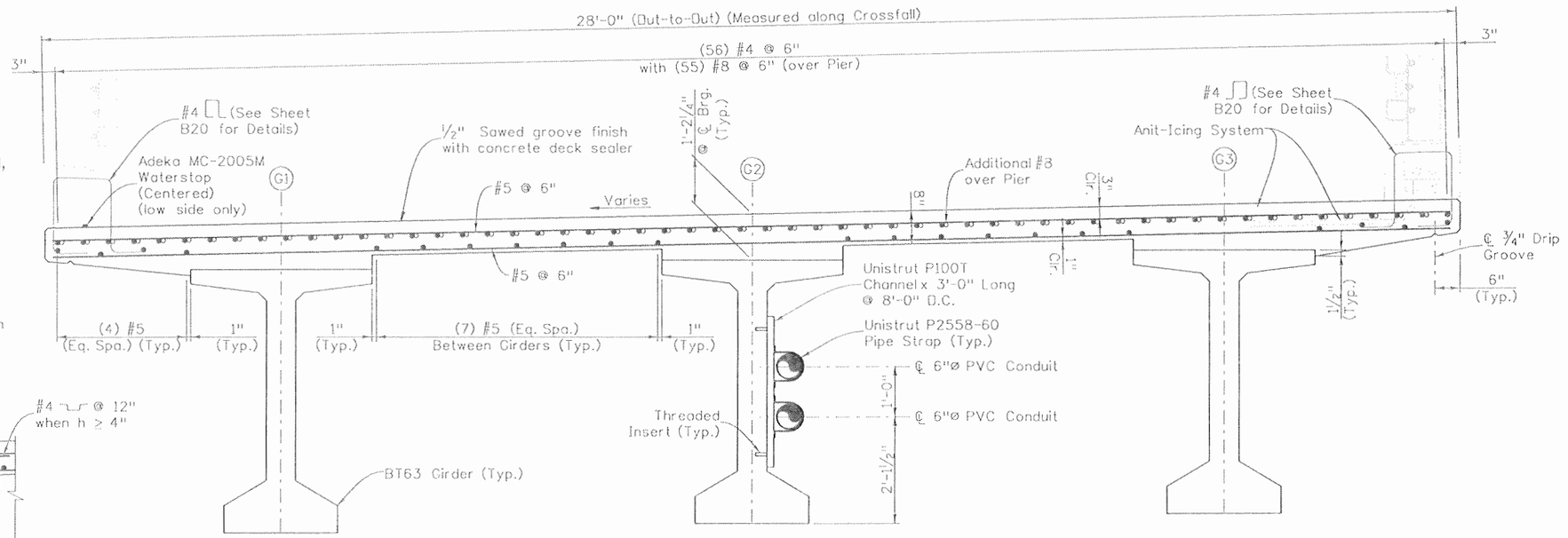
RAMP D OVER WILSON GULCH
PIER 2 DETAILS
(2 OF 2)

| Designer: | T. Johnson | Structure Numbers | P-05-Y |
|---|---|---|---|
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B14 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 314 |



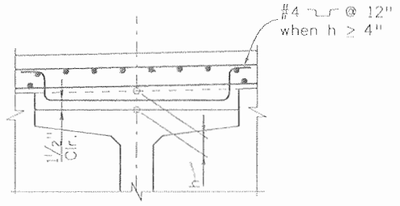

## DECK REINFORCING PLAN




## TYPICAL SECTION

### NOTES:

1. Deck concrete shall be Class H, f'c = 4,500 psi at 56 days.
2. Seal deck with CDOT approved deck sealer.
3. For Anti-icing System details, see Anti-icing System Plans.
4. Maximum permissible rebar relocation for anti-icing system is 2".




## HAUNCH DETAIL

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | JSM | 08/08 |
| Checked By: | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 08/08 |
| Checked By: | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | JSM | 08/08 |
| Checked By: | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_SupStrTypSect_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION
WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

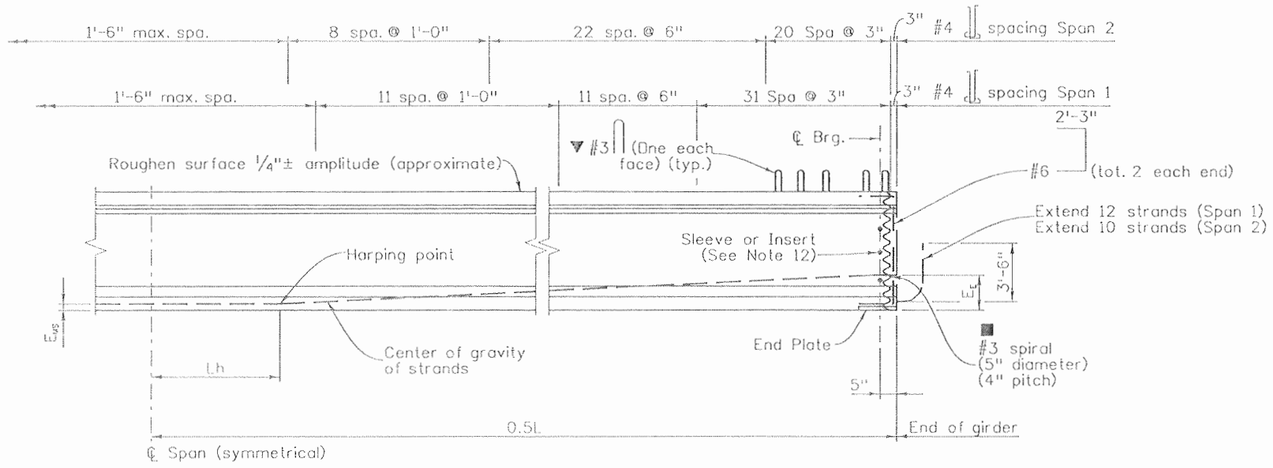

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 09/10
Revised:
Void:

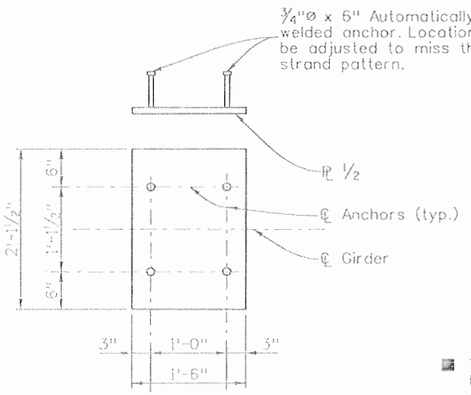
RAMP D OVER WILSON GULCH
SUPERSTRUCTURE REINFORCING PLAN & TYPICAL SECTION

Designer: J. Mills
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B15 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 315




## GIRDER ELEVATION

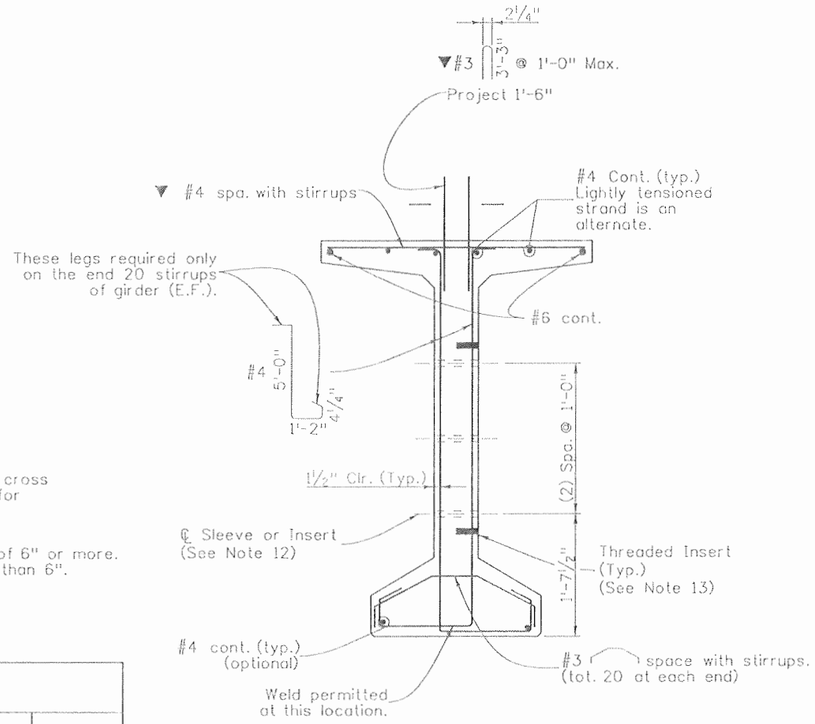



## END PLATE DETAIL

Galvanize after fabrication.

■ The Contractor may submit an alternate cross tie arrangement, at the end of the web, for approval by the Engineer.

▼ Space with #4 for stirrup spacings of 6" or more. Space at 1'-0" for stirrup spacings less than 6".




## TYPICAL GIRDER SECTION

## GIRDER SCHEDULE

| Girder Type | Span No. | Girder No. | L (Feet) | Lh (Feet) | $A_s$* (Square Inch) | $E_{MS}$ (Inch) | $E_E$ (Inch) | $F_j$ (KIPS) | $F_f$ (KIPS) | Concrete Strength $f'_{ci}$ (PSI) | Concrete Strength $f'_c$ (PSI) | Δ (Inch) | Predicted Camber (Inch) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT63 | 1 | 1-3 | 122.50 | 12.25 | 9.548 | 5.09 | 16.45 | 1933.5 | 1585.6 | 7250 | 8500 | 2.57 | 5.55 |
| BT63 | 2 | 1-3 | 103.50 | 10.35 | 6.076 | 3.43 | 13.29 | 1230.4 | 1064.9 | 7250 | 8500 | 1.32 | 2.85 |

## NOTES:

1. When approved by the Engineer, a minimum of tack welding will be permitted on ASTM A706 uncoated reinforcing steel.
2. Reinforcing projecting from the top of the girder shall be epoxy coated. Damaged coating on girder reinforcing need not be repaired. The minimum cover for reinforcing steel is 1".
3. At girder ends embedded in concrete diaphragms, cut strands to project 3", except as shown. Do not make cosmetic repairs (damage less than 1½" deep) to the parts of the girders embedded in concrete.
4. Use low relaxation strands meeting the requirements of ASTM A-416 Grade 270. The minimum clear distance between groups or individual strands shall be 2.3($d_s$) but not less than 1¼". The minimum cover for prestressing steel is 1½".
5. A minimum of two harping points shall be used per girder. Harped strands shall be well distributed at the girder ends, starting within 4" of the top of the girder and distributed such that there is no space between strands greater than 1'-0" at the end of the girder. As an alternate the Contractor may place #4 x 10'-0" in the sides of the end of the web parallel to the harped strands such that there is no space greater than 1'-0".
6. $A_s$* = minimum area of the prestressing steel.
   $d_s$ = nominal strand diameter.
   $f'_s$ = ultimate strength of prestressing steel.
   $F_j$ = jacking force per girder.
   $F_f$ = final force per girder after all losses.
   $f'_{ci}$ = required concrete strength at release of prestress force.
   $f'_c$ = required concrete strength at 28 days of age.
   L = length of girder along the grade of the girder.
   Δ = deflection at centerline of span due to cast-in-place slab, diaphragms, asphalt, curbs, rails, and walks.
7. Concrete shall be Class PS.
8. Entrained air is not required for girder concrete.
9. Use ½" chamfer on all corners.
10. Predicted camber is the camber for the girder alone at 90 days. The Contractor shall limit the camber growth to a value not to exceed the predicted camber plus 1" prior to the deck pour by weighting, scheduling fabrication, post tensioning, or other means and must report to the Engineer values of camber which exceed the predicted camber plus 1". Remedial measures, as approved by the Engineer, shall be taken if the predicted camber plus 1" is exceeded. The approved remedial measures shall be free of any adverse impact. The costs associated with all remedial measures shall be borne by the Contractor.
11. D20 wires may be used in lieu of #4.
    2 - D20 wires may be used in lieu of #6.
    D11 or W10.9 wires may be used in lieu of #3.
    W5 wires my be used in lieu of #2.
12. ¾"ø sleeves except use ⅞"ø threaded inserts on interior face of exterior girders at Pier 2.
13. Provide (2) ½"ø threaded inserts at 8'-0" center as required for utility conduits. Adjust vertical locations of inserts as required to clear strand and rebar.

| Design | Initial | Date |
|---|---|---|
| Designed By | JSM | 08/08 |
| Checked By | TAH | 08/08 |
| Detail | | |
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |
| Quantities | | |
| INITIAL | JSM | 08/08 |
| Quantities By | TAH | 08/08 |
| Checked By | | |

| | | | |
|---|---|---|---|
| Print Date: 9/27/2010 | Sheet Revisions | | |
| File Name: 16042Y_Prestr_I_Girder_01.dgn | Date: | Comments | Init. |
| Horiz. Scale: 1:1 Vert. Scale: As Noted | | | |
| Unit Information 0221 Unit Leader STW | | | |
| SEMA CONSTRUCTION WILSON & COMPANY | | | |

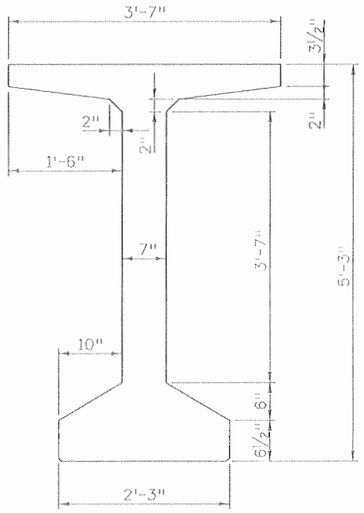

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


| As Constructed | |
|---|---|
| No Revisions: 09/10 | |
| Revised: | |
| Void: | |

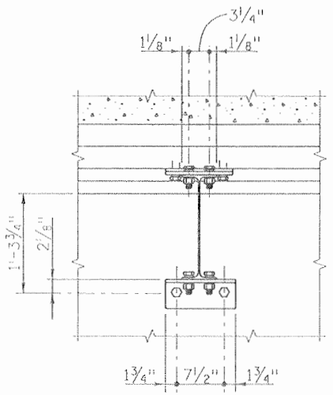
RAMP D OVER WILSON GULCH
BT63 GIRDER DETAILS
(1 OF 2)

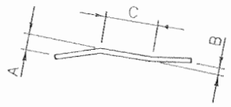
| | | | |
|---|---|---|---|
| Designer: | J. Mills | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B16 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 316 |



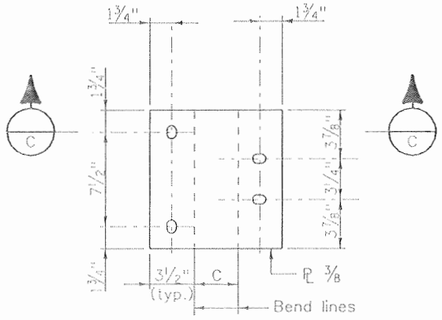

BT63 DETAIL



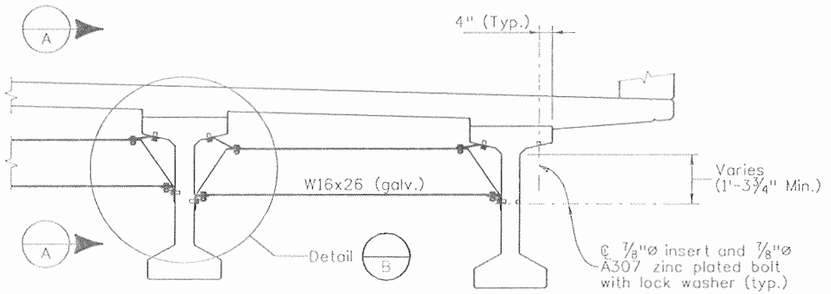

SECTION C

Dimensions A, B and C shall be shown on the shop drawings.

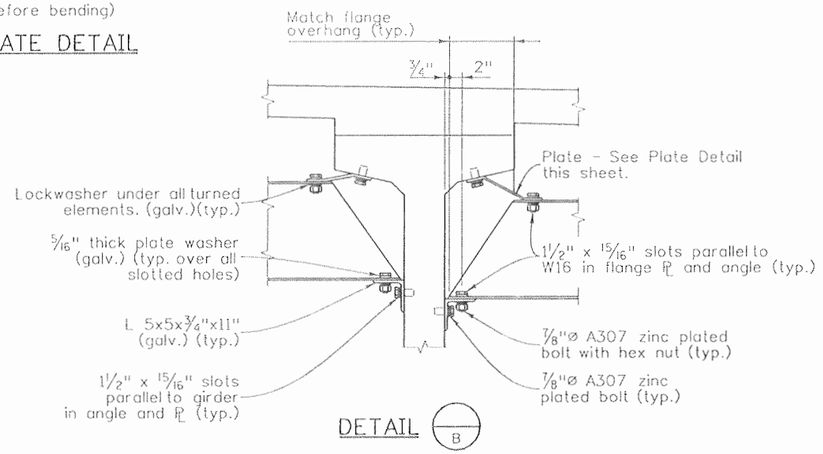



PLAN
(Before bending)

PLATE DETAIL




INTERMEDIATE DIAPHRAGM DETAILS




## NOTES:

1. All diaphragm materials, including bolts, nuts, and washers shall be galvanized. Galvanize after fabrication.
2. Bolts, nuts and lock washers may be zinc plated in lieu of being galvanized.
3. The diaphragms may be placed on a skew such that they are between 80° and 100° to the girders. Additionally, all diaphragms shall be installed level.
4. The Contractor is responsible for determining necessary bracing requirements and for providing adequate bracing for the specific wind and weather conditions to be encountered for each specific project.
5. When bracing or diaphragms are required, no girders shall be erected and left unbraced. The intermediate diaphragms (when used) shall be connected to the adjacent girders simultaneously with the erection of the girders.
6. Use and installation of the intermediate diaphragms shall not relieve the Contractor of full responsibility to construct the Work in a manner which provides all necessary rigidity, supports all loads imposed, and provides in the finished structure the lines and grades indicated on the plans.
7. For intermediate diaphragm location, see sheet B8.
8. All steel for diaphragms shall be AASHTO M270, Grade 36, minimum.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JSM | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | JSM | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_Prestr_I_Girder_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

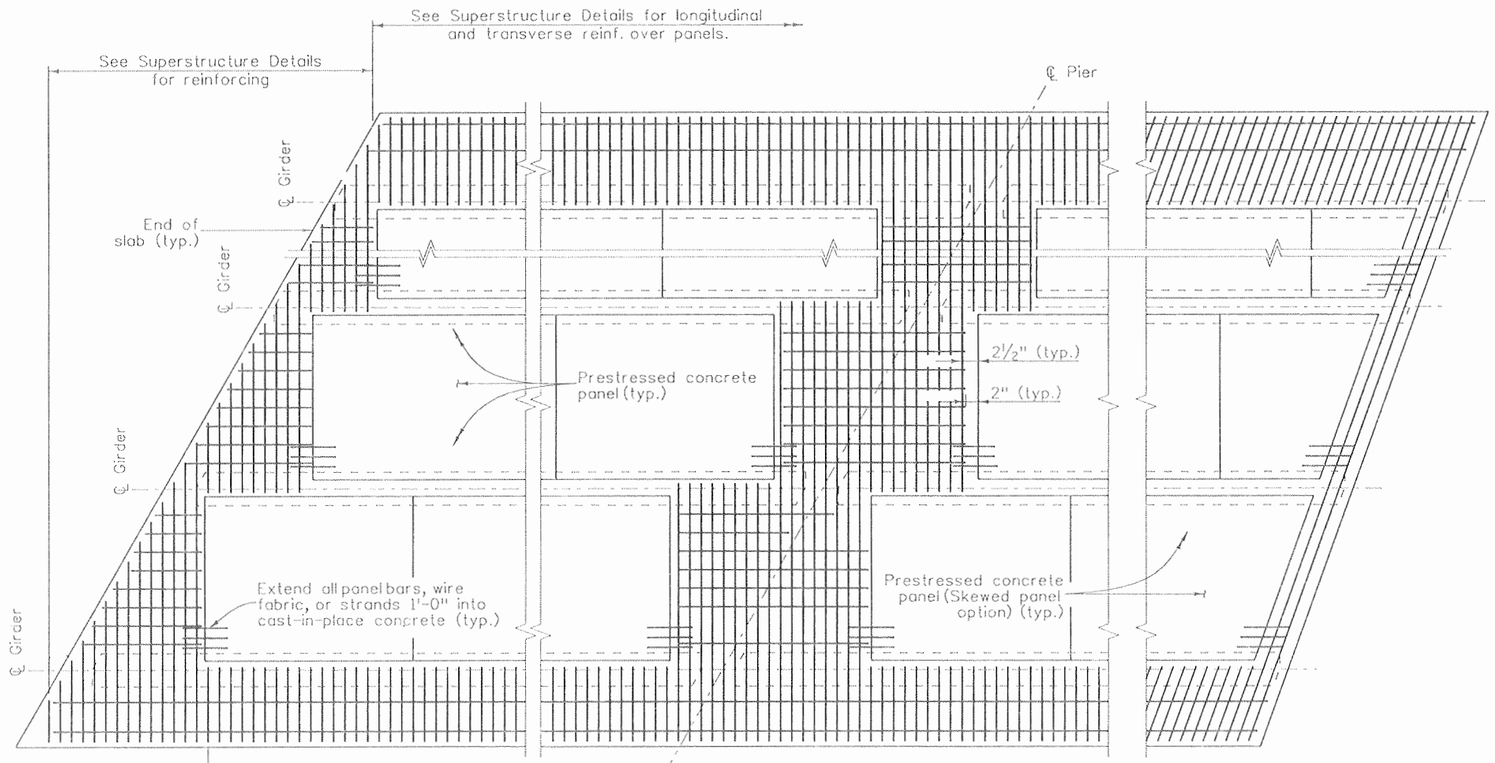
Colorado Department of Transportation
DOT — DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
BT63 GIRDER DETAILS
(2 OF 2)

Designer: J. Mills
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B17 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 317



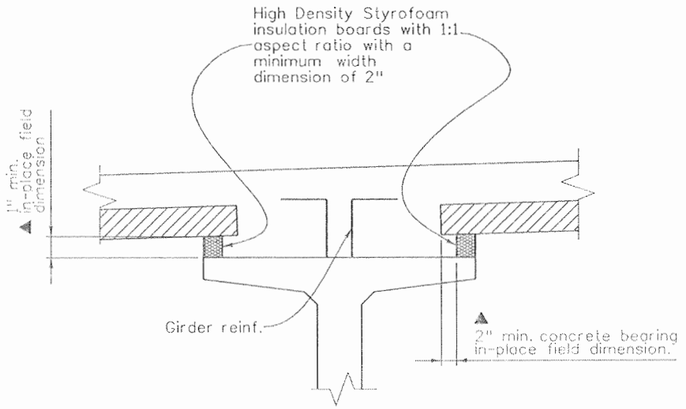

END OF SLAB
RECTANGULAR PANEL OPTION AND
SKEWS LESS THAN 70°

Rectangular panel option shall be used for skews less than 70°.

CONTINUOUS SLAB
OVER PIER

PART PLAN

END OF SLAB
SKEWED PANEL OPTION FOR
SKEWS 70° to 90°




ALTERNATE SUPPORT DETAIL

NOTES:

1. Composite total slab designed for HS 25-44 and Alternate Military Loading.
2. All concrete shall be Class PS with release strength $f'_{ci}$ = 4500 psi and minimum 28 day strength $f'_c$ = 6000 psi. Entrained air is not required for precast panel deck form concrete. The strength shall be at least 5000 psi at the time of the deck pour.
3. Use ⅜"Ø low relaxation strands meeting the requirements of ASTM A416 grade 270. Jacking force per strand ($F_j$) shall be at least 17.2 kips. Final force per strand ($F_f$) is estimated to be 14.2 kips.
4. Installation of Bar U (#3) is mandatory. All four Bar U (#3) loops shall be used simultaneously for lifting the panels.
5. Care must be taken to ensure proper cleaning of construction debris off the tops of the panels and consolidation of concrete mortar under the edges of the panels. Water, dirt or other debris on top of the panels will inhibit the bond of the cast-in-place concrete. It is also important that adequate space (▲ min. 1" x 2") is provided for the concrete to fill the space under the panel as the slab concrete is placed. Panel lengths and width shall be determined by the Contractor and shown on the shop plans.
6. The Contractor is responsible for the stability of the panels on the girders. Erected panels shall be uniformly supported along the length of the panel. The Contractor is responsible for meeting the total slab thickness shown on the Superstructure Details.
7. All planes of reinforcing steel shown in the superstructure details are required for areas not formed with precast panels.

| Design | Initial | Date |
|---|---|---|
| Designed By | JSM | 08/08 |
| Checked By | TAH | 08/08 |
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |
| Quantities | Initial | Date |
| Quantities By | JSM | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_PrecastPanel_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

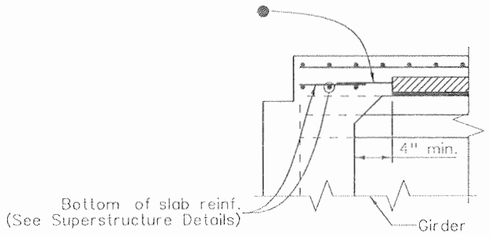
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

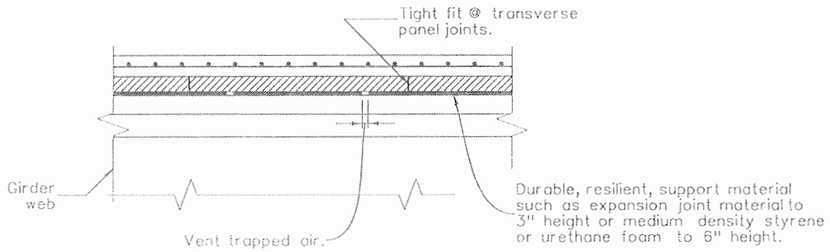
RAMP D OVER WILSON GULCH
PRECAST PANEL DECK FORM
(1 OF 2)

| | | | |
|---|---|---|---|
| Designer: | J. Mills | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B18 of B26 |

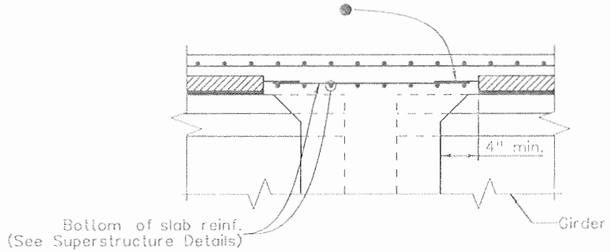
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 318 |



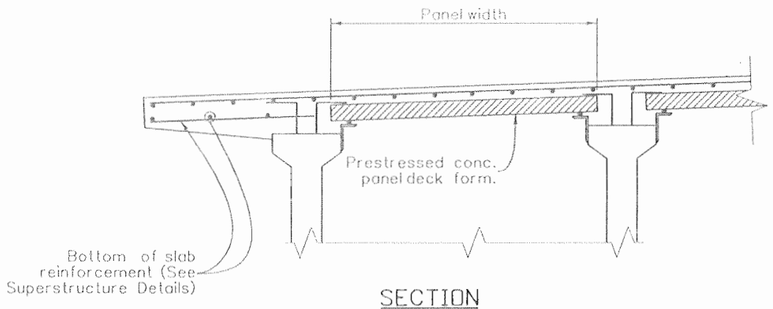

SECTION AT ABUTMENT



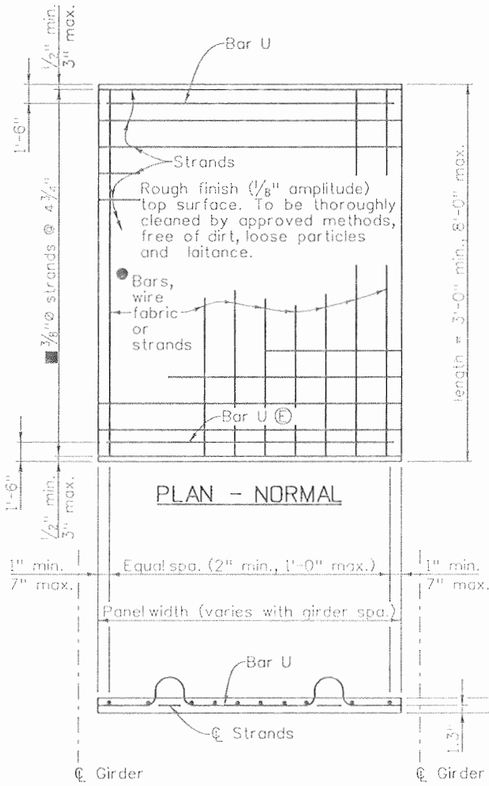

SECTION THRU TRANSVERSE
PANEL JOINTS




SECTION AT PIER




SECTION



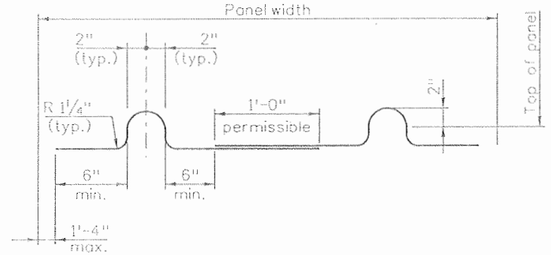

PRESTRESSED PANEL DETAILS

## NOTES:

1. Sawing of panels is acceptable in areas where projecting reinforcement is not required. It is desirable to have the prestressing strands project from the panels as long as the projecting strands do not interfere with other bridge components.
2. The longitudinal reinforcing steel in the cast-in-place portion of the deck may rest directly on the panels as necessary to obtain clearances at the top of deck, unless otherwise noted.
3. The tolerance on strand placement shall not exceed ±¼".
4. The tolerance on panel thickness shall not exceed ±¼".
5. Concentrated construction loads shall not exceed 500 lb for 3" panels, 700 lb for 3.5" panels, nor 1100 lb for 4" panels unless the load is distributed to less than 117 psf.
6. Total loads applied to any panel during construction shall not exceed 117 psf.
7. Bottom flexural cracks, sags greater than 0.5", or cambers greater than 0.5" will be considered evidence of mishandling, overloading, or exceeding allowable tolerances, and may be cause for rejecting panels at the Engineer's discretion.

● Reinforcing perpendicular to strands may be deformed reinf. bars, welded wire fabric, or welded deformed bar mats, and shall be placed directly above the strands. Minimum area of reinforcing perpendicular to strands shall be 0.11 sq. in. per ft. Tensioned or untensioned strands may also be used. These individual bars or wires shall be no larger than 0.375" diameter. For location of longitudinal bar extensions, see sheet 2 of 2.

■ May be reduced to ⅜"ø strands at 9½" when the panel width is less than 5'-7" and the design span is less than 7'-7".




BAR U (#3)
PRESTRESSED PANEL DETAILS

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | JSM | 08/08 |
| Checked By: | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 08/08 |
| Checked By: | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | VSM | 08/08 |
| Checked By: | TAH | 08/08 |

| | |
|---|---|
| Print Date: 9/27/2010 | |
| File Name: 16042Y_PrecastPanel_01.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

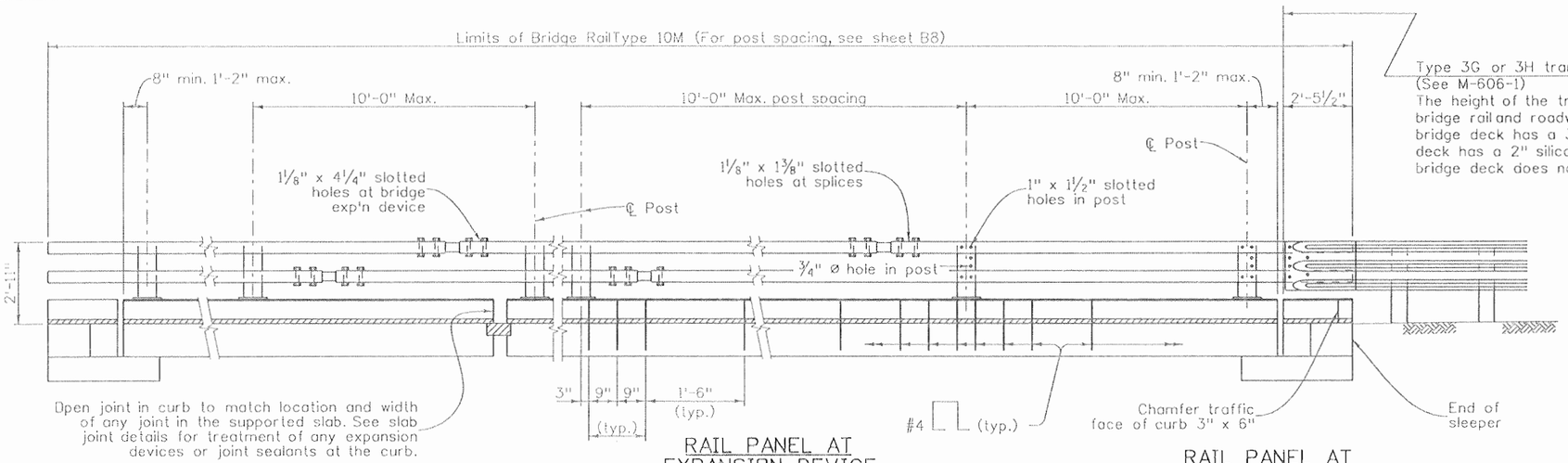
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

RAMP D OVER WILSON GULCH
PRECAST PANEL DECK FORM
(2 OF 2)

| | | | |
|---|---|---|---|
| Designer: | J. Mills | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B19 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 319 |




## RAIL PANEL AT TERMINAL SECTION

(See Roadwcy plans for ends not attached to Guard Rail.)

## RAIL PANEL AT EXPANSION DEVICE

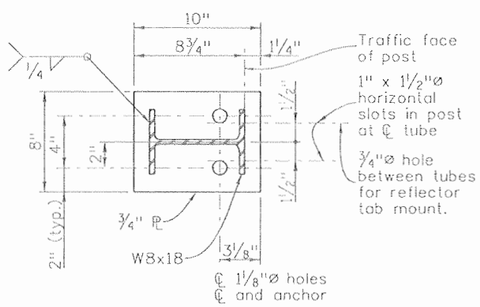
## RAIL PANEL AT TRANSITION SECTION

(See roadway plans for ends requiring attachment to guard rail.)

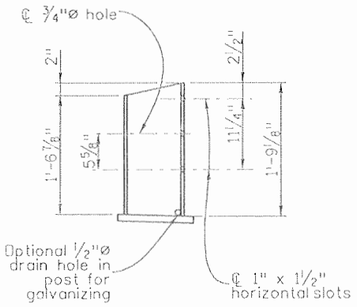
## ELEVATION - BRIDGE RAIL

## NOTES:

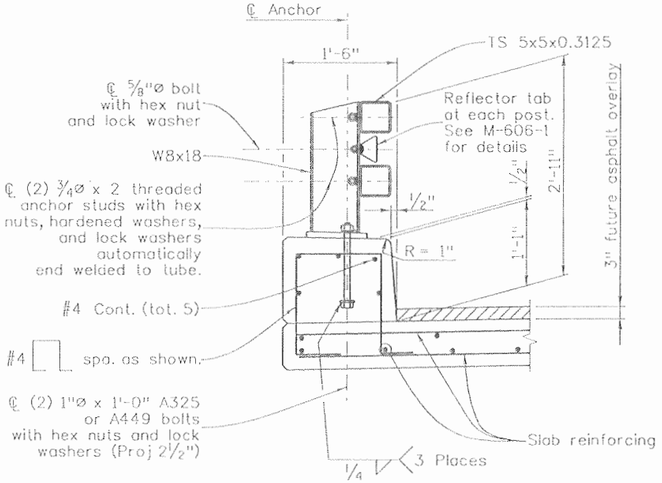
1. All tubes shall be ASTM A-847. All other steel shall be ASTM A-588 Grade 50.
2. Concrete, reinforcing steel, and structural steel elements shall conform to the requirements of sections 601, 602 and 509, respectively. Anchor bolts shall be galvanized in accordance with Section 509.
3. Post anchor, encased in concrete, shall be ASTM A-36 (AASHTO M-183).
4. The tubes shall be shop bent or fabricated to fit horizontal curve when radius is less than 1,500 feet.
5. Tubes shall be continuous over not less than two posts. No welded butt splices will be allowed in the tube sections.
6. The centerline of the tube splice shall be 1'-8" minimum and 2'-6" maximum from the centerline of the posts.
7. All bolts that have lock washers shall be tightened to snug only.
8. Posts shall be perpendicular to the longitudinal roadway grade.
9. One or more 10'-0" post spacings may be reduced (6'-8" min.) in order to maintain dimensions from the end of the rail and expansion joints.
10. Prior to fabrication of this item, three sets of working drawings which comply with the requirements of section 105, shall be submitted to the Engineer for information only.
    Structural Steel:
    ASTM A-36 $f_y$ = 36,000 psi
    ASTM A-588 Grade 50 $f_y$ = 50,000 psi
    A-847 Grade B $f_y$ = 46,000 psi
11. For additional details see next rail sheets.
12. At bridge ends without Approach Slabs. Terminate tube at nearest splice. Continue post spacing to end of structure.
13. Coordinate location of de-icing equipment and conduits with bridge rail reinforcing and hardware. Move conduit or equipment if a conflict exists. Refer to de-icing plans for additional reinforcement required at sensor pole mounting location.



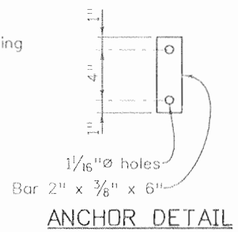

## PLAN - POST DETAIL



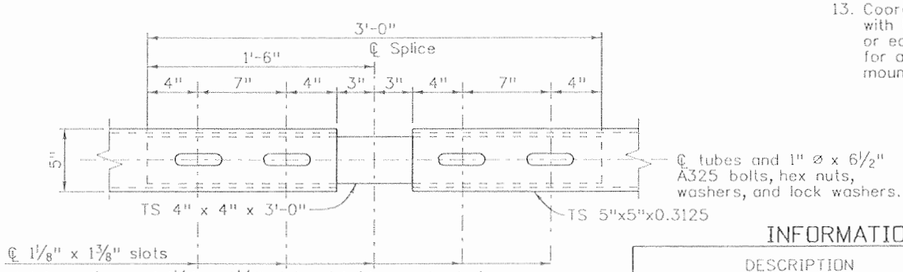

## ELEVATION




## SECTION




## ANCHOR DETAIL




## PLAN - TUBE SPLICE

## INFORMATION ONLY

| DESCRIPTION | UNIT | PER LIN. FT. |
|---|---|---|
| Structural Steel | LB. | 45.1 |
| | | |
| Concrete Class D (Bridge) | CU.YD. | .06 |
| | | |
| Reinforcing Steel (Epoxy Coated) | LB. | 6.6 |
| | | |

| Quantities | INITIAL | DATE |
|---|---|---|
| | AML | 08/08 |
| Quantities By: | GWK | 09/08 |
| Checked By: | | |

| Detail | INITIAL | DATE |
|---|---|---|
| | DRA | 08/08 |
| Detailed By: | GWK | 08/08 |
| Checked By: | | |

| Design | INITIAL | DATE |
|---|---|---|
| | AML | 08/08 |
| Designed By: | GWK | 08/08 |
| Checked By: | | |

Print Date: 9/27/2010
File Name: 16042Y_BridgeRailType10M_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

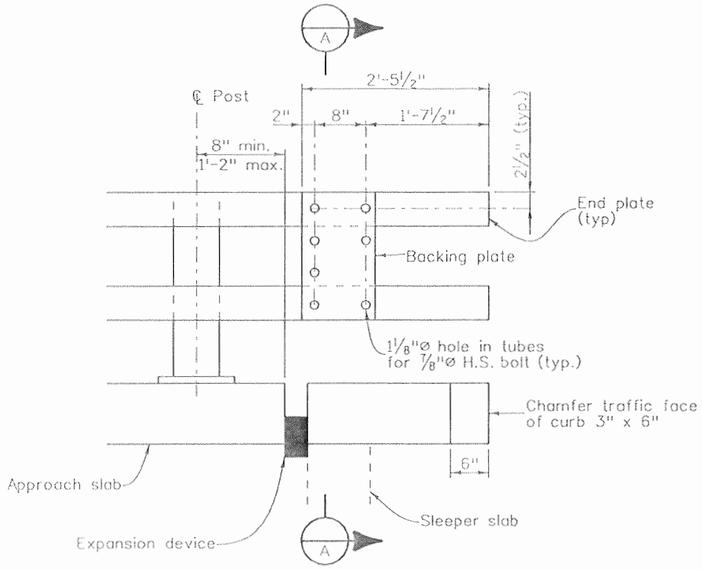
Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
BRIDGE RAIL TYPE 10M (SPECIAL)
(1 OF 2)

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B20 of B26

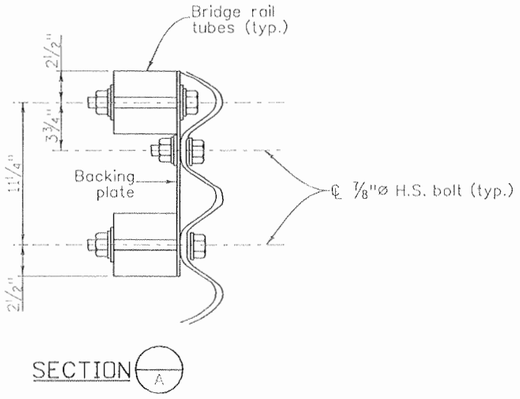
Project No./Code
NH 1602-114
16042
Sheet Number 320



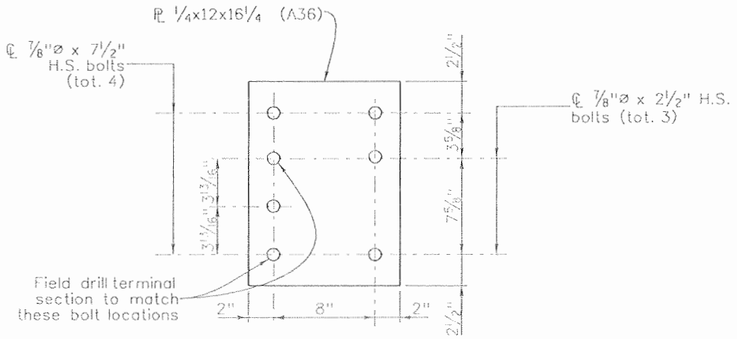

## RAIL TUBE DETAILS

(Thrie beam not shown)

(Req'd at approach slab ends only)

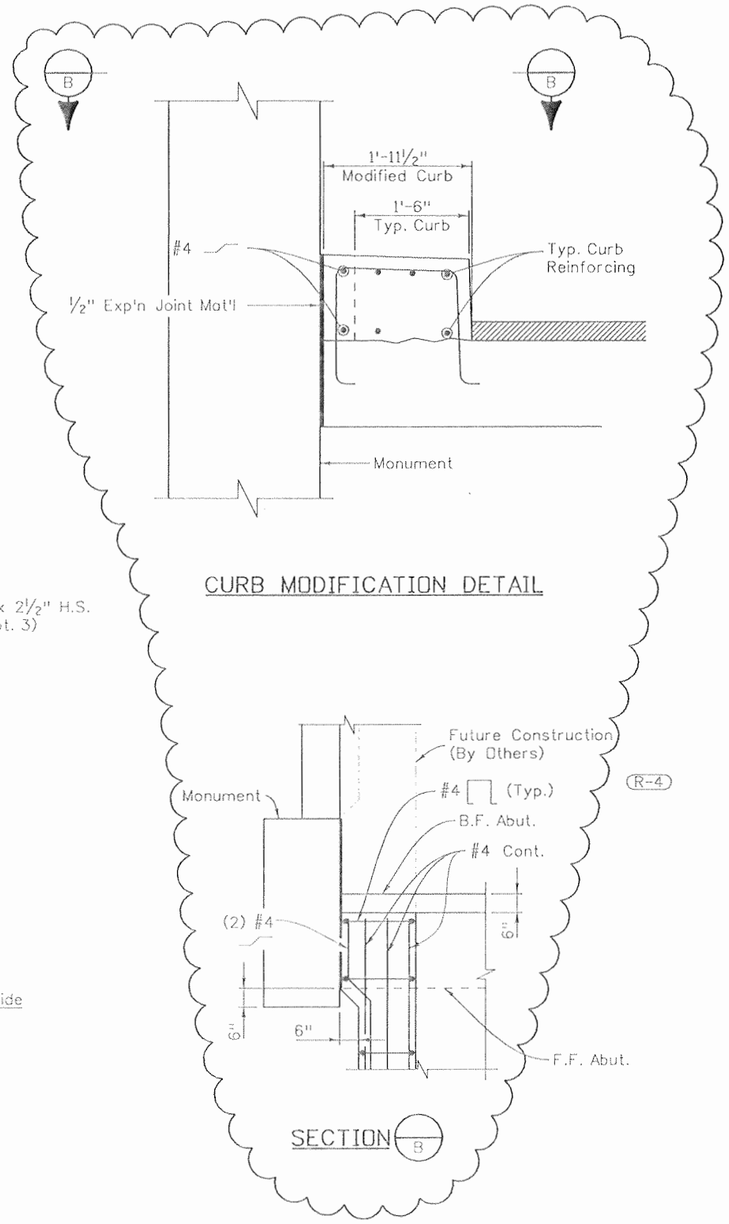



SECTION A

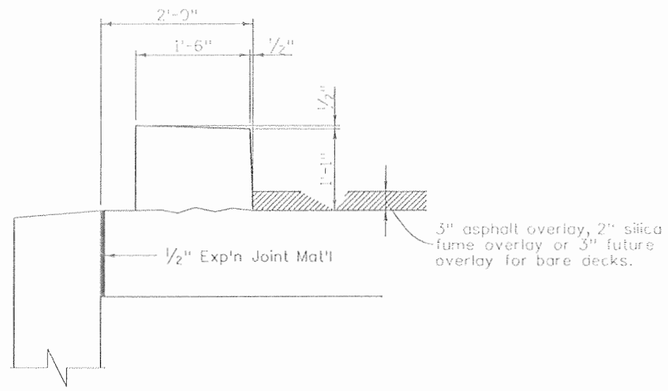



## BACKING PLATE

Holes are 1⅛"ø for ⅞"ø H. S. bolts with hex nuts, 2 PL washers, and 1 lock washer



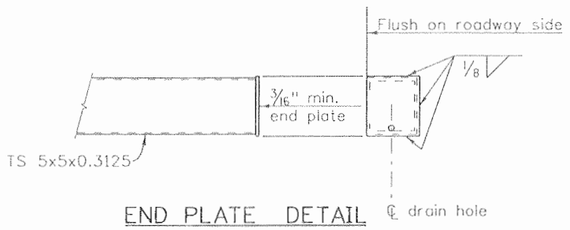

## CURB MODIFICATION DETAIL




## SECTION

(Use when curb is to be placed on approach slab.)

(Approach slab location only)




## END PLATE DETAIL




## SECTION B

| Quantities | | | | | | |
|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE |
| Designed By | AML | 08/08 | Detailed By | DRA | 08/08 |
| Checked By | GWK | 08/08 | Checked By | GWK | 08/08 |
| Quantities By | AML | 08/08 | Checked By | GWK | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_BridgeRailType10M_02.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

R-4

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| 9/29/08 | Added Rail Curb Modification | BJA |

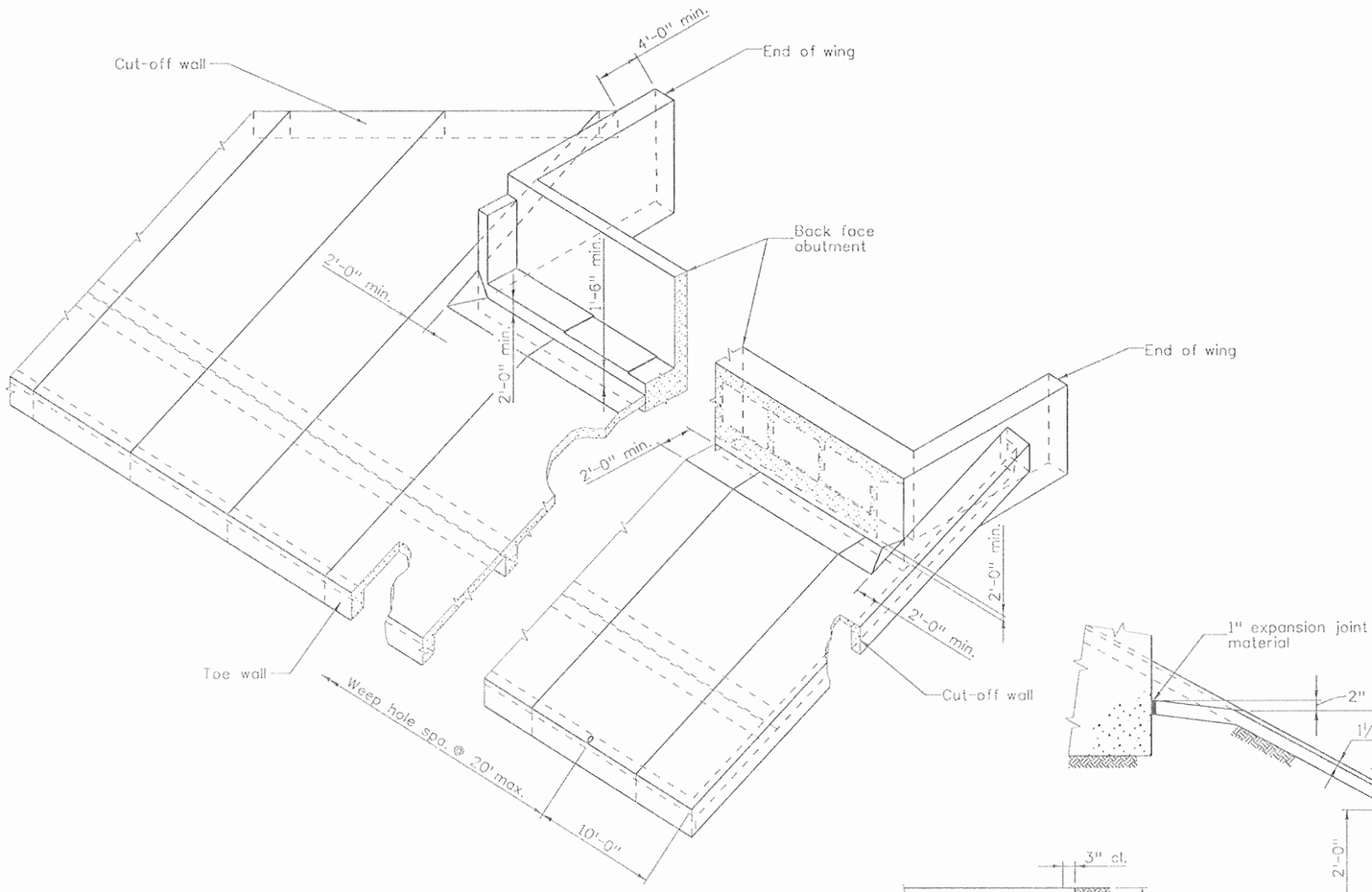

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 09/10
Revised:
Void:

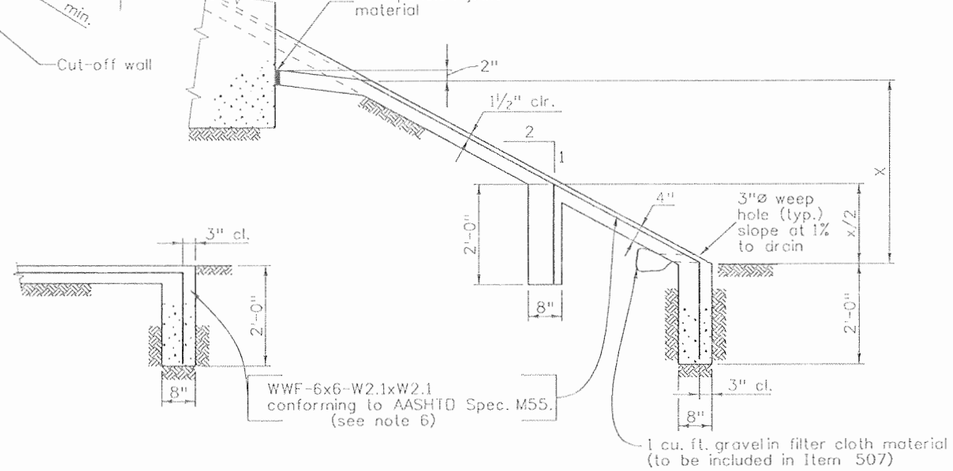
RAMP D OVER WILSON GULCH
BRIDGE RAIL TYPE 10M (SPECIAL)
(2 OF 2)

Designer: A. Leifheit
Detailer: D. Anderson
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B21 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 321




TYPICAL SECTION
THRU CUT-OFF WALL




TYPICAL SECTION
THRU SLOPE PAVING

## NOTES:

1. Slope paving shall be poured in 10 ft. transverse sections with a tooled construction joint at each section.
2. Wire fabric shall be 2" from the end of joints and shall lap 8" at splices.
3. Where slope or berm paving butts against structural concrete, separate with 1" expansion joint material.
4. Expansion joint material and welded wire fabric shall not be paid for separately, but shall be included in the work.
5. Structure excavation for concrete slope and ditch paving shall be limited to the actual volume occupied by the slope paving concrete.
6. 2.5 lbs. of an approved polypropylene fiber, per cubic yard of concrete, may be substituted for the WWF in this slope paving. If this substitution is made, a continuous #5 reinforcing bar shall be added near the top and bottom of the cutoff wall. The fiber shall be added to the concrete mix in such a fashion that the fibers are uniformly dispersed in the concrete without visible balls or clumps in either the finished slope paving or in the plastic concrete delivered from the concrete truck.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | BJA | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | BJA | 08/08 |
| Checked By | TAH | 08/08 |

| | |
|---|---|
| Print Date: 9/27/2010 | |
| File Name: 16042Y_SlopePavingDet_01.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

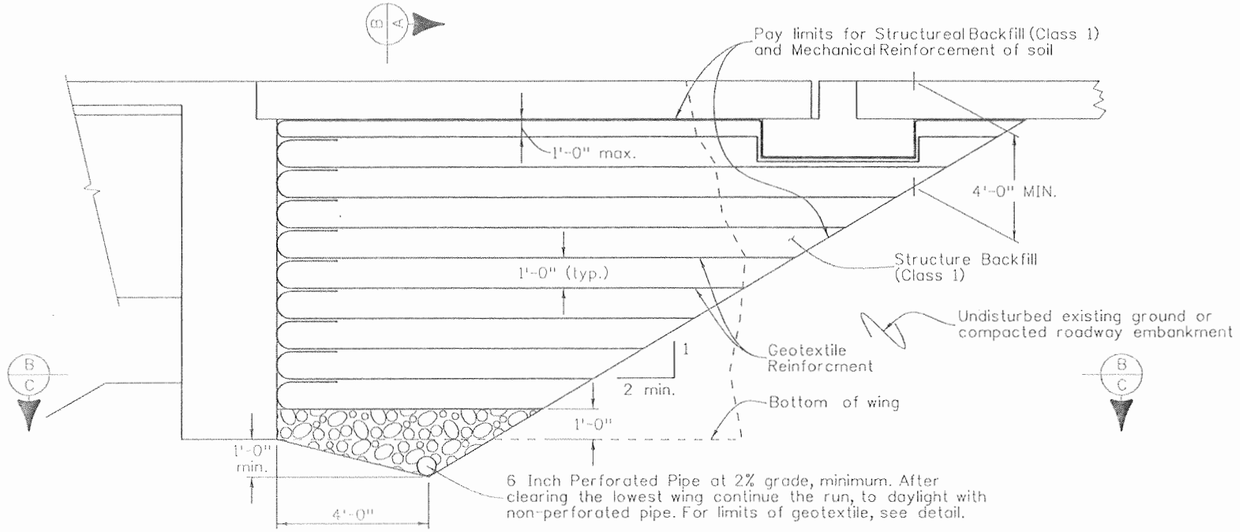
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

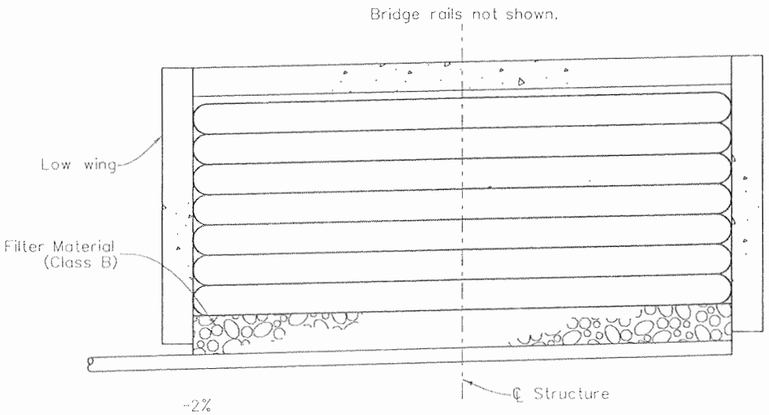
RAMP D OVER WILSON GULCH
SLOPE PAVING DETAILS

| | | | |
|---|---|---|---|
| Designer: | B. Allen | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B22 of B26 |

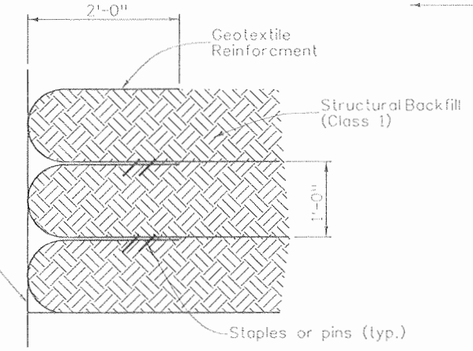
| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 322 |



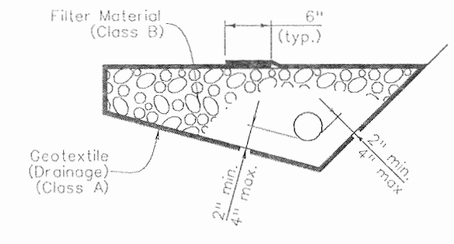

SECTION PERPENDICULAR TO ABUTMENT




SECTION B A

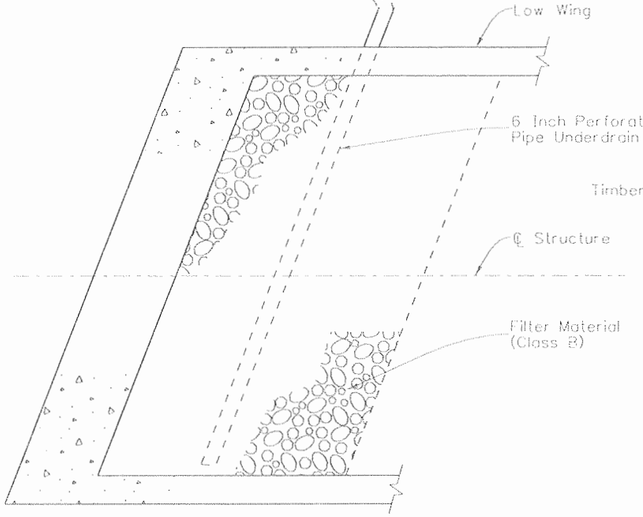



WRAP DETAIL



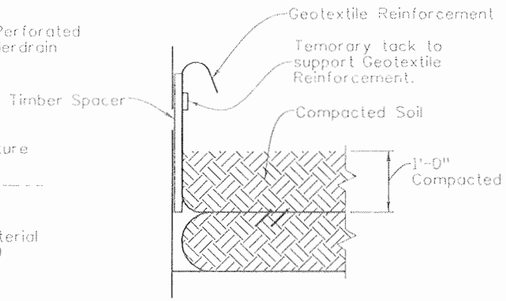

6 INCH PERFORTED PIPE UNDERDRAIN

6 Inch Perforated Pipe Underdrain includes all Filter Material (Class B) and Geotextile (Drainage) (Class A) surrounding the filter Material (Class B).

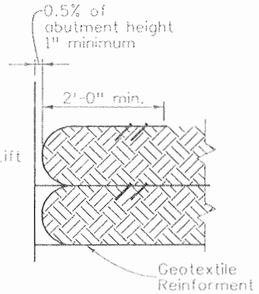



SECTION B C

For steel structures longer then 300' without expansion devices between abutments and for abutments greater then 12' high, provide gap between the abutment and backfill. The gap width shall be at least 0.5% of the abutment height, 1" minimum. See Gap Detaiul 1 and 2. Do not provide this gap at bottom 2 nor the top 2 layers of Reinforced Soil.




GAP DETAIL STEP 1




GAP DETAIL STEP 2

When required, the Geotextile Reinforcement wrap at Back Face of Abutment shall be temporarily hung with a spacer board and tack strip. After reaching a total of 1'-0" compacted lift, the tack strip shall be removed and Geotextile Reinforcement shall be pulled back slack free with its end anchored to soil underneath with staple or pins before the spacer board is pulled. Any alternate method to maintain the minimum gap between abutment concrete and Reinforced Soil may be proposed to the Engineer for approval.

## NOTES:

Geotextile reinforcement shall be woven fabric with a Minimum Average Roll Value of 4800 lb/ft for installations with a gap and 2400 lb/ft for installations without a gap based on ASTM D4595.

Geotextile Reinforcement shall be placed by alternating Machine Direction (MD) with Cross Machine Direction (XD) from layer to layer.

The Geotextile Reinforcement wrap at Back Face of Abutment shall Be pulled back slack free with its end anchored to soil underneath with staples or pins.

Minimum splice of all Geofabric shall consist of 6" of overlap.

Payment will be made under item 206 Mechanical Reinforcement of Soil (cu.yd.) and item 206 Structure Backfill (Class 1) (cu.yd.) and Shall include the cost for 6 inch Perforated Pipe underdrain and Subsurface Drain Outlet (6"ø Non-Perforated Pipe).

Installation of Pipe Underdrain and Subsurface Drain Outlet will conform to the Construction requirements of section 605.03 and 605.06, respectively.

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | BJA | 08/08 |
| Checked By: | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 08/08 |
| Checked By: | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | BJA | 08/08 |
| Checked By: | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_MSB_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION — WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

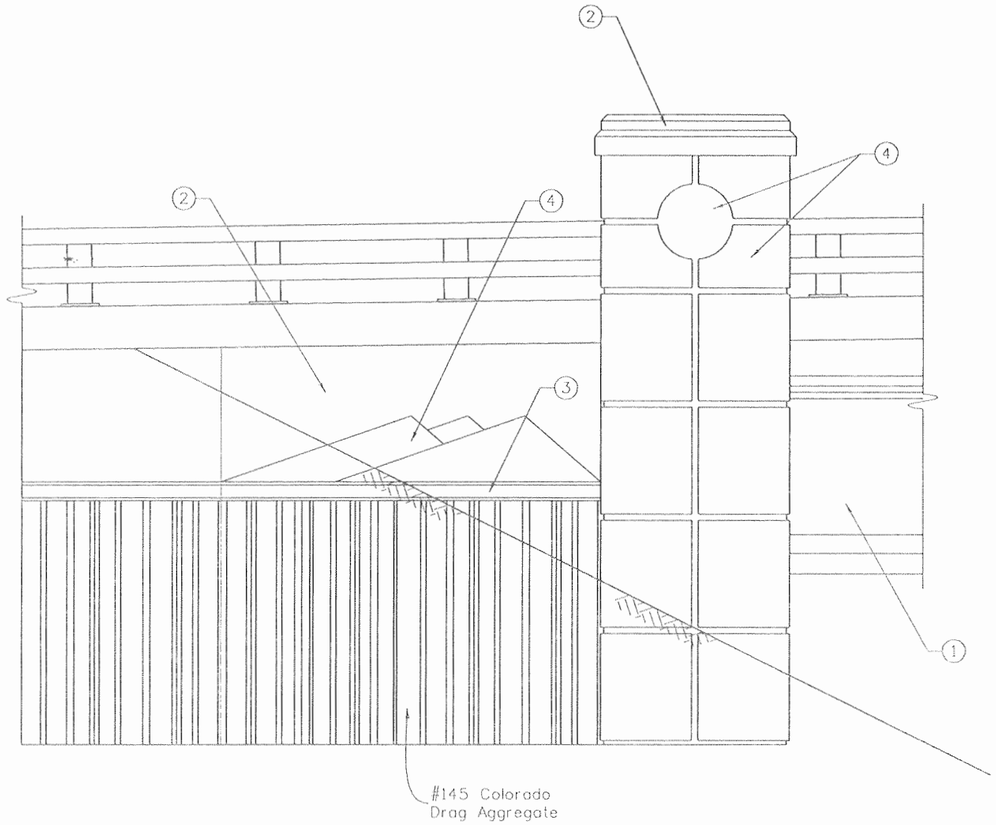
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

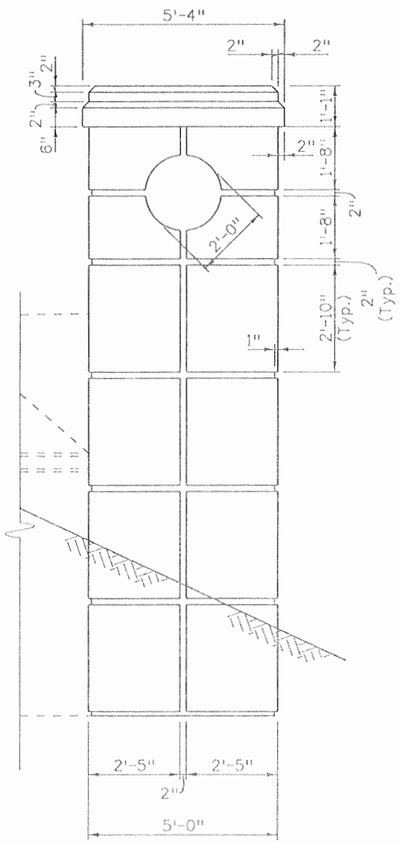
RAMP D OVER WILSON GULCH MECHANICALLY STABILIZED BACKFILL

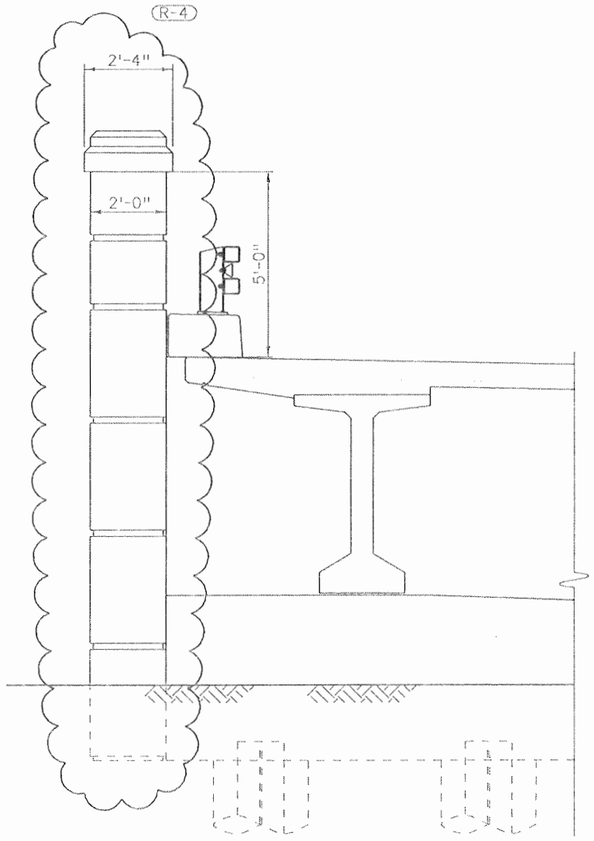
| | | | |
|---|---|---|---|
| Designer: | B. Allen | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B23 of B26 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 323 |




WINGWALL ELEVATION




PILASTER DETAILS

NOTES:

A colored structural concrete coating finish is required, as shown on the Plans, on all exposed concrete surfaces including piers, abutments, and wingwalls. Color numbers correspond to paint numbers as described by Diamond Vogel Paints. Coating shall extend to 1'-0" below ground surface.

(1) #8513

(2) #8515

(3) #8513

(4) #8511

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By: | BJA | 08/08 |
| Checked By: | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By: | RGA | 08/08 |
| Checked By: | TAH | 08/08 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By: | BJA | 08/08 |
| Checked By: | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_ArchDet_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION

WILSON & COMPANY

R-4

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| 9/29/08 | Monument Revisions | BJA |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
ARCHITECTURAL DETAILS

Designer: B. Allen
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B24 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 324

State of Colorado
Department of Transportation
Staff Bridge Design
Bridge Geometry Project Coordinate Converter
Version 1.00

Run date & time = Fri Aug 15 16:21:26 2008

Input Northing Offset = 1213765.030400
Input Easting Offset = 2320757.505000
Input Bearing = S 66 1 11.0000 E

DESCRIPTION

Units: feet;
Project: NH 1602-114;
Subaccount: 16042;
Designer: EJA; Detailer: ;
Location: Durango;
Ramp D over Wilson Gulch

HORIZONTAL ALIGNMENT DATA

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PC | 612+89.1728 | T | 184.2472 | | | | | |
| PI | 614+72.4200 | Lc | 361.4841 | DELTA | 27 19 26.00 LT | Dc | 7 33 31.71 | RADIUS 758.000163 |
| PT | 616+50.6569 | T | 184.2472 | | | | | |

VERTICAL ALIGNMENT DATA

| ELEVATION AC PT | ELEVATION AT GRADE | | STATION | ELEVATION AT GRADE | ELEVATION AT PI | PERCENT GRADE |
|---|---|---|---|---|---|---|
| | | | | | | 1.660000 |
| | 6674.1935 | PC | 611+97.5000 | | | |
| 6676.3900 | 6678.2671 | PI | 613+70.0000 | | | |
| | 6681.1348 | PT | 615+47.5000 | | | |
| | | | | | | 5.490000 |

TABLE OF ROADWAY CROSS SLOPES (SUPERELEVATION: E= -NC )

| STATION | SLOPE LEFT | SLOPE RIGHT | VC LENGTH |
|---|---|---|---|
| (ON TANGENT) | 0.0000 | 0.0000 | 50.00 (MIN) |
| 610+00.0000 | -0.0200 | 0.0200 | 50.00 -U- |
| 612+05.1710 | -0.0200 | 0.0200 | 51.00 -U- |
| 613+85.1710 | -0.0600 | 0.0200 | 50.00 -U- |

OFFSET PROFILE CONTROL TO PIVOT POINT = 0.0000 FEET

LIMITS OF VALID ELEVATION AND CROSS-SLOPE DATA

| BEGIN | END |
|---|---|
| 610+25.0000 | 613+60.1700 |
| SUPERELEVATION | SUPERELEVATION |

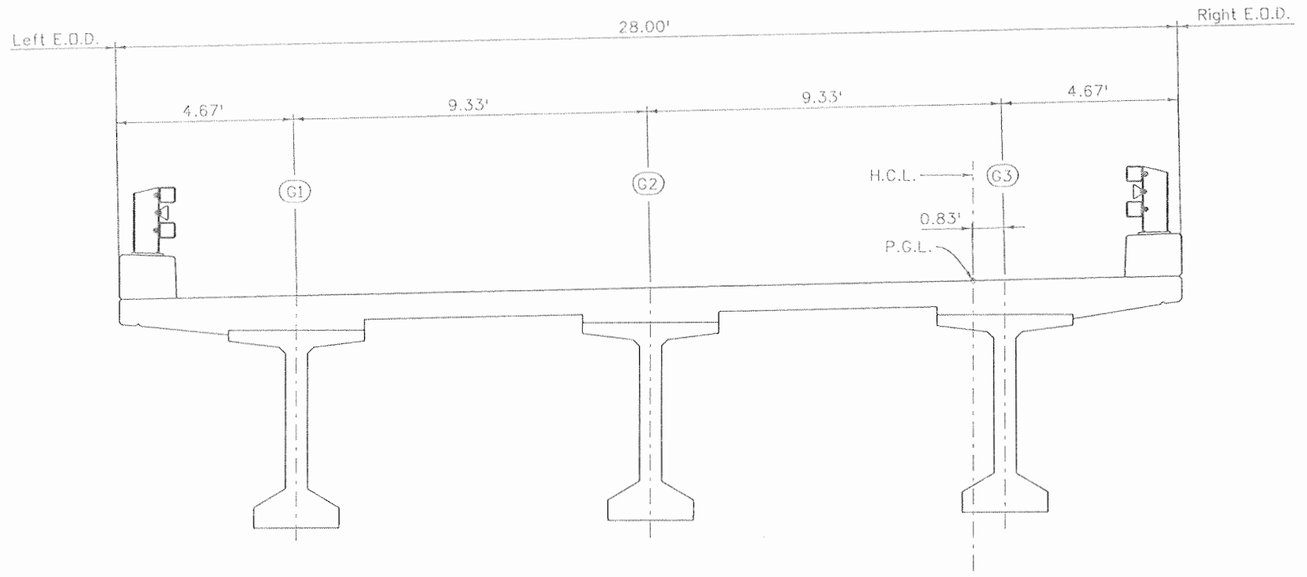
LAYOUT LINE DATA
LAYOUT LINE DEFINED AS BACK TANGENT

DEAD LOAD DEFLECTION DATA
DEFLECTIONS AT TENTH POINTS FROM FITTED CURVE

| | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FOR BENT LINE: CL Abut 1 | | | | | 07 CARD(S): 1 | | | GIRDER LINES REFERENCED BY: (BLANK) | | | | | A6= 0.00000 |
| INCH | 0.0000 | 0.7979 | 1.5208 | 2.0919 | 2.4566 | 2.5817 | 2.4566 | 2.0919 | 1.5208 | 0.7979 | 0.0000 | INCH | A5= 0.00000 |
| FOOT | 0.0000 | 0.0665 | 0.1267 | 0.1743 | 0.2047 | 0.2151 | 0.2047 | 0.1743 | 0.1267 | 0.0665 | 0.0000 | FOOT | A2= 9.13538 |
| | | | | | | | | | | | | | A1=-9.13538 |
| SLOPE 0.670261 | | | | | | | | | | | -0.670261 | SLOPE | A0=-8.04314 |

| | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FOR BENT LINE: CL Ah Brg | | | | | 07 CARD(S): 1 | | | GIRDER LINES REFERENCED BY: (BLANK) | | | | | A6= 9.63574 |
| INCH | 0.0000 | 0.3860 | 0.7437 | 1.0421 | 1.2417 | 1.3120 | 1.2417 | 1.0421 | 0.7437 | 0.3860 | 0.0000 | INCH | A5= 19.2715 |
| FOOT | 0.0000 | 0.0322 | 0.0620 | 0.0868 | 0.1035 | 0.1093 | 0.1035 | 0.0868 | 0.0620 | 0.0322 | 0.0000 | FOOT | A2=-6.92044 |
| | | | | | | | | | | | | | A1=-2.71529 |
| SLOPE 0.330584 | | | | | | | | | | | -0.330584 | SLOPE | A0=-3.96701 |

| BENT LINE : DESCRIPTION : | INTERSECTION POINT STATION | OFFSET | ELEVATION | FROM LAYOUT LINE : OFFSET X | ORDINATE Y | PROJECT COORDINATES NORTHING | EASTING | BENT LINE LENGTH FROM Y-AXIS | SKEW D M S | GIRDER LINE : LENGTH FROM : BEP LINE | ROADWAY CROSS-SLOPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * HORIZONTAL CONTROL LINE * | AT FINISHED GRADE | | | | | | | | | | |
| BF Abut 1 | 610+84.0000 | 0.0000 | 6672.7864 | 1 0.0000 | -1.2500 | 1213765.5384 | 2320756.3629 | 0.0000 | 0 00 00.00 | -1.2500 | +/-.020000 |
| CL Abut 1 | 610+85.2500 | 0.0000 | 6672.8022 | 10 0.0000 | 0.0000 | 1213765.0304 | 2320757.5050 | 0.0000 | 0 00 00.00 | 0.0000 | +/-.020000 |
| CL BK Brg | 612+06.9167 | 0.0000 | 6674.3475 | 1 0.0000 | 121.6667 | 1213715.5824 | 2320866.6701 | 0.0000 | 0 00 00.00 | 121.6667 | +/-.022385 |
| CL Pier 2 | 612+08.0000 | 0.0000 | 6674.3631 | 1 0.0000 | 122.7500 | 1213715.1421 | 2320869.6599 | 0.0000 | 0 00 00.00 | 122.7500 | +/-.022582 |
| CL Ah Brg | 612+09.0833 | 0.0000 | 6674.3788 | 10 0.0000 | 123.8333 | 1213714.7018 | 2320870.6497 | 0.0000 | 0 00 00.00 | 123.8333 | +/-.022787 |
| CL Abut 3 | 613+11.7500 | 0.0000 | 6676.5033 | 1 -0.3362 | 226.4967 | 1213673.2843 | 2320964.5864 | -0.3362 | 1 42 23.65 | 226.5000 | +/-.035527 |
| BF Abut 3 | 613+13.0000 | 0.0000 | 6676.5369 | 1 -0.3745 | 227.7461 | 1213672.8115 | 2320965.7455 | -0.3745 | 1 48 03.80 | 227.7500 | +/-.055943 |
| * LAYOUT LINE * | AT FINISHED GRADE | | | | | | | | | | |
| BF Abut 1 | 610+84.0000 | 0.0000 | 6672.7864 | 0.0000 | -1.2500 | 1213765.5384 | 2320756.3629 | 0.0000 | 0 00 00.00 | -1.2500 | +/-.020000 |
| CL Abut 1 | 610+85.2500 | 0.0000 | 6672.8022 | 0.0000 | 0.0000 | 1213765.0304 | 2320757.5050 | 0.0000 | 0 00 00.00 | 0.0000 | +/-.020000 |
| CL BK Brg | 612+06.9167 | 0.0000 | 6674.3475 | 0.0000 | 121.6667 | 1213715.5824 | 2320866.6701 | 0.0000 | 0 00 00.00 | 121.6667 | +/-.022385 |
| CL Pier 2 | 612+08.0000 | 0.0000 | 6674.3631 | 0.0000 | 122.7500 | 1213715.1421 | 2320869.6599 | 0.0000 | 0 00 00.00 | 122.7500 | +/-.022582 |
| CL Ah Brg | 612+09.0833 | 0.0000 | 6674.3788 | 0.0000 | 123.8333 | 1213714.7018 | 2320870.6497 | 0.0000 | 0 00 00.00 | 123.8333 | +/-.022787 |
| PTS OF PC* | 612+89.1728 | 0.0000 | 6675.9284 | 0.0000 | 203.9228 | 1213682.1507 | 2320943.8263 | | | 203.9228 | +/-.048001 |
| CL Abut 3 | 613+11.7400 | 0.3361 | 6676.5217 | 0.0000 | 226.4967 | 1213672.9731 | 2320964.4617 | 0.0000 | 0 00 00.00 | 226.4967 | +0.035523 |
| BF Abut 3 | 613+12.9882 | 0.3743 | 6676.5575 | 0.0000 | 227.7461 | 1213672.4659 | 2320965.5953 | 0.0000 | 0 00 00.00 | 227.7461 | +0.055939 |




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JSM | 08/08 |
| Checked By | TAH | 08/08 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | WSM | 08/08 |
| Checked By | TAH | 08/08 |

Print Date: 9/27/2010
File Name: 16042Y_Brdg_Geometry_01.dgn
Horiz. Scale: 1:1 Vert. Scale: As Noted
Unit Information 0221 Unit Leader STW

SEMA CONSTRUCTION | WILSON & COMPANY

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 09/10
Revised:
Void:

RAMP D OVER WILSON GULCH
BRIDGE DECK ELEVATIONS
(1 OF 2)

Designer: J. Mills
Detailer: R. Artman
Sheet Subset: Bridge
Structure Numbers: P-05-Y
Subset Sheets: B25 of B26

Project No./Code
NH 1602-114
16042
Sheet Number 325

* LT EOD *

PARALLEL TO HORIZONTAL CONTROL — AT FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV-DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF Abut 1 | 610+84.0000 | -22.5000 | 6672.3364 | | -22.5000 | -1.2500 | 1213786.0963 | 2320765.5074 | -22.5000 | 0 00 00.00 | -1.2500 | -0.020000 |
| CL Abut 1 | 610+85.2500 | -22.5000 | 6672.3522 | 672.3522 | -22.5000 | 0.0000 | 1213785.5883 | 2320766.6495 | -22.5000 | 0 00 00.00 | 0.0000 | -0.020000 |
| F-1 | 610+97.4167 | -22.5000 | 6672.5055 | 672.5719 | -22.5000 | 12.1667 | 1213780.6435 | 2320777.7660 | | | 12.1667 | -0.020000 |
| F-2 | 611+09.5833 | -22.5000 | 6672.6588 | 672.7855 | -22.5000 | 24.3333 | 1213775.6987 | 2320788.8825 | | | 24.3333 | -0.020000 |
| F-3 | 611+21.7500 | -22.5000 | 6672.8121 | 672.9864 | -22.5000 | 36.5000 | 1213770.7539 | 2320799.9990 | | | 36.5000 | -0.020000 |
| F-4 | 611+33.9167 | -22.5000 | 6672.9654 | 673.1701 | -22.5000 | 48.6667 | 1213765.8091 | 2320811.1156 | | | 48.6667 | -0.020000 |
| F-5 | 611+46.0834 | -22.5000 | 6673.1187 | 673.3338 | -22.5000 | 60.8334 | 1213760.8643 | 2320822.2321 | | | 60.8334 | -0.020000 |
| F-6 | 611+58.2500 | -22.5000 | 6673.2720 | 673.4767 | -22.5000 | 73.0000 | 1213755.9195 | 2320833.3485 | | | 73.0000 | -0.020000 |
| F-7 | 611+70.4167 | -22.5000 | 6673.4253 | 673.5996 | -22.5000 | 85.1667 | 1213750.9747 | 2320844.4651 | | | 85.1667 | -0.020000 |
| F-8 | 611+82.5834 | -22.5000 | 6673.5781 | 673.7048 | -22.5000 | 97.3334 | 1213746.0299 | 2320855.5816 | | | 97.3334 | -0.020019 |
| F-9 | 611+94.7500 | -22.5000 | 6673.7162 | 673.7827 | -22.5000 | 109.5000 | 1213741.0851 | 2320866.6981 | | | 109.5000 | -0.020709 |
| CL Bk Brg | 612+06.9167 | -22.5000 | 6673.8439 | 673.8439 | -22.5000 | 121.6667 | 1213736.1403 | 2320877.8146 | -22.5000 | 0 00 00.00 | 121.6667 | -0.022385 |
| CL Pier 2 | 612+08.0000 | -22.5000 | 6673.8550 | | -22.5000 | 122.7500 | 1213735.7000 | 2320878.8044 | -22.5000 | 0 00 00.00 | 122.7500 | -0.022582 |
| CL Ah Brg | 612+09.0833 | -22.5000 | 6673.8661 | 673.8661 | -22.5000 | 123.8333 | 1213735.2597 | 2320879.7942 | -22.5000 | 0 00 00.00 | 123.8333 | -0.022787 |
| F-1 | 612+19.3496 | -22.5000 | 6673.9696 | 674.0018 | -22.5000 | 134.1000 | 1213731.0871 | 2320889.1747 | | | 134.1000 | -0.025117 |
| F-2 | 612+29.6160 | -22.5000 | 6674.0699 | 674.1318 | -22.5000 | 144.3667 | 1213726.9145 | 2320898.5552 | | | 144.3667 | -0.028150 |
| F-3 | 612+39.8823 | -22.5000 | 6674.1739 | 674.2608 | -22.5000 | 154.6334 | 1213722.7419 | 2320907.9358 | | | 154.6334 | -0.031571 |
| F-4 | 612+50.1486 | -22.5000 | 6674.2905 | 674.3940 | -22.5000 | 164.9001 | 1213718.5693 | 2320917.3163 | | | 164.9001 | -0.034993 |
| F-5 | 612+60.4150 | -22.5000 | 6674.4197 | 674.5290 | -22.5000 | 175.1668 | 1213714.3967 | 2320926.6968 | | | 175.1668 | -0.038416 |
| F-6 | 612+70.6813 | -22.5000 | 6674.5614 | 674.6649 | -22.5000 | 185.4334 | 1213710.2241 | 2320936.0773 | | | 185.4334 | -0.041838 |
| F-7 | 612+80.9501 | -22.5000 | 6674.7157 | 674.8026 | -22.5000 | 195.7001 | 1213706.0515 | 2320945.4578 | | | 195.7001 | -0.045260 |
| F-8 | 612+91.2194 | -22.5000 | 6674.8836 | 674.9456 | -22.5028 | 205.9668 | 1213701.8814 | 2320954.8395 | | | 205.9668 | -0.048703 |
| F-9 | 613+01.8601 | -22.5000 | 6675.0688 | 675.1010 | -22.4830 | 216.2335 | 1213697.8006 | 2320964.2602 | | | 216.2335 | -0.052230 |
| CL Abut 3 | 613+12.4409 | -22.5000 | 6675.2673 | 675.2673 | -22.8465 | 226.4967 | 1213693.8516 | 2320973.7371 | -22.8465 | 1 45 31.65 | 226.5002 | -0.055757 |
| BF Abut 3 | 613+13.7292 | -22.5000 | 6675.2924 | | -22.8859 | 227.7461 | 1213693.3799 | 2320974.8946 | -22.8859 | 1 51 22.22 | 227.7502 | -0.056186 |

* C1 *

PARALLEL TO LAYOUT LINE — AT FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV-DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF Abut 1 | 610+84.0000 | -17.8333 | 6672.4297 | | -17.8333 | -1.2500 | 1213781.8325 | 2320743.6107 | -17.8333 | 0 00 00.00 | -1.2500 | -0.020000 |
| CL Abut 1 | 610+85.2500 | -17.8333 | 6672.4455 | 672.4455 | -17.8333 | 0.0000 | 1213781.3244 | 2320764.7528 | -17.8333 | 0 00 00.00 | 0.0000 | -0.020000 |
| F-1 | 610+97.4167 | -17.8333 | 6672.5988 | 672.6653 | -17.8333 | 12.1667 | 1213776.3796 | 2320775.8694 | | | 12.1667 | -0.020000 |
| F-2 | 611+09.5833 | -17.8333 | 6672.7521 | 672.8788 | -17.8333 | 24.3333 | 1213771.4348 | 2320786.9860 | | | 24.3333 | -0.020000 |
| F-3 | 611+21.7500 | -17.8333 | 6672.9054 | 673.0797 | -17.8333 | 36.5000 | 1213766.4900 | 2320798.1024 | | | 36.5000 | -0.020000 |
| F-4 | 611+33.9167 | -17.8333 | 6673.0587 | 673.2634 | -17.8333 | 48.6667 | 1213761.5452 | 2320809.2189 | | | 48.6667 | -0.020000 |
| F-5 | 611+46.0834 | -17.8333 | 6673.2120 | 673.4271 | -17.8333 | 60.8334 | 1213756.6004 | 2320820.3354 | | | 60.8334 | -0.020000 |
| F-6 | 611+58.2500 | -17.8333 | 6673.3653 | 673.5700 | -17.8333 | 73.0000 | 1213751.6556 | 2320831.4519 | | | 73.0000 | -0.020000 |
| F-7 | 611+70.4167 | -17.8333 | 6673.5186 | 673.6929 | -17.8333 | 85.1667 | 1213746.7108 | 2320842.5684 | | | 85.1667 | -0.020000 |
| F-8 | 611+82.5834 | -17.8333 | 6673.6715 | 673.7983 | -17.8333 | 97.3334 | 1213741.7660 | 2320853.6850 | | | 97.3334 | -0.020019 |
| F-9 | 611+94.7500 | -17.8333 | 6673.8128 | 673.8793 | -17.8333 | 109.5000 | 1213736.8212 | 2320864.8014 | | | 109.5000 | -0.020709 |
| CL Bk Brg | 612+06.9167 | -17.8333 | 6673.9483 | 673.9483 | -17.8333 | 121.6667 | 1213731.8764 | 2320875.9179 | -17.8333 | 0 00 00.00 | 121.6667 | -0.022385 |
| CL Pier 2 | 612+08.0000 | -17.8333 | 6673.9604 | | -17.8333 | 122.7500 | 1213731.4361 | 2320876.9077 | -17.8333 | 0 00 00.00 | 122.7500 | -0.022582 |
| CL Ah Brg | 612+09.0833 | -17.8333 | 6673.9725 | 673.9725 | -17.8333 | 123.8333 | 1213730.9958 | 2320877.8975 | -17.8333 | 0 00 00.00 | 123.8333 | -0.022787 |
| F-1 | 612+19.3496 | -17.8333 | 6674.0868 | 674.1196 | -17.8333 | 134.0996 | 1213726.8234 | 2320887.2777 | | | 134.0996 | -0.025117 |
| F-2 | 612+29.6160 | -17.8333 | 6674.2012 | 674.2636 | -17.8333 | 144.3660 | 1213722.6509 | 2320896.6580 | | | 144.3660 | -0.028150 |
| F-3 | 612+39.8823 | -17.8333 | 6674.3213 | 674.4081 | -17.8333 | 154.6323 | 1213718.4784 | 2320906.0381 | | | 154.6323 | -0.031571 |
| F-4 | 612+50.1486 | -17.8333 | 6674.4538 | 674.5573 | -17.8333 | 164.8986 | 1213714.3060 | 2320915.4183 | | | 164.8986 | -0.034993 |
| F-5 | 612+60.4150 | -17.8333 | 6674.5890 | 674.7083 | -17.8333 | 175.1650 | 1213710.1335 | 2320924.7986 | | | 175.1650 | -0.038415 |
| F-6 | 612+70.6813 | -17.8333 | 6674.7366 | 674.8601 | -17.8333 | 185.4313 | 1213705.9610 | 2320934.1787 | | | 185.4313 | -0.041837 |
| F-7 | 612+80.9477 | -17.8333 | 6674.9269 | 675.0137 | -17.8333 | 195.6977 | 1213701.7885 | 2320943.5590 | | | 195.6977 | -0.045259 |
| F-8 | 612+91.2632 | -17.8305 | 6675.1167 | 675.1727 | -17.8335 | 205.9640 | 1213697.6161 | 2320952.9391 | | | 205.9640 | -0.048698 |
| F-9 | 613+01.7257 | -17.7310 | 6675.3162 | 675.3454 | -17.8333 | 216.2303 | 1213693.4436 | 2320962.3193 | | | 216.2303 | -0.052262 |
| CL Abut 3 | 613+12.2834 | -17.4891 | 6675.5434 | 675.5434 | -17.8333 | 226.4967 | 1213689.2711 | 2320971.6996 | -17.8333 | 0 00 00.00 | 226.4967 | -0.055764 |
| BF Abut 3 | 613+13.5616 | -17.4500 | 6675.5726 | | -17.8333 | 227.7461 | 1213688.7634 | 2320972.8411 | -17.8333 | 0 00 00.00 | 227.7461 | -0.056131 |

* G2 *

PARALLEL TO LAYOUT LINE — AT FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV-DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF Abut 1 | 610+84.0000 | -8.5000 | 6672.6164 | | -8.5000 | -1.2500 | 1213773.4048 | 2320759.8175 | -8.5000 | 0 00 00.00 | -1.2500 | -0.020000 |
| CL Abut 1 | 610+85.2500 | -8.5000 | 6672.6322 | 672.6322 | -8.5000 | 0.0000 | 1213772.7967 | 2320760.9596 | -8.5000 | 0 00 00.00 | 0.0000 | -0.020000 |
| F-1 | 610+97.4167 | -8.5000 | 6672.7855 | 672.8519 | -8.5000 | 12.1667 | 1213767.8529 | 2320772.0761 | | | 12.1667 | -0.020000 |
| F-2 | 611+09.5833 | -8.5000 | 6672.9388 | 673.0655 | -8.5000 | 24.3333 | 1213762.9071 | 2320783.1926 | | | 24.3333 | -0.020000 |
| F-3 | 611+21.7500 | -8.5000 | 6673.0921 | 673.2664 | -8.5000 | 36.5000 | 1213757.9623 | 2320794.3091 | | | 36.5000 | -0.020000 |
| F-4 | 611+33.9167 | -8.5000 | 6673.2454 | 673.4501 | -8.5000 | 48.6667 | 1213753.0175 | 2320805.4256 | | | 48.6667 | -0.020000 |
| F-5 | 611+46.0834 | -8.5000 | 6673.3987 | 673.6138 | -8.5000 | 60.8334 | 1213748.0727 | 2320816.5422 | | | 60.8334 | -0.020000 |
| F-6 | 611+58.2500 | -8.5000 | 6673.5520 | 673.7567 | -8.5000 | 73.0000 | 1213743.1279 | 2320827.6586 | | | 73.0000 | -0.020000 |
| F-7 | 611+70.4167 | -8.5000 | 6673.7053 | 673.8796 | -8.5000 | 85.1667 | 1213738.1831 | 2320838.7752 | | | 85.1667 | -0.020000 |
| F-8 | 611+82.5834 | -8.5000 | 6673.8584 | 673.9851 | -8.5000 | 97.3334 | 1213733.2383 | 2320849.8917 | | | 97.3334 | -0.020019 |
| F-9 | 611+94.7500 | -8.5000 | 6674.0001 | 674.0726 | -8.5000 | 109.5000 | 1213728.2935 | 2320861.0081 | | | 109.5000 | -0.020709 |
| CL Bk Brg | 612+06.9167 | -8.5000 | 6674.1572 | 674.1572 | -8.5000 | 121.6667 | 1213723.3487 | 2320872.1247 | -8.5000 | 0 00 00.00 | 121.6667 | -0.022385 |
| CL Pier 2 | 612+08.0000 | -8.5000 | 6674.1712 | | -8.5000 | 122.7500 | 1213722.9084 | 2320873.1145 | -8.5000 | 0 00 00.00 | 122.7500 | -0.022582 |
| CL Ah Brg | 612+09.0833 | -8.5000 | 6674.1851 | 674.1851 | -8.5000 | 123.8333 | 1213722.4681 | 2320874.1043 | -8.5000 | 0 00 00.00 | 123.8333 | -0.022787 |
| F-1 | 612+19.3496 | -8.5000 | 6674.3213 | 674.3534 | -8.5000 | 134.0996 | 1213718.2957 | 2320883.4844 | | | 134.0996 | -0.025117 |
| F-2 | 612+29.6160 | -8.5000 | 6674.4646 | 674.5259 | -8.5000 | 144.3660 | 1213714.1232 | 2320892.8647 | | | 144.3660 | -0.028150 |
| F-3 | 612+39.8823 | -8.5000 | 6674.6155 | 674.7028 | -8.5000 | 154.6323 | 1213709.9507 | 2320902.2449 | | | 154.6323 | -0.031571 |
| F-4 | 612+50.1486 | -8.5000 | 6674.7804 | 674.8839 | -8.5000 | 164.8986 | 1213705.7783 | 2320911.6250 | | | 164.8986 | -0.034993 |
| F-5 | 612+60.4150 | -8.5000 | 6674.9575 | 675.0658 | -8.5000 | 175.1650 | 1213701.6058 | 2320921.0053 | | | 175.1650 | -0.038415 |
| F-6 | 612+70.6813 | -8.5000 | 6675.1471 | 675.2536 | -8.5000 | 185.4313 | 1213697.4333 | 2320930.3855 | | | 185.4313 | -0.041837 |
| F-7 | 612+80.9477 | -8.5000 | 6675.3493 | 675.4361 | -8.5000 | 195.6977 | 1213693.2608 | 2320939.7657 | | | 195.6977 | -0.045259 |
| F-8 | 612+91.2371 | -8.4972 | 6675.5647 | 675.6267 | -8.5003 | 205.9640 | 1213689.0884 | 2320949.1459 | | | 205.9640 | -0.048699 |
| F-9 | 613+01.6188 | -8.3990 | 6675.7998 | 675.8319 | -8.5000 | 216.2303 | 1213684.9159 | 2320958.5261 | | | 216.2303 | -0.052150 |
| CL Abut 3 | 613+11.9956 | -8.1605 | 6676.0561 | 676.0561 | -8.5000 | 226.4967 | 1213680.7434 | 2320967.9063 | -8.5000 | 0 00 00.00 | 226.4967 | -0.055669 |
| BF Abut 3 | 613+13.2561 | -8.1215 | 6676.0988 | | -8.5000 | 227.7461 | 1213680.2357 | 2320969.0479 | -8.5000 | 0 00 00.00 | 227.7461 | -0.056029 |

* G3 *

PARALLEL TO LAYOUT LINE — AT FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV-DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF Abut 1 | 610+84.0000 | 0.8333 | 6672.8031 | | 0.8333 | -1.2500 | 1213764.7771 | 2320756.0242 | 0.8333 | 0 00 00.00 | -1.2500 | +0.020000 |
| CL Abut 1 | 610+85.2500 | 0.8333 | 6672.8188 | 672.8188 | 0.8333 | 0.0000 | 1213764.2690 | 2320757.1663 | 0.8333 | 0 00 00.00 | 0.0000 | +0.020000 |
| F-1 | 610+97.4167 | 0.8333 | 6672.9721 | 673.0386 | 0.8333 | 12.1667 | 1213759.3242 | 2320768.2829 | | | 12.1667 | +0.020000 |
| F-2 | 611+09.5833 | 0.8333 | 6673.1254 | 673.2521 | 0.8333 | 24.3333 | 1213754.3794 | 2320779.3993 | | | 24.3333 | +0.020000 |
| F-3 | 611+21.7500 | 0.8333 | 6673.2787 | 673.4530 | 0.8333 | 36.5000 | 1213749.4346 | 2320790.5158 | | | 36.5000 | +0.020000 |
| F-4 | 611+33.9167 | 0.8333 | 6673.4320 | 673.6367 | 0.8333 | 48.6667 | 1213744.4898 | 2320801.6324 | | | 48.6667 | +0.020000 |
| F-5 | 611+46.0834 | 0.8333 | 6673.5853 | 673.8005 | 0.8333 | 60.8334 | 1213739.5450 | 2320812.7489 | | | 60.8334 | +0.020000 |
| F-6 | 611+58.2500 | 0.8333 | 6673.7386 | 673.9433 | 0.8333 | 73.0000 | 1213734.6002 | 2320823.8654 | | | 73.0000 | +0.020000 |
| F-7 | 611+70.4167 | 0.8333 | 6673.8919 | 674.0662 | 0.8333 | 85.1667 | 1213729.6554 | 2320834.9819 | | | 85.1667 | +0.020000 |
| F-8 | 611+82.5834 | 0.8333 | 6674.0452 | 674.1720 | 0.8333 | 97.3334 | 1213724.7106 | 2320846.0984 | | | 97.3334 | +0.020019 |
| F-9 | 611+94.7500 | 0.8333 | 6674.1994 | 674.2659 | 0.8333 | 109.5000 | 1213719.7658 | 2320857.2149 | | | 109.5000 | +0.020709 |
| CL Bk Brg | 612+06.9167 | 0.8333 | 6674.3662 | 674.3662 | 0.8333 | 121.6667 | 1213714.8210 | 2320868.3314 | 0.8333 | 0 00 00.00 | 121.6667 | +0.022385 |
| CL Pier 2 | 612+08.0000 | 0.8333 | 6674.3819 | | 0.8333 | 122.7500 | 1213714.3807 | 2320869.3212 | 0.8333 | 0 00 00.00 | 122.7500 | +0.022582 |
| CL Ah Brg | 612+09.0833 | 0.8333 | 6674.3978 | 674.3978 | 0.8333 | 123.8333 | 1213713.9404 | 2320870.3110 | 0.8333 | 0 00 00.00 | 123.8333 | +0.022787 |
| F-1 | 612+19.3496 | 0.8333 | 6674.5557 | 674.5879 | 0.8333 | 134.0996 | 1213709.7680 | 2320879.6912 | | | 134.0996 | +0.025117 |
| F-2 | 612+29.6160 | 0.8333 | 6674.7267 | 674.7867 | 0.8333 | 144.3660 | 1213705.5955 | 2320889.0714 | | | 144.3660 | +0.028150 |
| F-3 | 612+39.8823 | 0.8333 | 6674.9106 | 674.9974 | 0.8333 | 154.6323 | 1213701.4230 | 2320898.4516 | | | 154.6323 | +0.031571 |
| F-4 | 612+50.1486 | 0.8333 | 6675.1070 | 675.2105 | 0.8333 | 164.8986 | 1213697.2506 | 2320907.8318 | | | 164.8986 | +0.034953 |
| F-5 | 612+60.4150 | 0.8333 | 6675.3160 | 675.4254 | 0.8333 | 175.1650 | 1213693.0781 | 2320917.2120 | | | 175.1650 | +0.038415 |
| F-6 | 612+70.6813 | 0.8333 | 6675.5376 | 675.6411 | 0.8333 | 185.4313 | 1213688.9056 | 2320926.5922 | | | 185.4313 | +0.041837 |
| F-7 | 612+80.9477 | 0.8333 | 6675.7717 | 675.8566 | 0.8333 | 195.6977 | 1213684.7331 | 2320935.9725 | | | 195.6977 | +0.045259 |
| F-8 | 612+91.2117 | 0.8360 | 6676.0185 | 676.0805 | 0.8333 | 205.9640 | 1213680.5607 | 2320945.3526 | | | 205.9640 | +0.048681 |
| F-9 | 613+01.4657 | 0.9331 | 6676.2825 | 676.3146 | 0.8333 | 216.2303 | 1213676.3882 | 2320954.7328 | | | 216.2303 | +0.052099 |
| CL Abut 3 | 613+11.7152 | 1.1690 | 6676.5672 | 676.5672 | 0.8333 | 226.4967 | 1213672.2157 | 2320964.1131 | 0.8333 | 0 00 00.00 | 226.4967 | +0.055515 |
| BF Abut 3 | 613+12.9621 | 1.2072 | 6676.6034 | | 0.8333 | 227.7461 | 1213671.7080 | 2320965.2546 | 0.8333 | 0 00 00.00 | 227.7461 | +0.055931 |

* RT EOD *

PARALLEL TO HORIZONTAL CONTROL — AT FINISHED GRADE

| BENT LINE | STATION | OFFSET | ELEVATION | ELEV-DL | X | Y | NORTHING | EASTING | BENT LNTH | SKEW | GIRDER LNTH | CRS-SLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF Abut 1 | 610+84.0000 | 5.5000 | 6672.8964 | | 5.5000 | -1.2500 | 1213760.5132 | 2320754.1276 | 5.5000 | 0 00 00.00 | -1.2500 | +0.020000 |
| CL Abut 1 | 610+85.2500 | 5.5000 | 6672.9122 | 672.9122 | 5.5000 | 0.0000 | 1213760.0051 | 2320755.2697 | 5.5000 | 0 00 00.00 | 0.0000 | +0.020000 |
| F-1 | 610+97.4167 | 5.5000 | 6673.0655 | 673.1319 | 5.5000 | 12.1667 | 1213755.0603 | 2320766.3862 | | | 12.1667 | +0.020000 |
| F-2 | 611+09.5833 | 5.5000 | 6673.2188 | 673.3455 | 5.5000 | 24.3333 | 1213750.1155 | 2320777.5027 | | | 24.3333 | +0.020000 |
| F-3 | 611+21.7500 | 5.5000 | 6673.3721 | 673.5464 | 5.5000 | 36.5000 | 1213745.1707 | 2320788.6192 | | | 36.5000 | +0.020000 |
| F-4 | 611+33.9167 | 5.5000 | 6673.5254 | 673.7301 | 5.5000 | 48.6667 | 1213740.2259 | 2320799.7357 | | | 48.6667 | +0.020000 |
| F-5 | 611+46.0834 | 5.5000 | 6673.6787 | 673.8938 | 5.5000 | 60.8334 | 1213735.2811 | 2320810.8523 | | | 60.8334 | +0.020000 |
| F-6 | 611+58.2500 | 5.5000 | 6673.8320 | 674.0367 | 5.5000 | 73.0000 | 1213730.3363 | 2320821.9687 | | | 73.0000 | +0.020000 |
| F-7 | 611+70.4167 | 5.5000 | 6673.9853 | 674.1596 | 5.5000 | 85.1667 | 1213725.3915 | 2320833.0852 | | | 85.1667 | +0.020000 |
| F-8 | 611+82.5834 | 5.5000 | 6674.1387 | 674.2654 | 5.5000 | 97.3334 | 1213720.4467 | 2320844.2018 | | | 97.3334 | +0.020019 |
| F-9 | 611+94.7500 | 5.5000 | 6674.2960 | 674.3625 | 5.5000 | 109.5000 | 1213715.5019 | 2320855.3182 | | | 109.5000 | +0.020709 |
| CL Bk Brg | 612+06.9167 | 5.5000 | 6674.4706 | 674.4706 | 5.5000 | 121.6667 | 1213710.5571 | 2320866.4348 | 5.5000 | 0 00 00.00 | 121.6667 | +0.022385 |
| CL Pier 2 | 612+08.0000 | 5.5000 | 6674.4873 | | 5.5000 | 122.7500 | 1213710.1168 | 2320867.4246 | 5.5000 | 0 00 00.00 | 122.7500 | +0.022582 |
| CL Ah Brg | 612+09.0833 | 5.5000 | 6674.5042 | 674.5042 | 5.5000 | 123.8333 | 1213709.6765 | 2320868.4144 | 5.5000 | 0 00 00.00 | 123.8333 | +0.022787 |
| F-1 | 612+19.3500 | 5.5000 | 6674.6729 | 674.7051 | 5.5000 | 134.1000 | 1213705.5039 | 2320877.7949 | | | 134.1000 | +0.025117 |
| F-2 | 612+29.6166 | 5.5000 | 6674.8581 | 674.9200 | 5.5000 | 144.3666 | 1213701.3313 | 2320887.1753 | | | 144.3666 | +0.028150 |
| F-3 | 612+39.8833 | 5.5000 | 6675.0579 | 675.1448 | 5.5000 | 154.6333 | 1213697.1587 | 2320896.5559 | | | 154.6333 | +0.031571 |
| F-4 | 612+50.1500 | 5.5000 | 6675.2704 | 675.3730 | 5.5000 | 164.9000 | 1213692.9861 | 2320905.9364 | | | 164.9000 | +0.034993 |
| F-5 | 612+60.4166 | 5.5000 | 6675.4953 | 675.6047 | 5.5000 | 175.1666 | 1213688.8135 | 2320915.3168 | | | 175.1666 | +0.038416 |
| F-6 | 612+70.6833 | 5.5000 | 6675.7329 | 675.8364 | 5.5000 | 185.4333 | 1213684.6409 | 2320924.6974 | | | 185.4333 | +0.041838 |
| F-7 | 612+80.9500 | 5.5000 | 6675.9830 | 676.0696 | 5.5000 | 195.7000 | 1213680.4683 | 2320934.0779 | | | 195.7000 | +0.045260 |
| F-8 | 613+01.2016 | 5.5000 | 6676.2453 | 676.3073 | 5.4973 | 205.9666 | 1213676.2982 | 2320943.4595 | | | 205.9666 | +0.048677 |
| F-9 | 613+01.3946 | 2.6.2328 | 6676.5135 | 676.5506 | 5.4008 | 216.2328 | 1213672.2140 | 2320952.8787 | | | 216.2333 | +0.052075 |
| CL Abut 3 | 613+11.5873 | 5.5000 | 6676.8040 | 676.8040 | 5.1662 | 226.4967 | 1213668.2568 | 2320962.3521 | 5.1662 | 1 41 39.38 | 226.5000 | +0.055472 |
| BF Abut 3 | 613+12.8283 | 5.5000 | 6676.8396 | | 5.1282 | 227.7461 | 1213667.7838 | 2320963.5091 | 5.1282 | 1 47 17.07 | 227.7499 | +0.055886 |

Quantities

| | INITIAL | DATE |
|---|---|---|
| Designed By | JSW | 08/08 |
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |
| Quantities By | JSM | 08/08 |
| Checked By | TAH | 08/08 |

Design

| | INITIAL | DATE |
|---|---|---|
| Designed By | JSW | 08/08 |
| Detailed By | RGA | 08/08 |
| Checked By | TAH | 08/08 |

| | |
|---|---|
| Print Date: 9/27/2010 | |
| File Name: 16042Y_Brdg_Geometry_02.dgn | |
| Horiz. Scale: 1:1 | Vert. Scale: As Noted |
| Unit Information 0221 | Unit Leader STW |

SEMA CONSTRUCTION — WILSON & COMPANY

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed

| | |
|---|---|
| No Revisions: | 09/10 |
| Revised: | |
| Void: | |

RAMP D OVER WILSON GULCH
BRIDGE DECK ELEVATIONS
(2 OF 2)

| | | | |
|---|---|---|---|
| Designer: | J. Mills | Structure Numbers | P-05-Y |
| Detailer: | R. Artman | | |
| Sheet Subset: | Bridge | Subset Sheets: | B26 of B26 |

Project No./Code: NH 1602-114

16042

Sheet Number 326

# ANTI-ICING SYSTEM
# PHASE I

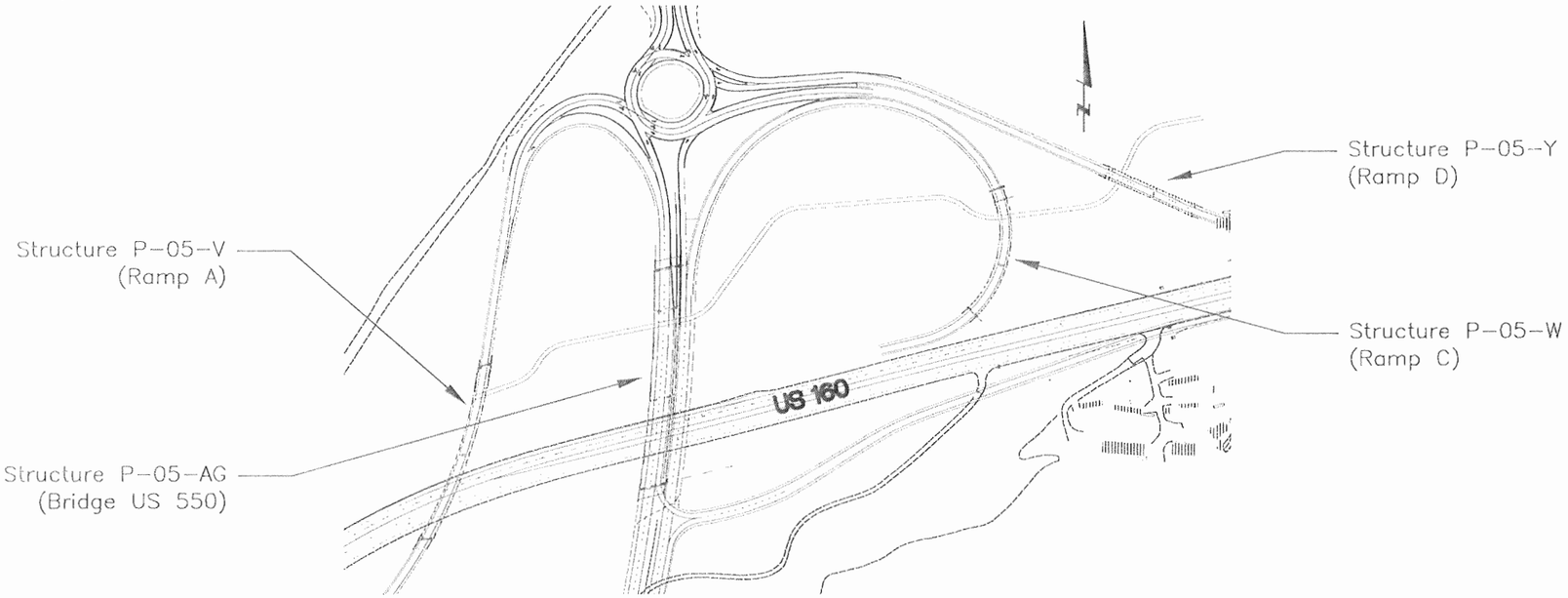
## Structure P-05-AG
## US 550 OVER US 160
## RELEASED FOR CONSTRUCTION

INDEX OF DRAWINGS



GENERAL NOTES

1. The Anti-Icing System Phase I construction drawings include information for the installation of the basic components and shall include conduits, junction boxes, and sensor anchorage to accommodate the future components of an operational system.
2. Conduit shall have a high point placed at the midpoint of the junction boxes to facilitate drainage of the conduits.
3. Spray nozzle and spray pattern on layout are for information only.
4. Unless otherwise indicated, junction boxes shall be placed on the upstream side of super elevation or normal cross slope.




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | MH | 07/08 |
| Checked By | DDH | 07/25 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-BRIDGE 550.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

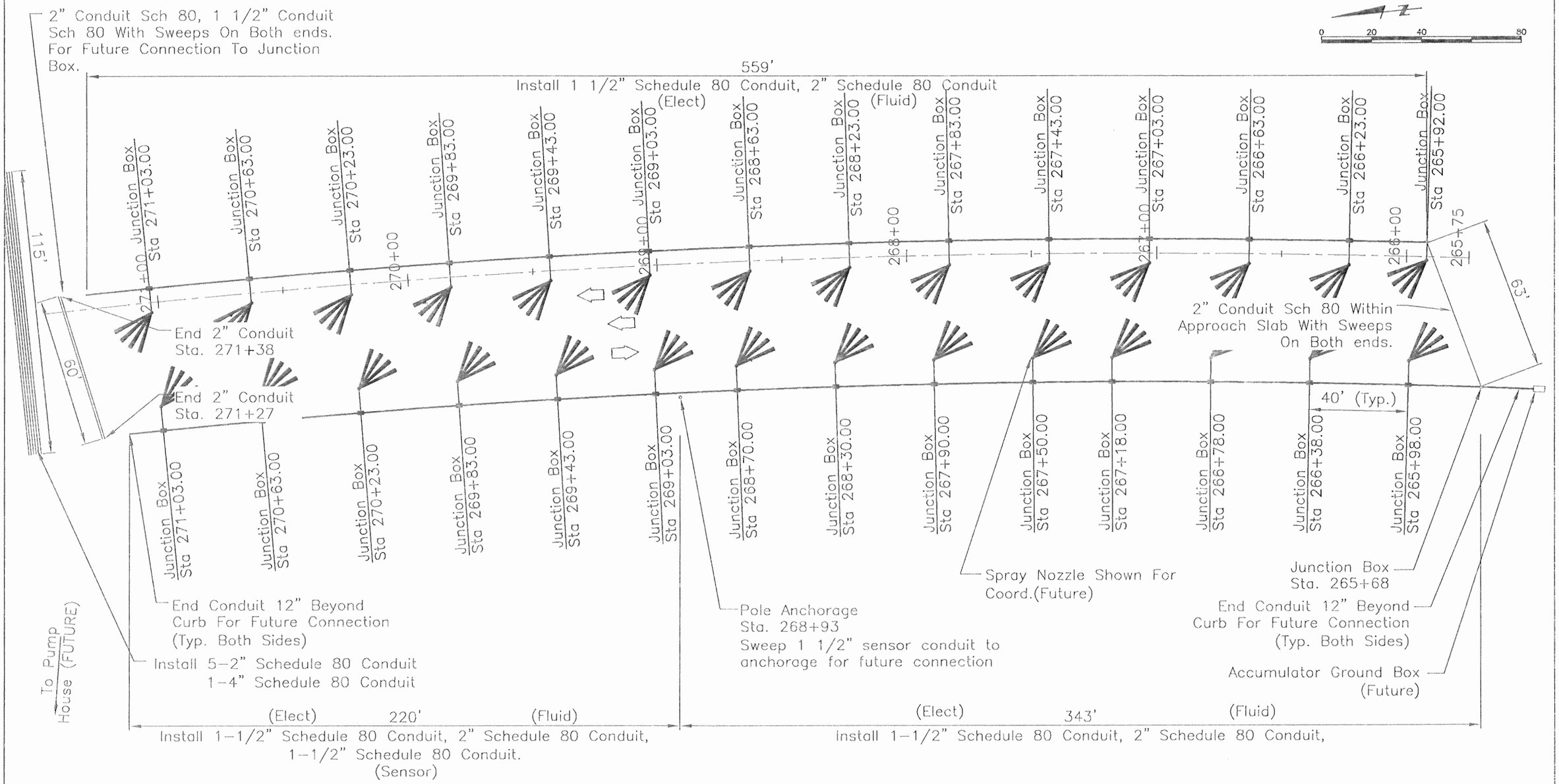

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 11/1/09
Revised:
Void:

GENERAL NOTES

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-AG
Subset Sheets: AIS1 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 327




**NOTE:** See Bridge Cross Section For Junction Box Installation.

Rail And Curb On North End Of Bridge Approach Is Future.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | WH | 07/09 |
| Checked By | DDH | 07/25 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/09 |
| Checked By | DDH | 07/25 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-BRIDGE 550.DWG
Horiz. Scale: 1:40 Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lewis, Rasmussen & Associates, Inc. www.LRA-INC.com
109 So. Bryan Cortez, Colorado 81321 (970) 565-8482 (Fax) 970-565-8489

ENVIROTECH
1100 28th Avenue, Suite B (970) 259-3979
Greeley, Colorado 80631 (970) 259-3978

R-X

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

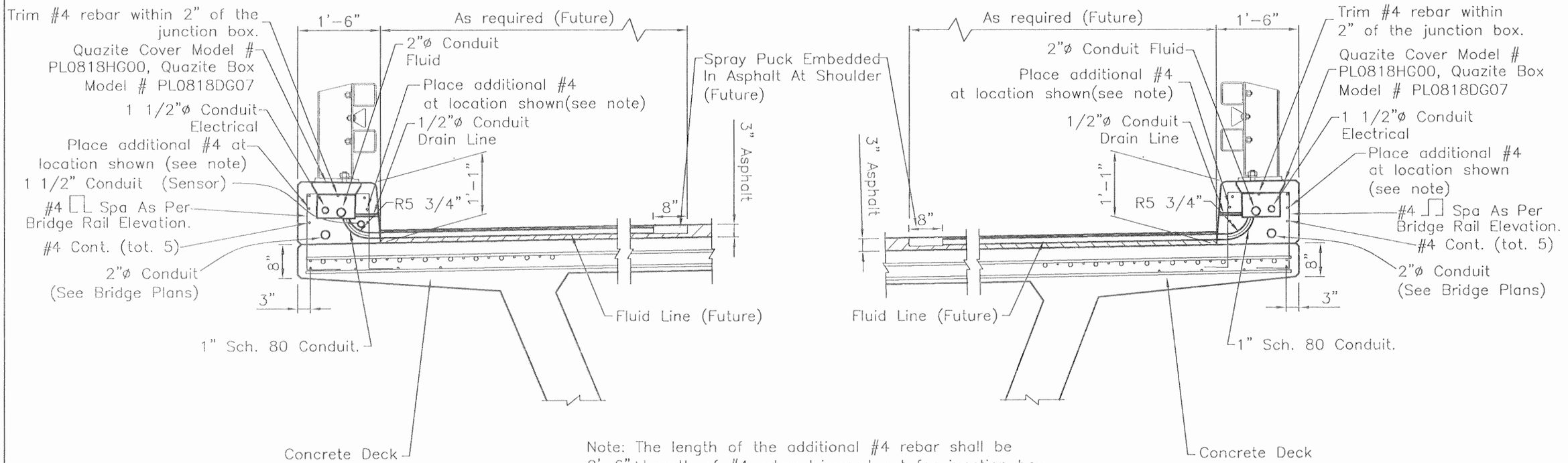
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE LAYOUT

| | | | |
|---|---|---|---|
| Designer: | Daniel Hull | Structure Numbers | P-05-AG |
| Detailer: | Rick Keller | | |
| Sheet Subset: | Anti-Icing | Subset Sheets: | AIS2 of AIS5 |

Project No./Code
NH 1602-114
16042
Sheet Number 328



Note: The length of the additional #4 rebar shall be 2'-6"+Length of #4 rebar trimmed out for junction box.

## BRIDGE SECTION

Scale: 1/2" = 1'-0"

|  | Design |  | Detail |  |  | Quantities |  |
|---|---|---|---|---|---|---|---|
|  | INITIAL | DATE |  | INITIAL | DATE |  | INITIAL |  |
| Designed By | JWH | 07/08 | Detailed By | RJK | 07/08 | Quantities By | XXX | M |
| Checked By | DDH | 07/25 | Checked By | DDH | 07/25 | Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101–BRIDGE 550.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.

ENVIROTECH

R–X

| Sheet Revisions |  |  |
|---|---|---|
| Date: | Comments | Init. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

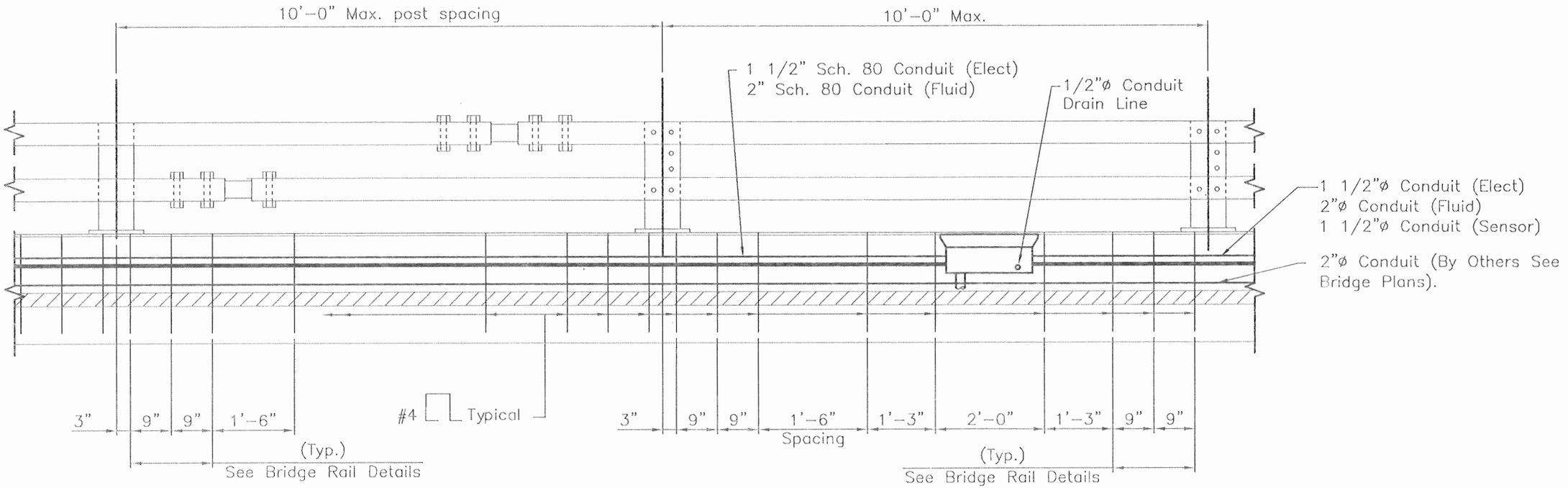
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970–385–1440 FAX: 970–385–8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE CROSS SECTION

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti–Icing
Structure Numbers P–05–AG
Subset Sheets: AIS3 of AIS5

Project No./Code
NH 1602–114
16042
Sheet Number 329




## BRIDGE RAIL ELEVATION

Scale" 1/2" = 1'-0"

| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | | INITIAL | DATE | | | INITIAL | DATE |
| Designed By | JMH | 07/08 | Detailed By | Checked By | RJK | 07/08 | Quantities By | Checked By | XXX | MM/YY |
| Checked By | DDH | 07/25 | Checked By | | DDH | 07/25 | | | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-BRIDGE 550.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc. (970) 259-3582 (970) 247-1438

ENVIROTECH SERVICES, INC. (719) 384-5992 (719) 384-5995

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

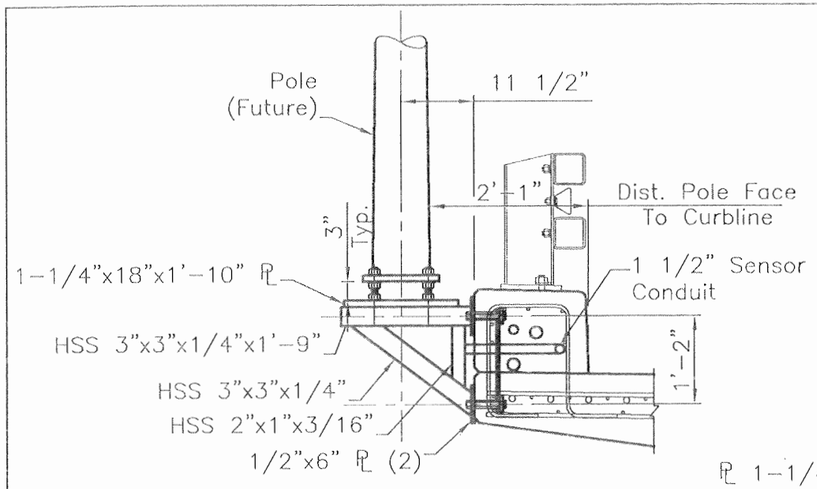
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE RAIL ELEVATION

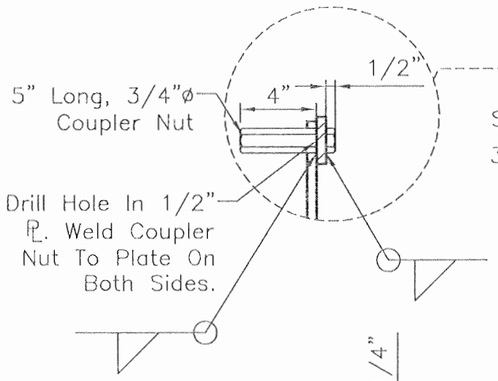
Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-AG
Subset Sheets: AIS4 of AIS5

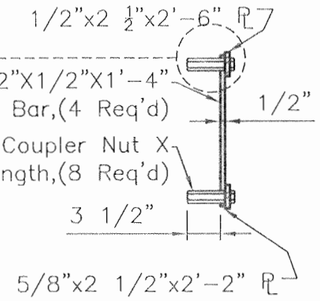
Project No./Code
NH 1602-114
16042
Sheet Number 330



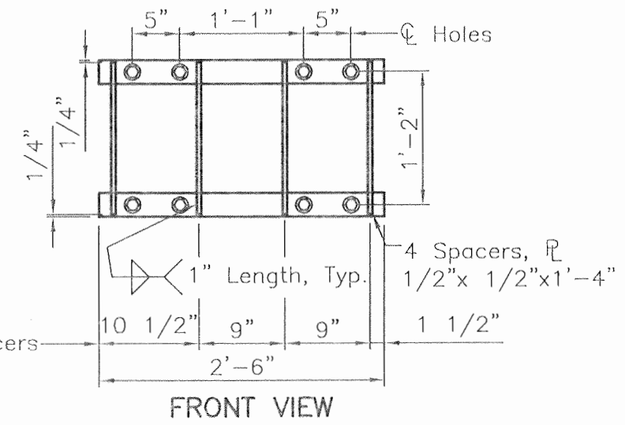

## POST MOUNTING DETAIL

Scale: 1/2" = 1'-0"



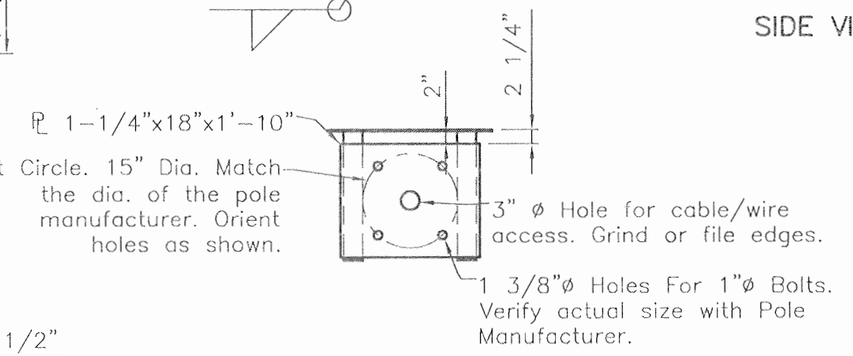

SIDE VIEW




FRONT VIEW

## BARRIER INSERT DETAIL

Scale: 3/4" = 1'-0"



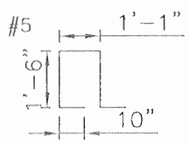

## PLAN VIEW OF MOUNTING BRACKET

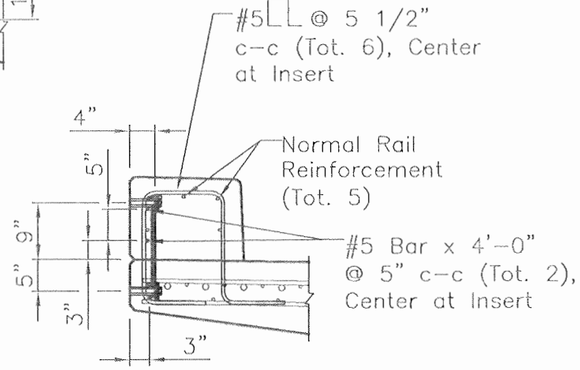
Scale: 1/2" = 1'-0"




## OUTSIDE MOUNTING BRACKET

Scale: 1/2" = 1'-0"




## BARRIER WITH BRACKET INSERTS

Scale: 1/2" = 1'-0"

## STRUCTURAL STEEL AND METAL EMBEDMENTS FOR CONCRETE STRUCTURES

1. Miscellaneous steel items in the structures shall be fabricated from structural steel conforming to ASTM A36 or A572. Welding shall meet requirements of AWS D1.1. The finished fabrication shall be hot-dip galvanized in accordance with ASTM A123.
2. All Bolts, Nuts and Washers shall be A325, and shall be galvanized.
3. All HSS Round or Rectangular Sections shall conform to ASTM A500, Grade B or C structural tubing.
4. All welds shall be 1/4" minimum effective throat welds, or to the thickness of the smaller material being welded, whichever is smaller, based on 70 ksi electrode strength. HSS members may require flare bevel welds.
5. 3/4" Coupler Nuts shall be 5" minimum in length, and shall meet the requirements of A325.
6. Bolts to connect the Bracket to the barrier shall be 3 1/2" in length with washers.
7. Pole Mounting Bracket is designed for following conditions:
   1. Maximum wind velocity of 100 mph.
   2. Maximum height of pole not to exceed 30 feet from top of mounting bracket plate.
   3. Top of pole shall not exceed 100 feet as measured above the local ground elevation.
   4. Horizontal projected area of installed equipment shall not exceed 4.5 SF mounted at 27 Feet above the top of the mounting plate (or equivalent produced moment).
   5. Base of the pole shall not exceed 8" diameter, Bolt circle shall not exceed 15".

| Quantities | INITIAL | DATE |
|---|---|---|
| | XXX | MM/YY |
| Quantities By | XXX | MM/YY |
| Checked By | | |

| Detail | INITIAL | DATE |
|---|---|---|
| | RJK | 07/08 |
| Detailed By | | 07/25 |
| Checked By | DDH | |

| Design | INITIAL | DATE |
|---|---|---|
| | JMH | 07/08 |
| Designed By | | 07/25 |
| Checked By | DDH | |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-BRIDGE 550.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lacey, Rynearson & Associates, Inc. WWW.LRA-INC.COM
908 5th Street (970) 259-5363
Cortez, Colorado 81321 (Fax) 970-565-5438

ENVIROTECH ENGINEERING, INC.
1145 20th Avenue, Suite B1 (303) 291-1972
Greeley, Colorado 80631 Fax: 291-1975

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

SENSOR POLE ANCHORAGE

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-AG
Subset Sheets: AIS5 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 331

# ANTI-ICING SYSTEM
# PHASE I

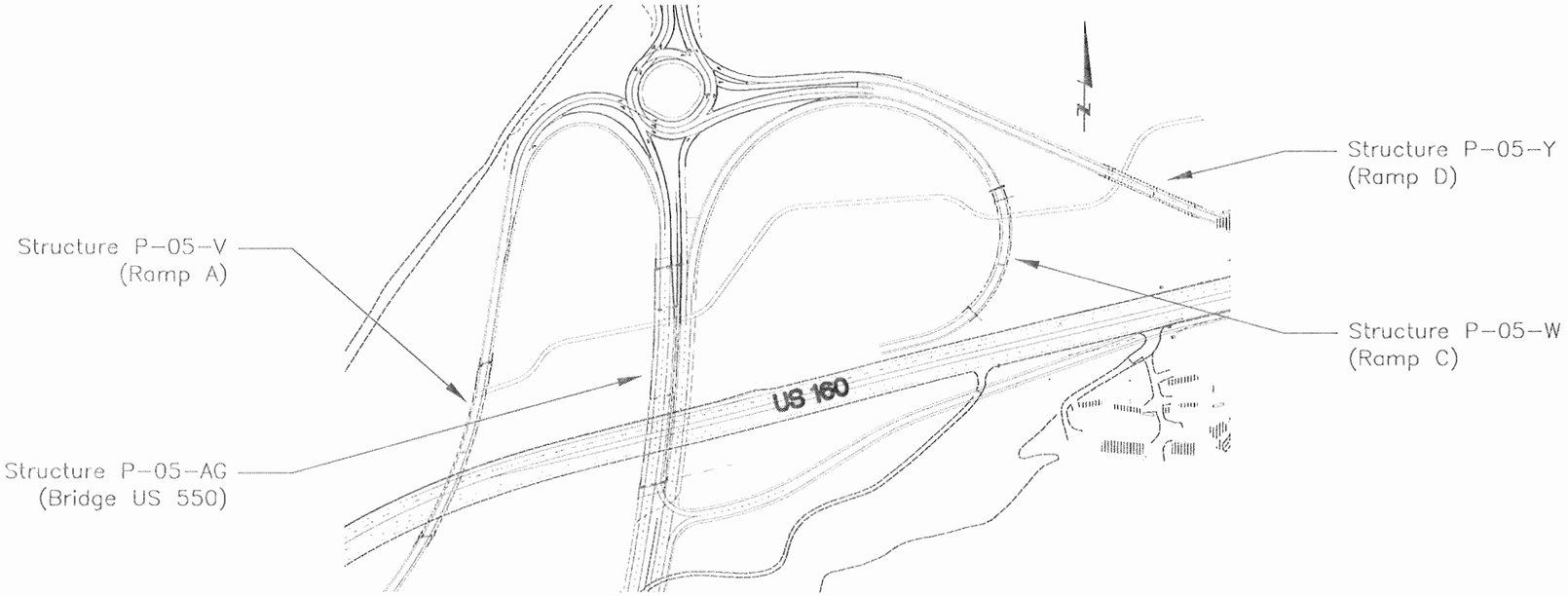
## Structure P-05-V
## RAMP A OVER US 160
## RELEASED FOR CONSTRUCTION

INDEX OF DRAWINGS



GENERAL NOTES

1. The Anti-Icing System Phase I construction drawings include information for the installation of the basic components and shall include conduits, junction boxes, and sensor anchorage to accommodate the future components of an operational system.
2. Conduit shall have a high point placed at the midpoint of the junction boxes to facilitate drainage of the conduits.
3. Spray nozzle and spray pattern on layout are for information only.
4. Unless otherwise indicated, junction boxes shall be placed on the upstream side of super elevation or normal cross slope.




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JMH | 07/09 |
| Checked By | DDH | 07/25 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/09 |
| Checked By | DDH | 07/25 |

| Quantities | INITIAL | Date |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP A.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lampo, Rynearson & Associates, Inc.
ENVIROTECH

(R-X)

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

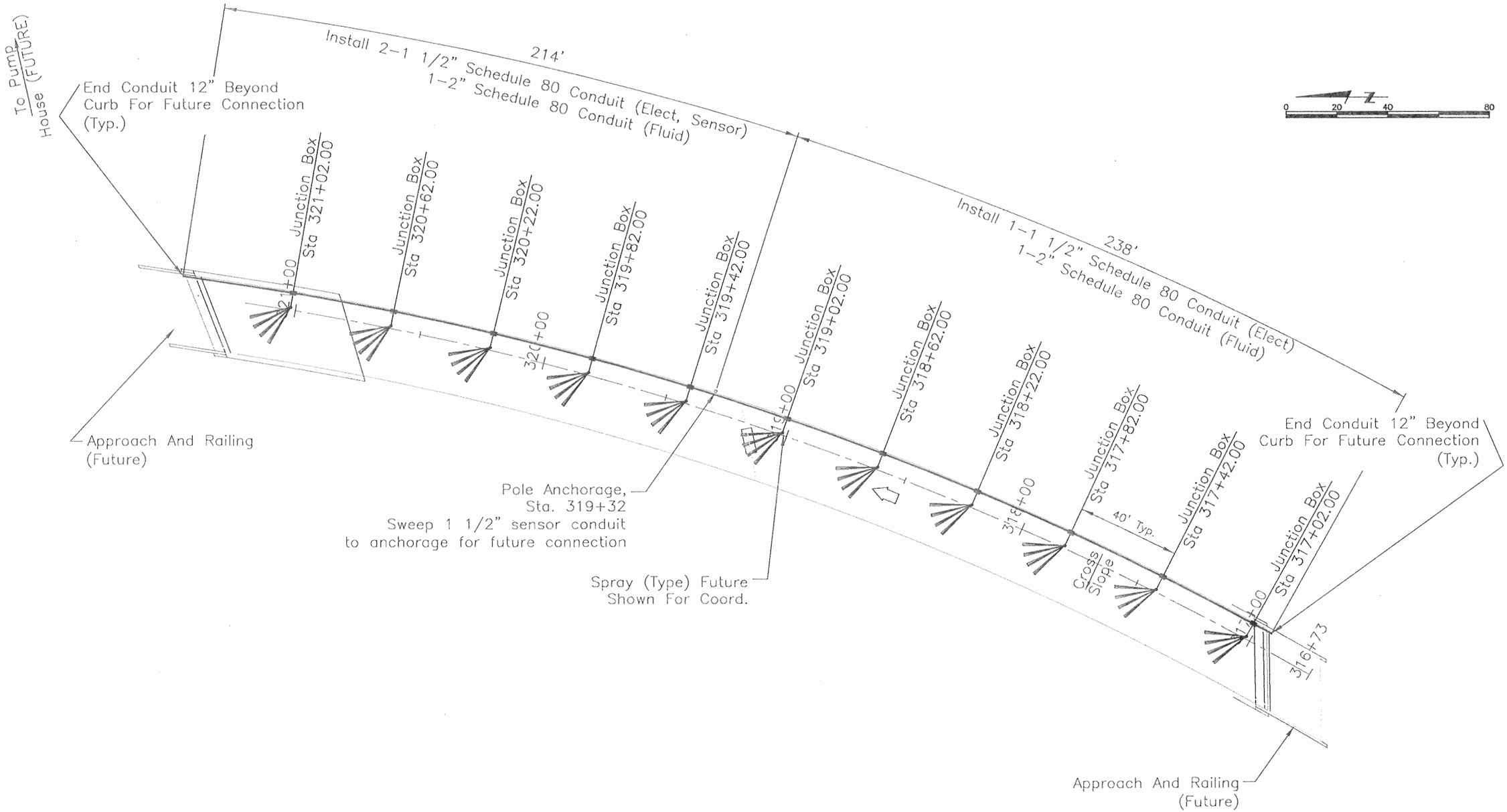

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 11/1/09
Revised:
Void:

GENERAL NOTES

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-V
Subset Sheets: AIS1 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 332




**NOTE:** See Bridge Cross Section For Junction Box Installation.

| Design | | | |
|---|---|---|---|
| | INITIAL | DATE | |
| Designed By | JWH | 07/08 | Detailed By |
| Checked By | DDH | 07/25 | Checked By |

| Detail | | | |
|---|---|---|---|
| | INITIAL | DATE | |
| Detailed By | RJK | 07/08 | Quantities By |
| Checked By | DDH | 07/25 | Checked By |

| Quantities | | | |
|---|---|---|---|
| | INITIAL | DATE | |
| Quantities By | XXX | MM/YY | |
| Checked By | XXX | MM/YY | |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP A.DWG
Horiz. Scale: 1:40 Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lacey, Rasmussen & Associates, Inc.
ENVIROTECH

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

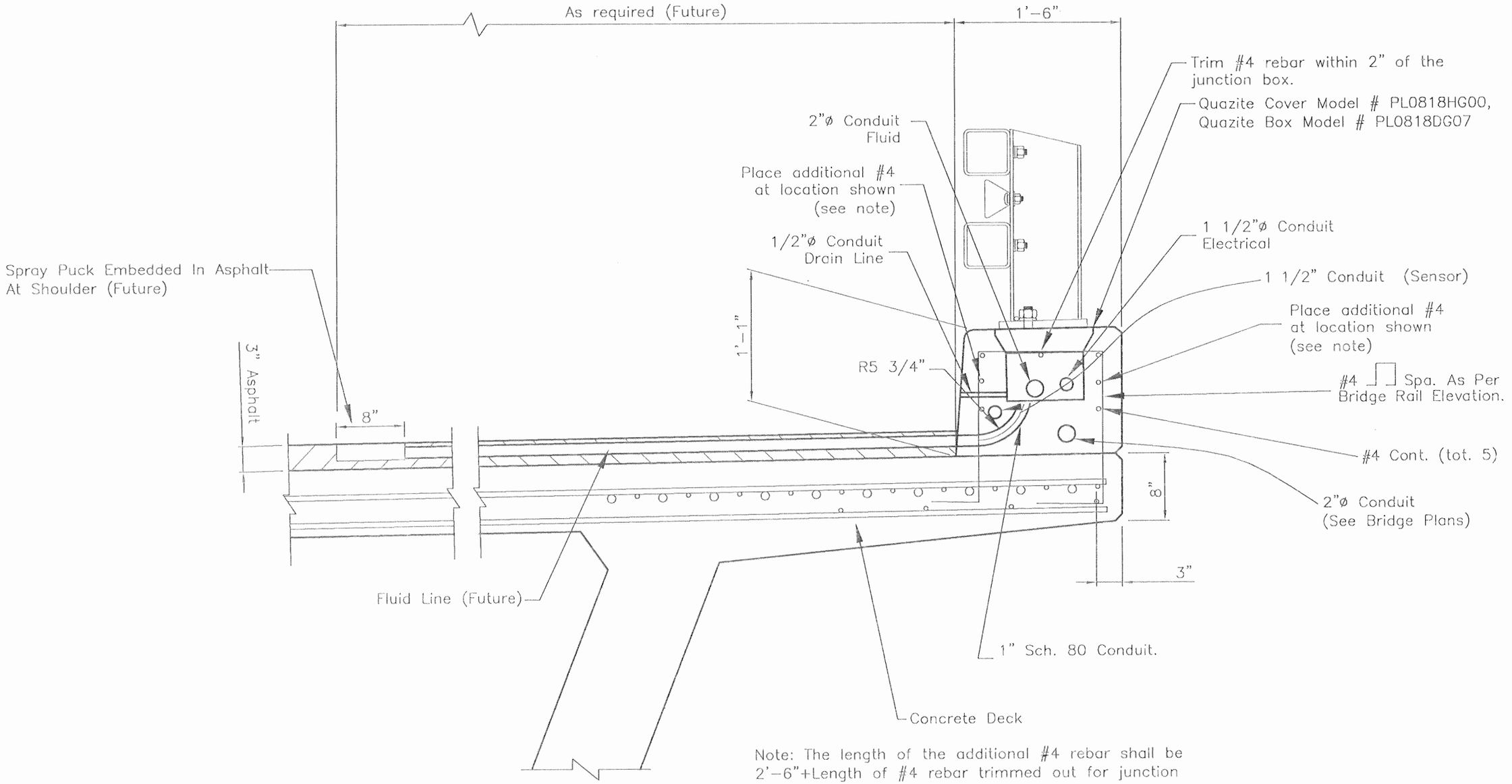

Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE LAYOUT

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-V
Subset Sheets: AIS2 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 333




Note: The length of the additional #4 rebar shall be 2'-6"+Length of #4 rebar trimmed out for junction box.

## BRIDGE SECTION

Scale: 1/2" = 1'-0"

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JMPI | 07/08 |
| Checked By | DDH | 07/25 |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP A.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH SERVICES, INC.

(R-X)

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

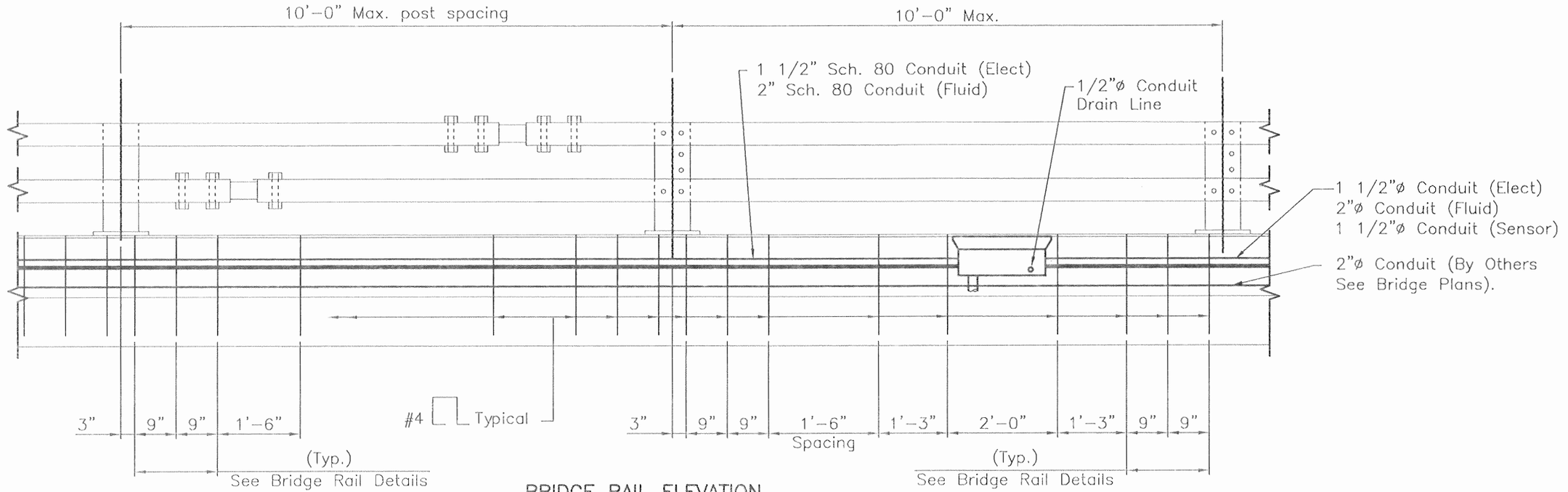
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE CROSS SECTION

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-V
Subset Sheets: AIS3 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 334




BRIDGE RAIL ELEVATION
Scale" 1/2" = 1'-0"

| Design | | | | Detail | | | | Quantities | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | JMH | 07/08 | Detailed By | RJK | 07/06 | Quantities By | XXX | MM/YY |
| Checked By | DDH | 07/25 | Checked By | DDH | 07/25 | Checked By | XXX | MM/YY |

| | | | |
|---|---|---|---|
| Print Date: Wednesday, September 01, 2010 | | | |
| File Name: 0208005.08P101-RAMP A.DWG | | | |
| Horiz. Scale: As Noted | Vert. Scale: As Noted | | |
| Unit Information | Unit Leader Initials | | |

Lamp, Rynearson & Associates, Inc. WWW.LRA-INC.COM
ENVIROTECH SERVICES, INC.

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

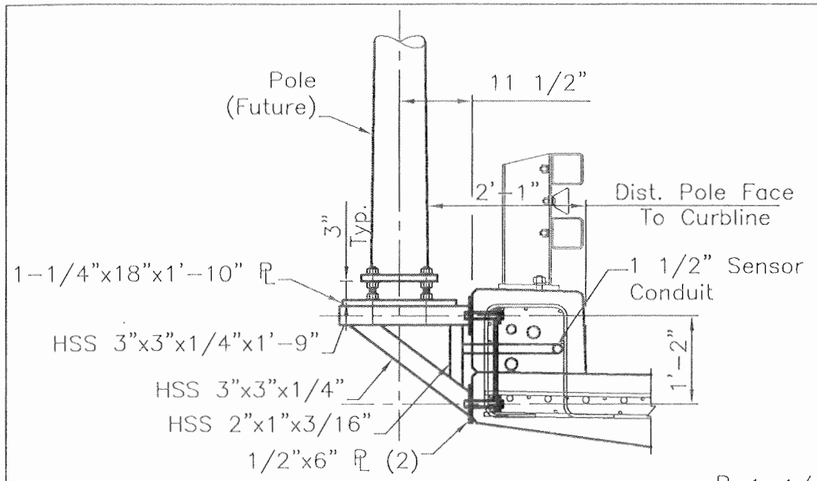
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE RAIL ELEVATION

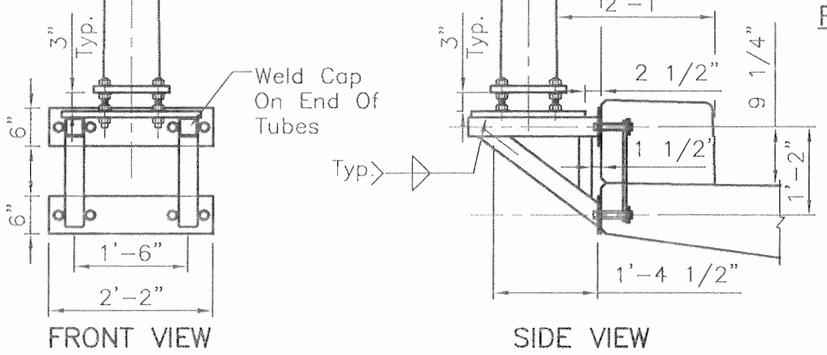
| | | | |
|---|---|---|---|
| Designer: | Daniel Hull | Structure Numbers | P-05-V |
| Detailer: | Rick Keller | | |
| Sheet Subset: | Anti-Icing | Subset Sheets: | AIS4 of AIS5 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 335 |



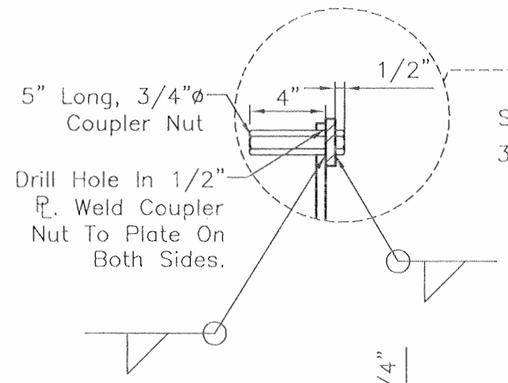

## POST MOUNTING DETAIL

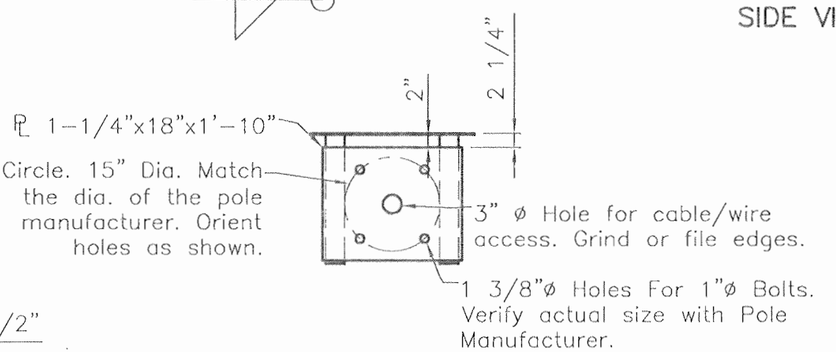
Scale: 1/2" = 1'-0"




## OUTSIDE MOUNTING BRACKET

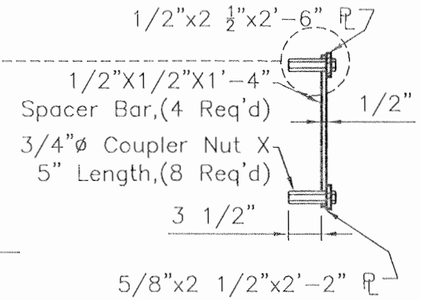
Scale: 1/2" = 1'-0"



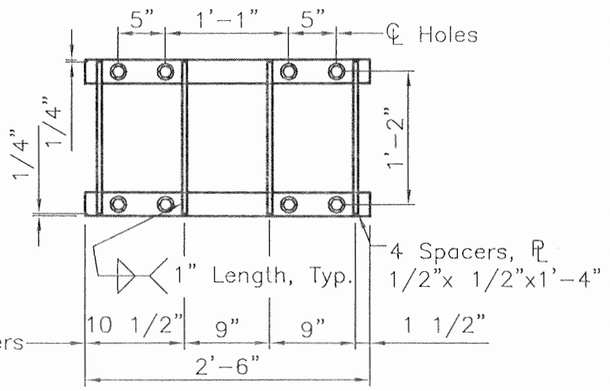




## PLAN VIEW OF MOUNTING BRACKET

Scale: 1/2" = 1'-0"



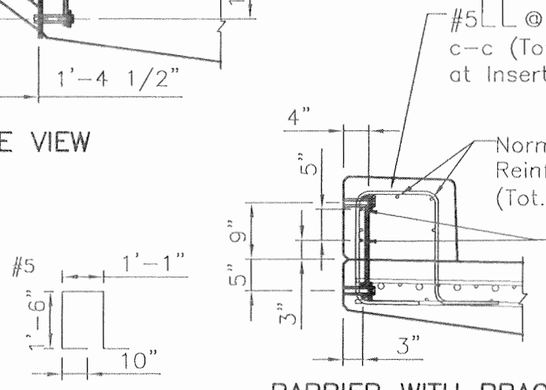

SIDE VIEW




FRONT VIEW

## BARRIER INSERT DETAIL

Scale: 3/4" = 1'-0"




## BARRIER WITH BRACKET INSERTS

Scale: 1/2" = 1'-0"

## STRUCTURAL STEEL AND METAL EMBEDMENTS FOR CONCRETE STRUCTURES

1. Miscellaneous steel items in the structures shall be fabricated from structural steel conforming to ASTM A36 or A572. Welding shall meet requirements of AWS D1.1. The finished fabrication shall be hot-dip galvanized in accordance with ASTM A123.
2. All Bolts, Nuts and Washers shall be A325, and shall be galvanized.
3. All HSS Round or Rectangular Sections shall conform to ASTM A500, Grade B or C structural tubing.
4. All welds shall be 1/4" minimum effective throat welds, or to the thickness of the smaller material being welded, whichever is smaller, based on 70 ksi electrode strength. HSS members may require flare bevel welds.
5. 3/4" Coupler Nuts shall be 5" minimum in length, and shall meet the requirements of A325.
6. Bolts to connect the Bracket to the barrier shall be 3 1/2" in length with washers.
7. Pole Mounting Bracket is designed for following conditions:
   1. Maximum wind velocity of 100 mph.
   2. Maximum height of pole not to exceed 30 feet from top of mounting bracket plate.
   3. Top of pole shall not exceed 100 feet as measured above the local ground elevation.
   4. Horizontal projected area of installed equipment shall not exceed 4.5 SF mounted at 27 Feet above the top of the mounting plate (or equivalent produced moment).
   5. Base of the pole shall not exceed 8" diameter, Bolt circle shall not exceed 15".

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JMH | 07/08 |
| Checked By | DDH | 07/25 |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP A.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc. (970) 245-8481 (Fax) 970.245.9698

ENVIROTECH SERVICES, INC. 1140 28th Avenue, Suite B1 Greeley, Colorado 80631 (970) 356-5010 (970) 356-5018

R-X

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

SENSOR POLE ANCHORAGE

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-V
Subset Sheets: AIS6 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 336

# ANTI-ICING SYSTEM
# PHASE I

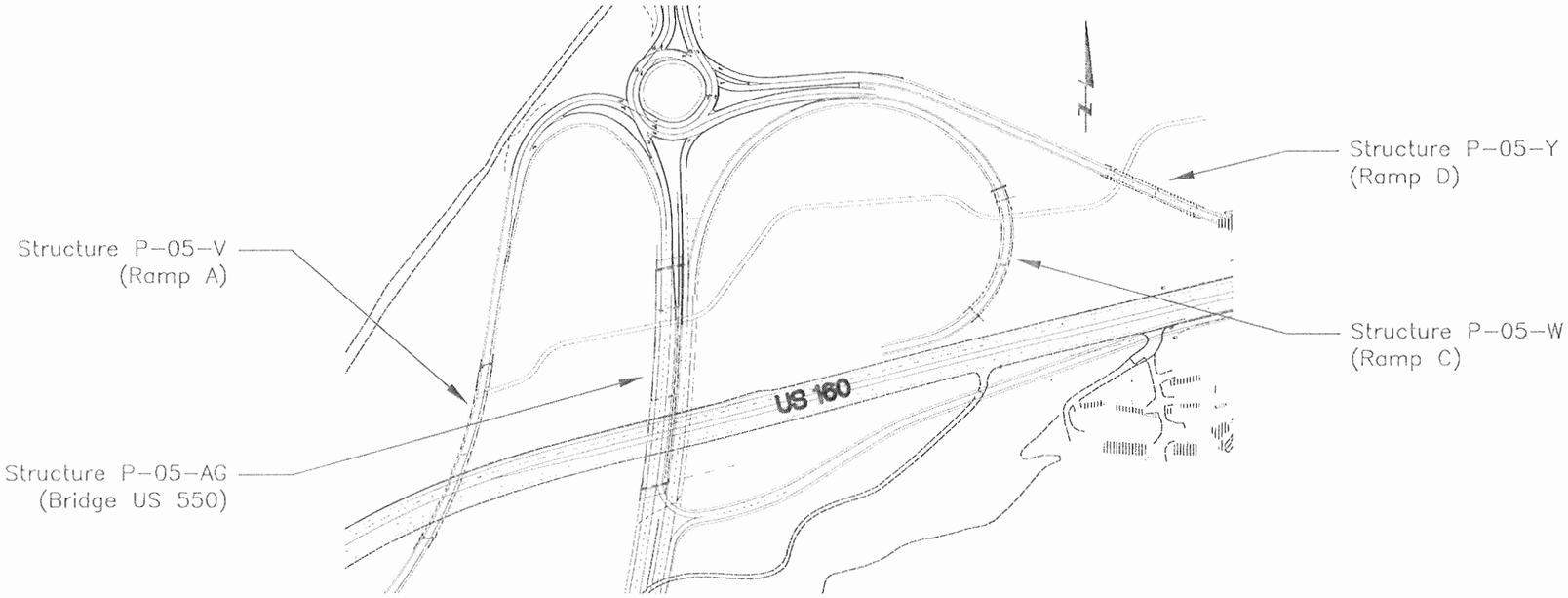
## Structure P-05-W
## RAMP C OVER WILSON GULCH
## RELEASED FOR CONSTRUCTION

INDEX OF DRAWINGS



GENERAL NOTES

1. The Anti-Icing System Phase I construction drawings include information for the installation of the basic components and shall include conduits, junction boxes, and sensor anchorage to accommodate the future components of an operational system.
2. Conduit shall have a high point placed at the midpoint of the junction boxes to facilitate drainage of the conduits.
3. Spray nozzle and spray pattern on layout are for information only.
4. Unless otherwise indicated, junction boxes shall be placed on the upstream side of super elevation or normal cross slope.




| Design | | | | Detail | | | | Quantities | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | JMH | 07/06 | Detailed By | RJK | 07/06 | Quantities By | XXX | MM/YY |
| Checked By | DDH | 07/25 | Checked By | DDH | 07/25 | Checked By | XXX | MM/YY |

| | | | |
|---|---|---|---|
| Print Date: Wednesday, September 01, 2010 | | | |
| File Name: 0208005.08P101-RAMP C.DWG | | | |
| Horiz. Scale: As Noted | Vert. Scale: As Noted | R-X | |
| Unit Information | Unit Leader Initials | | |

Lacey, Rynearson & Associates, Inc.
ENVIROTECH SERVICES, INC.

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

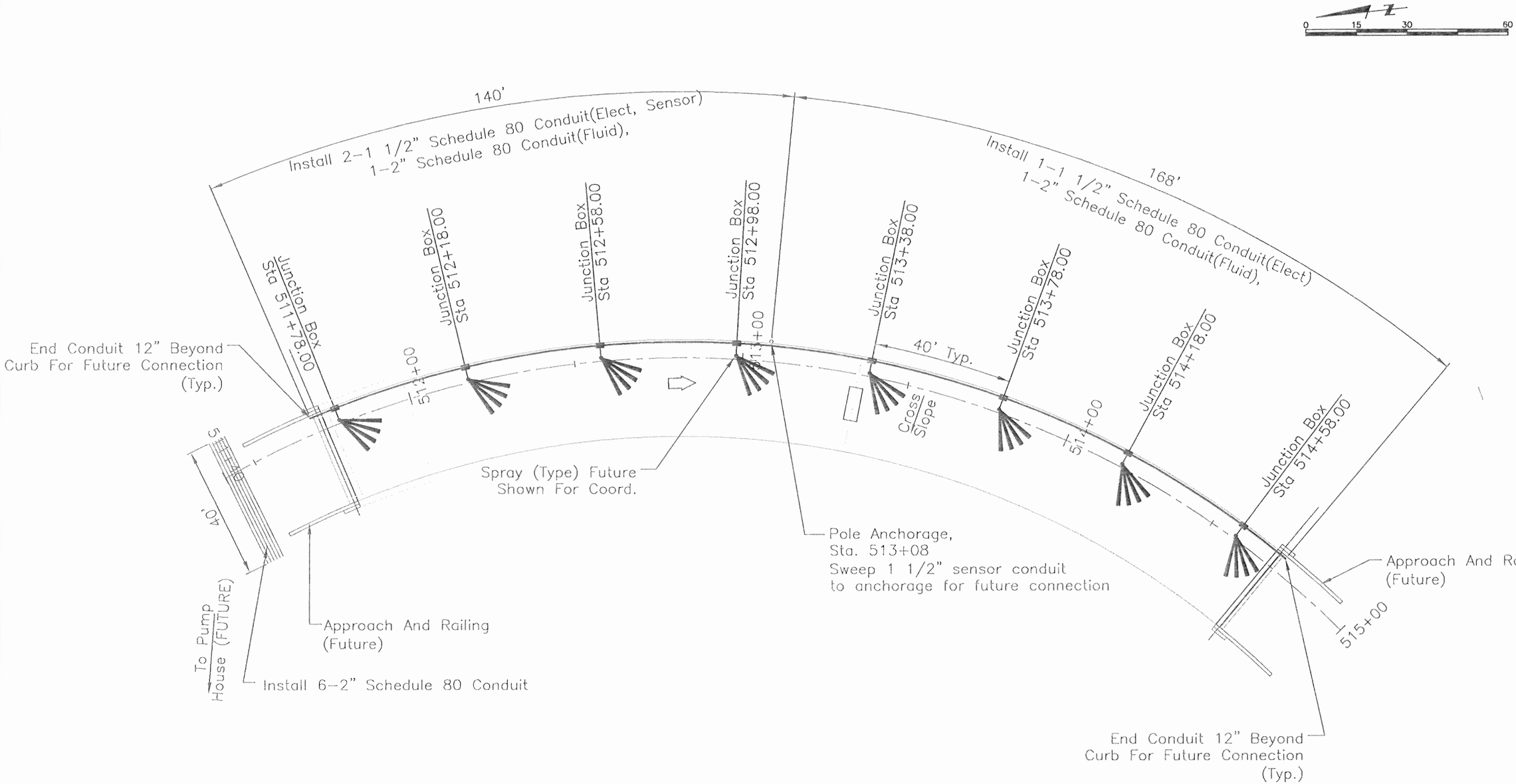

As Constructed

| | |
|---|---|
| No Revisions: 11/1/09 | |
| Revised: | |
| Void: | |

GENERAL NOTES

| | | | |
|---|---|---|---|
| Designer: | Daniel Hull | Structure Numbers | P-05-W |
| Detailer: | Rick Keller | | |
| Sheet Subset: | Anti-Icing | Subset Sheets: | AIS1 of AIS5 |

| Project No./Code | |
|---|---|
| NH 1602-114 | |
| 16042 | |
| Sheet Number | 337 |




**NOTE:** See Bridge Cross Section For Junction Box Installation.

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JWH | 07/08 |
| Checked By | DDH | 07/25 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | XX/XX |
| Checked By | XXX | XX/XX |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP C.DWG
Horiz. Scale: 1:30 Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH

R-X

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

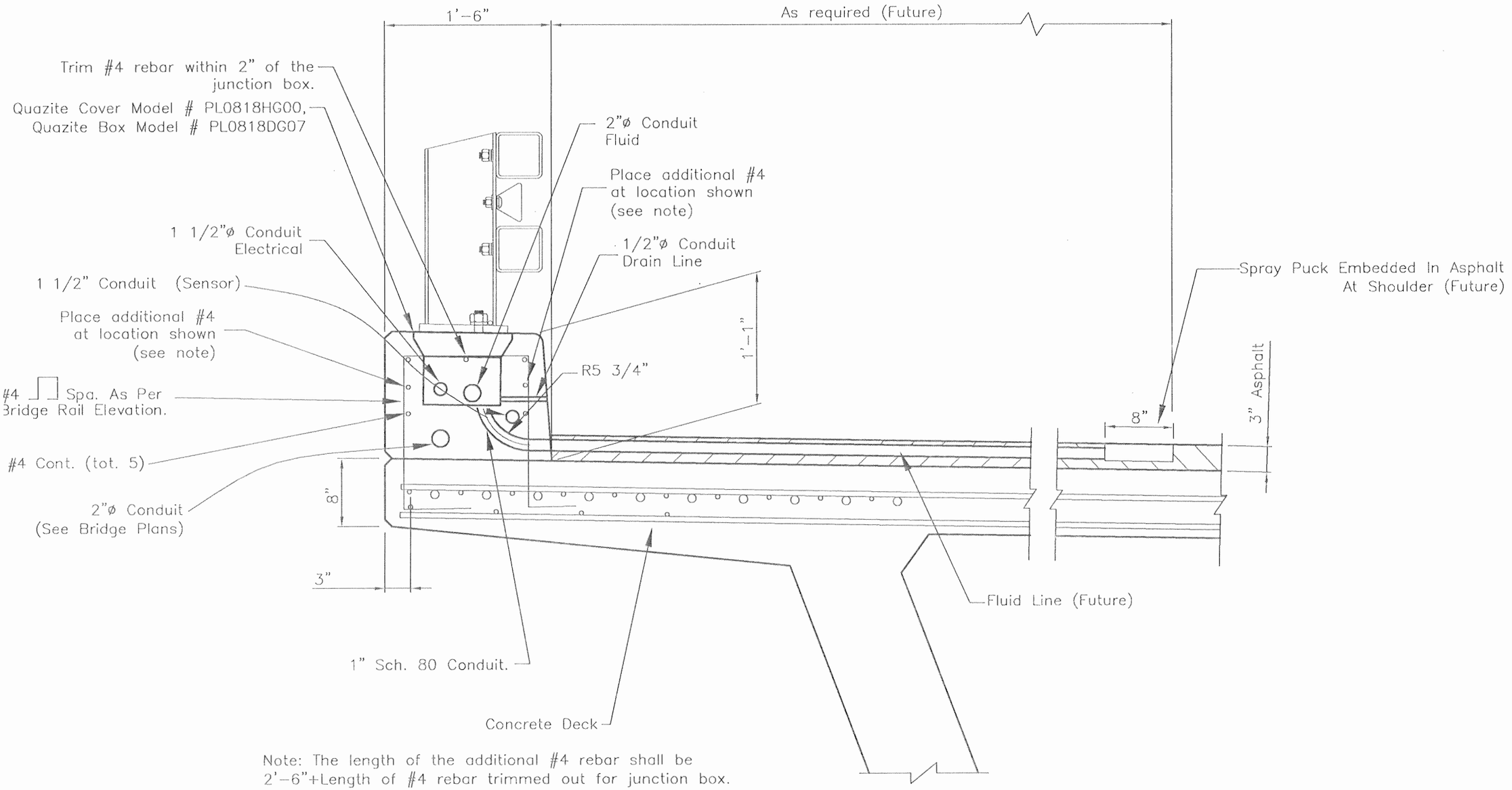
Colorado Department of Transportation
DOT
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE LAYOUT

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-W
Subset Sheets: AIS2 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 338




Note: The length of the additional #4 rebar shall be 2'-6"+Length of #4 rebar trimmed out for junction box.

## BRIDGE SECTION

Scale: 1/2" = 1'-0"

| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JMH | 07/08 |
| Checked By | DDH | 07/25 |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP C.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH SERVICES, INC.

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

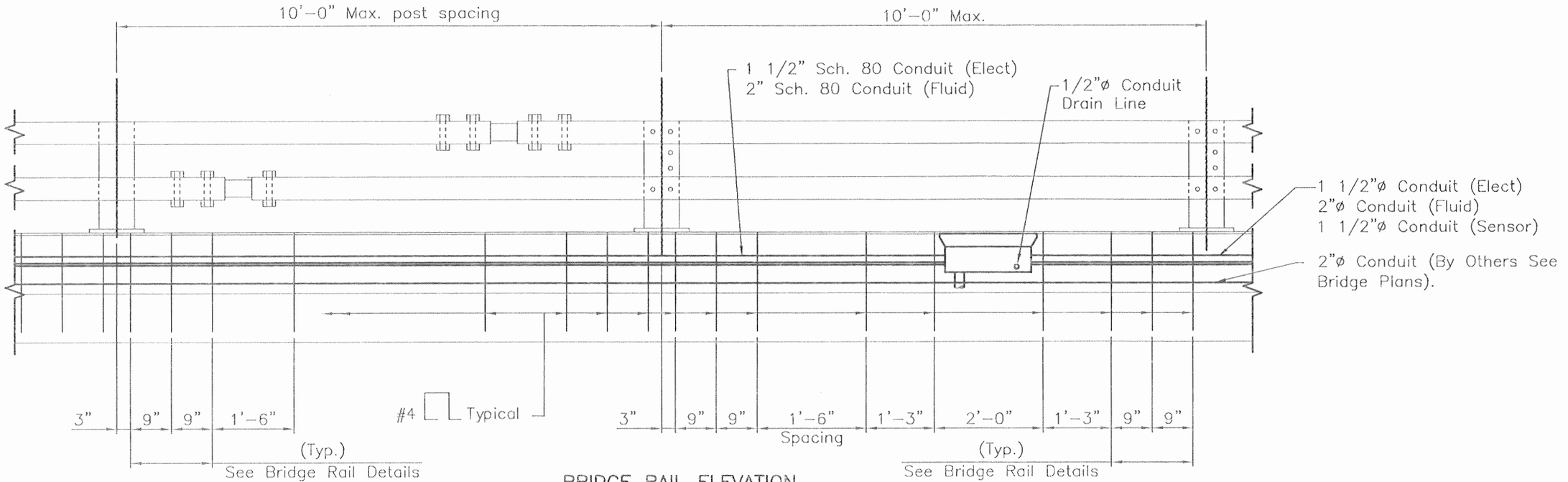
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE CROSS SECTION

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-W
Subset Sheets: AIS3 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 339




BRIDGE RAIL ELEVATION
Scale" 1/2" = 1'-0"

| Design | | | Detail | | | Quantities | | |
|---|---|---|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE | | INITIAL | DATE |
| Designed By | JWH | 07/08 | Detailed By | RJK | 07/08 | Quantities By | XXX | MM/YY |
| Checked By | DDH | 07/25 | Checked By | DDH | 07/25 | Checked By | XXX | MM/YY |

| | | | |
|---|---|---|---|
| Print Date: Wednesday, September 01, 2010 | | Sheet Revisions | |
| File Name: 0208005.08P101-RAMP C.DWG | | Date: | Comments |
| Horiz. Scale: As Noted Vert. Scale: As Noted | R=X | | |
| Unit Information Unit Leader Initials | | | |
| Lamp, Rynearson & Associates, Inc. www.LRA.INC.COM 719.Ath Street Greeley, Colorado 80631 (970) 353-5565 (Fax) 970.353.3648 | ENVIROTECH SERVICES, INC. 1140 20th Avenue, Suite F Greeley, Colorado 80631 (970) 356-5010 | | |

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

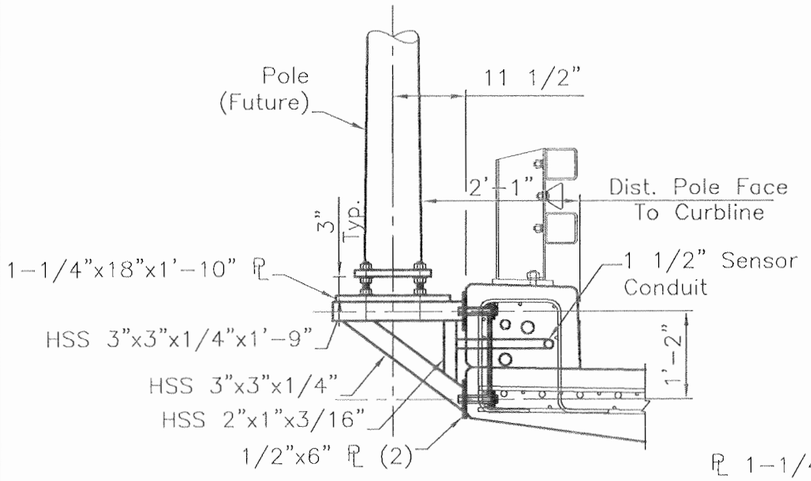
Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE RAIL ELEVATION

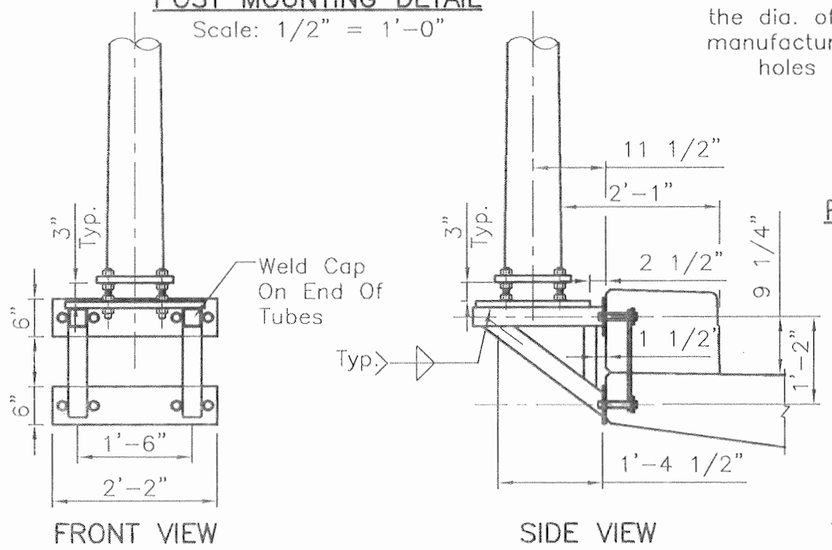
Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-W
Subset Sheets: AIS4 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 340



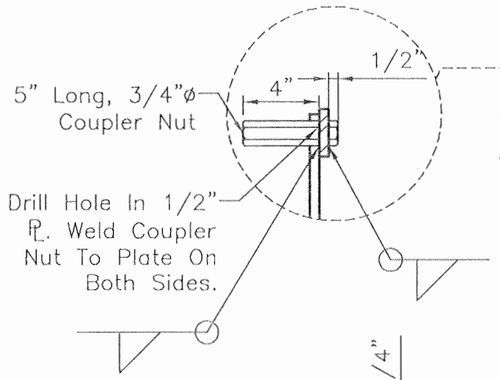

## POST MOUNTING DETAIL

Scale: 1/2" = 1'-0"



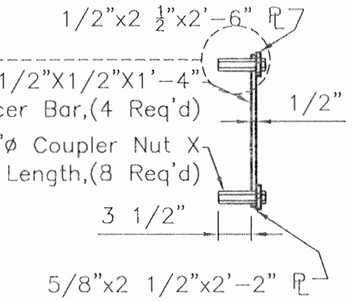

## OUTSIDE MOUNTING BRACKET

Scale: 1/2" = 1'-0"

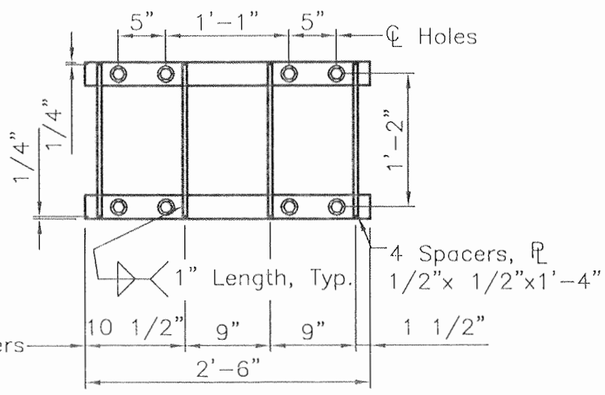



## PLAN VIEW OF MOUNTING BRACKET

Scale: 1/2" = 1'-0"



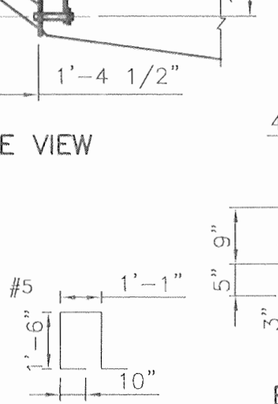

SIDE VIEW

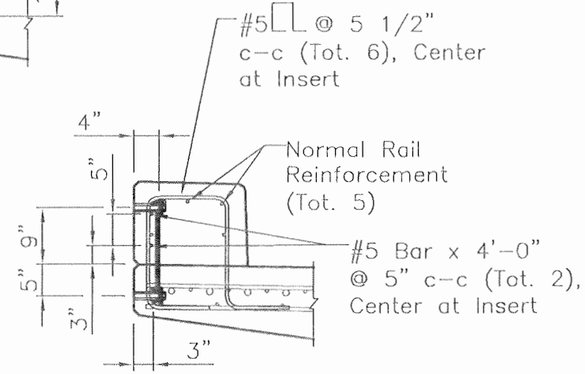



FRONT VIEW

## BARRIER INSERT DETAIL

Scale: 3/4" = 1'-0"




## BARRIER WITH BRACKET INSERTS

Scale: 1/2" = 1'-0"

## STRUCTURAL STEEL AND METAL EMBEDMENTS FOR CONCRETE STRUCTURES

1. Miscellaneous steel items in the structures shall be fabricated from structural steel conforming to ASTM A36 or A572. Welding shall meet requirements of AWS D1.1. The finished fabrication shall be hot-dip galvanized in accordance with ASTM A123.
2. All Bolts, Nuts and Washers shall be A325, and shall be galvanized.
3. All HSS Round or Rectangular Sections shall conform to ASTM A500, Grade B or C structural tubing.
4. All welds shall be 1/4" minimum effective throat welds, or to the thickness of the smaller material being welded, whichever is smaller, based on 70 ksi electrode strength. HSS members may require flare bevel welds.
5. 3/4" Coupler Nuts shall be 5" minimum in length, and shall meet the requirements of A325.
6. Bolts to connect the Bracket to the barrier shall be 3 1/2" in length with washers.
7. Pole Mounting Bracket is designed for following conditions:
   1. Maximum wind velocity of 100 mph.
   2. Maximum height of pole not to exceed 30 feet from top of mounting bracket plate.
   3. Top of pole shall not exceed 100 feet as measured above the local ground elevation.
   4. Horizontal projected area of installed equipment shall not exceed 4.5 SF mounted at 27 Feet above the top of the mounting plate (or equivalent produced moment).
   5. Base of the pole shall not exceed 8" diameter, Bolt circle shall not exceed 15".

| Quantities | INITIAL | DATE |
|---|---|---|
| | XXX | MM/YY |
| Quantities By | XXX | MM/YY |
| Checked By | | |

| Detail | INITIAL | DATE |
|---|---|---|
| | RJK | 07/08 |
| Detailed By | RJK | 07/08 |
| Checked By | DDH | 07/25 |

| Design | INITIAL | DATE |
|---|---|---|
| | JMH | 07/08 |
| Designed By | JMH | 07/08 |
| Checked By | DDH | 07/25 |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP C.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH SERVICES, INC.

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | | | | |
|---|---|---|---|---|
| No Revisions: 11/1/09 | SENSOR POLE ANCHORAGE | | | Project No./Code |
| Revised: | Designer: Daniel Hull | Structure Numbers | P-05-W | NH 1602-114 |
| Void: | Detailer: Rick Keller | | | 16042 |
| | Sheet Subset: Anti-Icing | Subset Sheets: AIS5 of AIS5 | | Sheet Number 341 |

# ANTI-ICING SYSTEM
# PHASE I

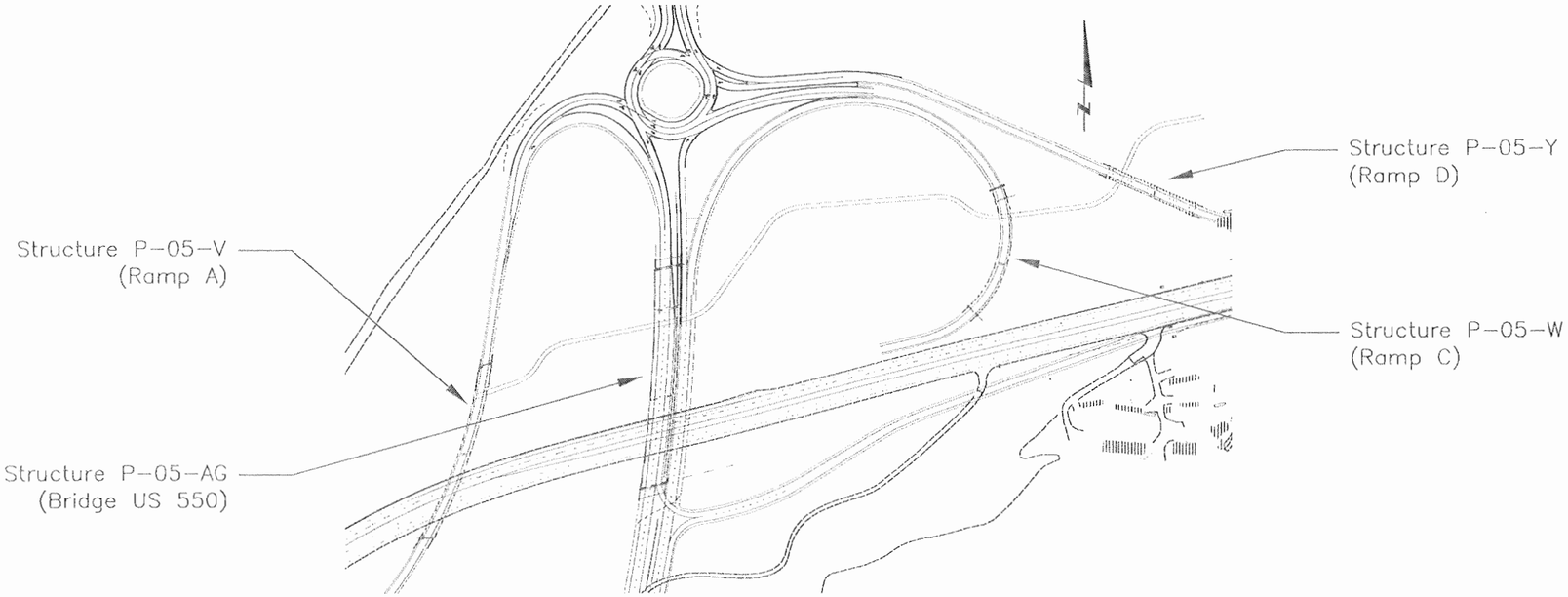
## Structure P-05-Y
## RAMP D OVER WILSON GULCH
## RELEASED FOR CONSTRUCTION

INDEX OF DRAWINGS



GENERAL NOTES

1. The Anti-Icing System Phase I construction drawings include information for the installation of the basic components and shall include conduits, junction boxes, and sensor anchorage to accommodate the future components of an operational system.
2. Conduit shall have a high point placed at the midpoint of the junction boxes to facilitate drainage of the conduits.
3. Spray nozzle and spray pattern on layout are for information only.
4. Pucks shall be placed on the upstream side of super elevation or normal cross slope.




| Design | INITIAL | DATE |
|---|---|---|
| Designed By | JMH | 07/08 |
| Checked By | XXX | MM/YY |

| Detail | INITIAL | DATE |
|---|---|---|
| Detailed By | RJK | 07/08 |
| Checked By | XXX | MM/YY |

| Quantities | INITIAL | DATE |
|---|---|---|
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP D.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH

R-X

Sheet Revisions

| Date: | Comments | Init. |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

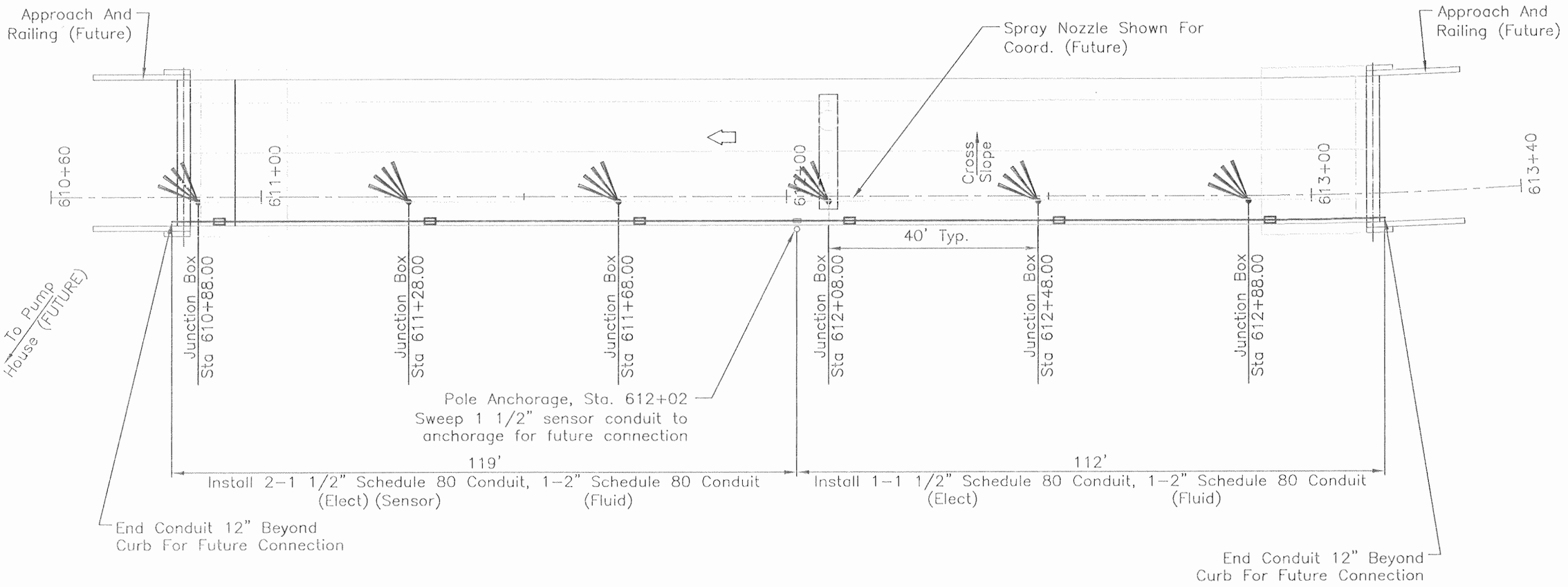

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 11/1/09
Revised:
Void:

GENERAL NOTES

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-Y
Subset Sheets: AIS1 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 342




**NOTE:** See Bridge Cross Section For Junction Box Installation

| Design | | | Drafting | | |
|---|---|---|---|---|---|
| | INITIAL | DATE | | INITIAL | DATE |
| Designed By | JMH | 07/08 | Detailed By | RJK | 07/08 |
| Checked By | XXX | MM/YY | Checked By | XXX | MM/YY |

| Quantities | | |
|---|---|---|
| | INITIAL | DATE |
| Quantities By | XXX | MM/YY |
| Checked By | XXX | MM/YY |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP D.DWG
Horiz. Scale: 1:20 Vert. Scale: As Noted
Unit Information Unit Leader Initials

Larry, Ryneerson & Associates, Inc. www.LRA-INC.COM
308 No. Pierce (Ph) 970.531.0062
Cowley, Colorado 80631 (Fax) 970.566.0698

ENVIROTECH SERVICES, INC.
1-40 29th Avenue, Suite B (303) 289-3608
Greeley, Colorado 80631 (970) 346-0698

(R-X)

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

As Constructed
No Revisions: 11/1/09
Revised:
Void:

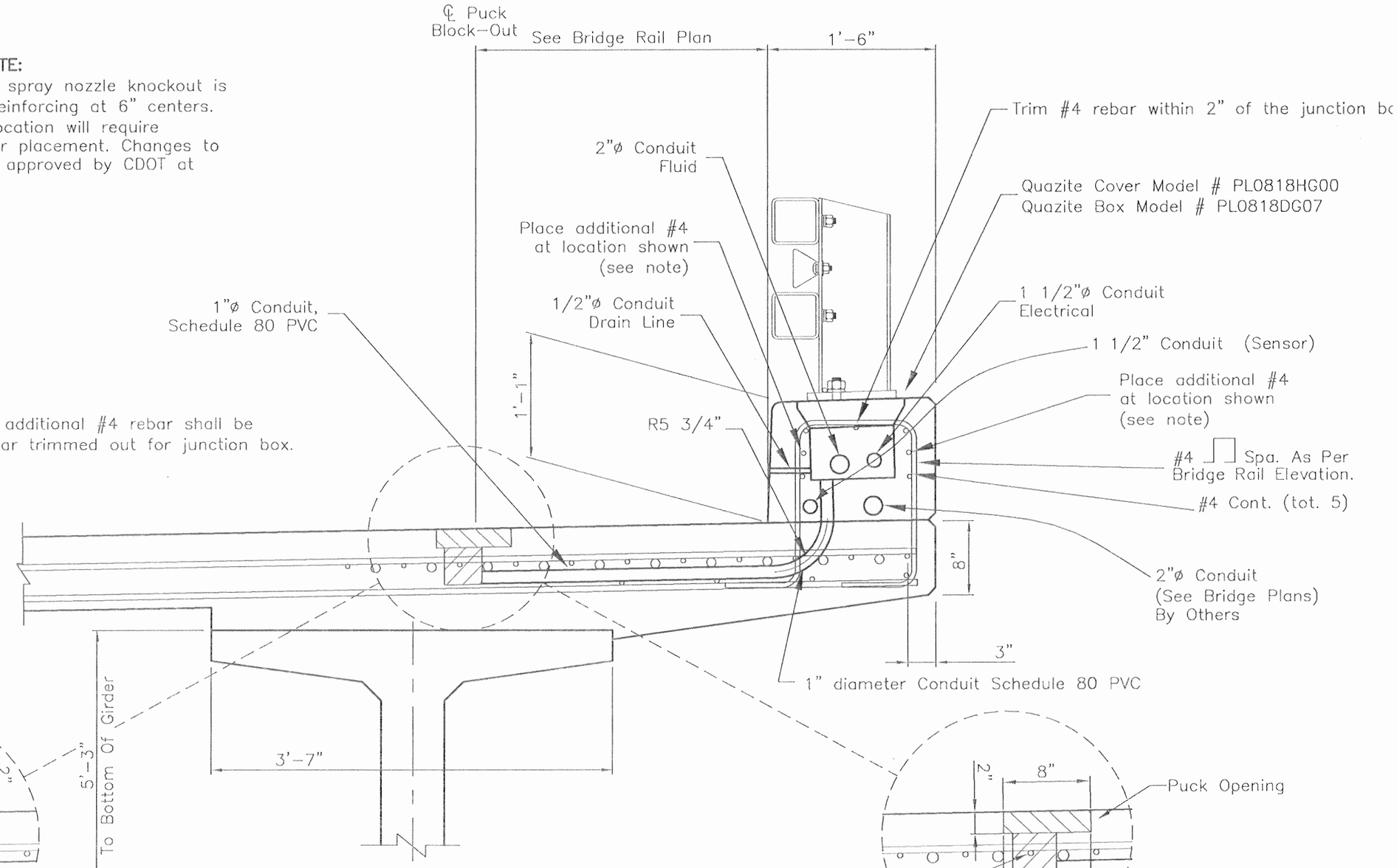
BRIDGE LAYOUT

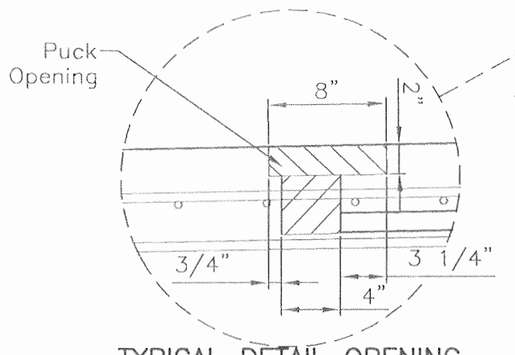
Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-Y
Subset Sheets: AIS2 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 343

**SPRAY NOZZLE KNOCKOUT NOTE:**
The 4" opening width for the spray nozzle knockout is based on locations of deck reinforcing at 6" centers. The 4" opening at the pier location will require modification to the deck rebar placement. Changes to the rebar placement shall be approved by CDOT at the time of installation.

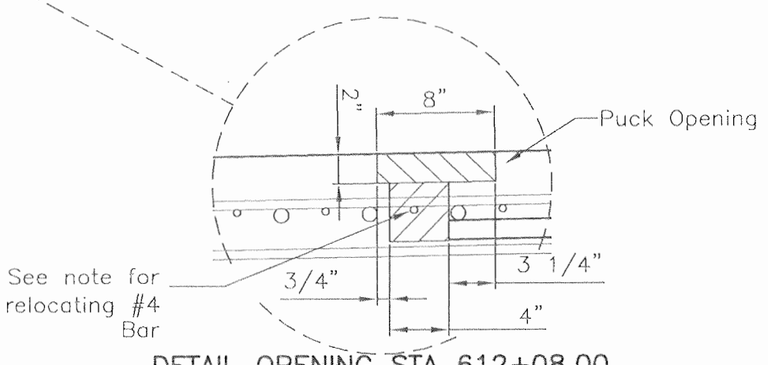
Note: The length of the additional #4 rebar shall be 2'-6"+Length of #4 rebar trimmed out for junction box.




TYPICAL DETAIL OPENING

BRIDGE SECTION
Scale: 1" = 1'-0"




DETAIL OPENING STA 612+08.00

| Design | INITIAL | DATE | Detailed By | INITIAL | DATE | Quantities |
|---|---|---|---|---|---|---|
| Designed By | JWH | 07/08 | Checked By | RJK | 07/08 | INITIAL |
| Checked By | XXX | MM/YY | | XXX | MM/YY | XXX |
| | | | Quantities By | | | XXX |
| | | | Checked By | | | MM/YY |

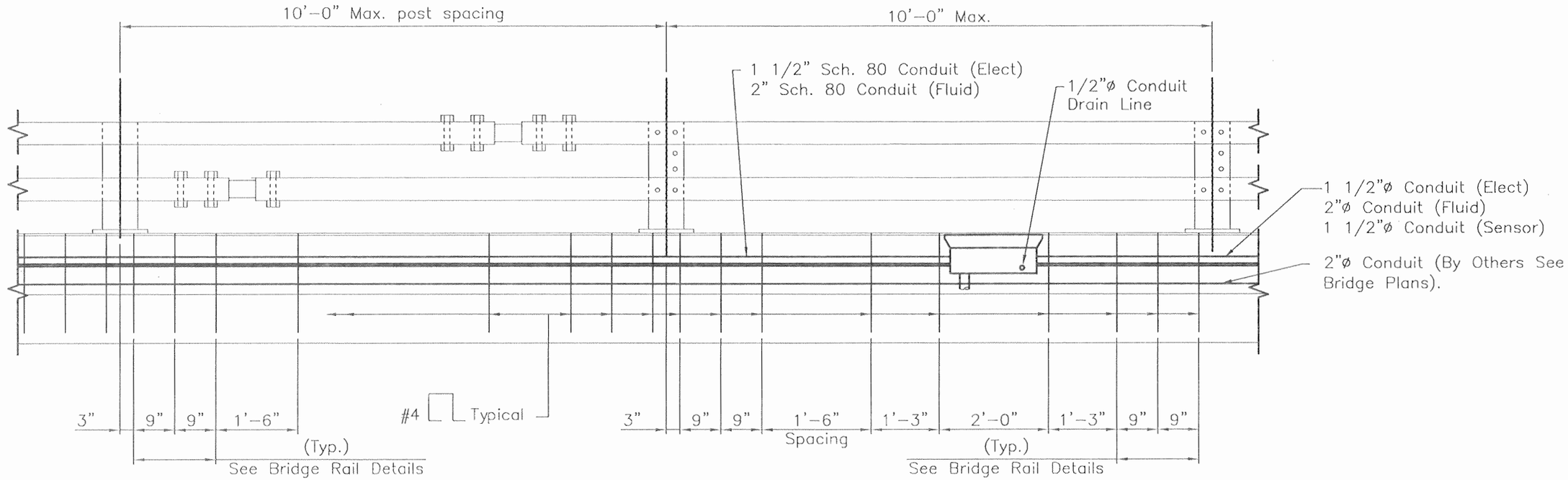
| | |
|---|---|
| Print Date: Wednesday, September 01, 2010 | |
| File Name: 0208005.08P101-RAMP D.DWG | |
| Horiz. Scale: As Noted Vert. Scale: As Noted | (R-X) |
| Unit Information Unit Leader Initials | |

Lamp, Rynearson & Associates, Inc. www.LRA-INC.COM
ENVIROTECH

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |

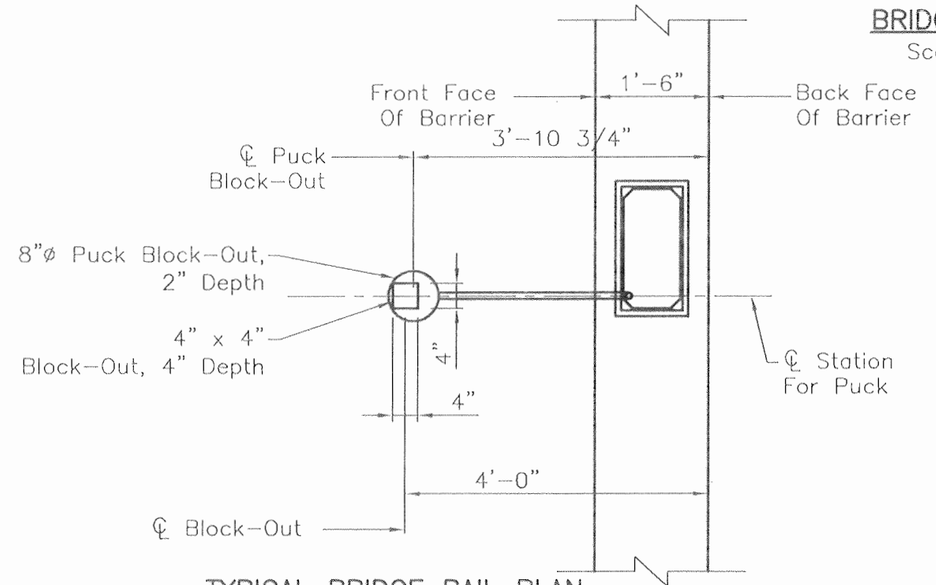
Colorado Department of Transportation
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA

| As Constructed | BRIDGE CROSS SECTION | | | Project No./Code |
|---|---|---|---|---|
| No Revisions: 11/1/09 | | | | NH 1602-114 |
| Revised: | Designer: Daniel Hull | Structure Numbers | P-05-Y | 16042 |
| Void: | Detailer: Rick Keller | | | |
| | Sheet Subset: Anti-Icing | Subset Sheets: AIS3 of AIS5 | | Sheet Number 344 |



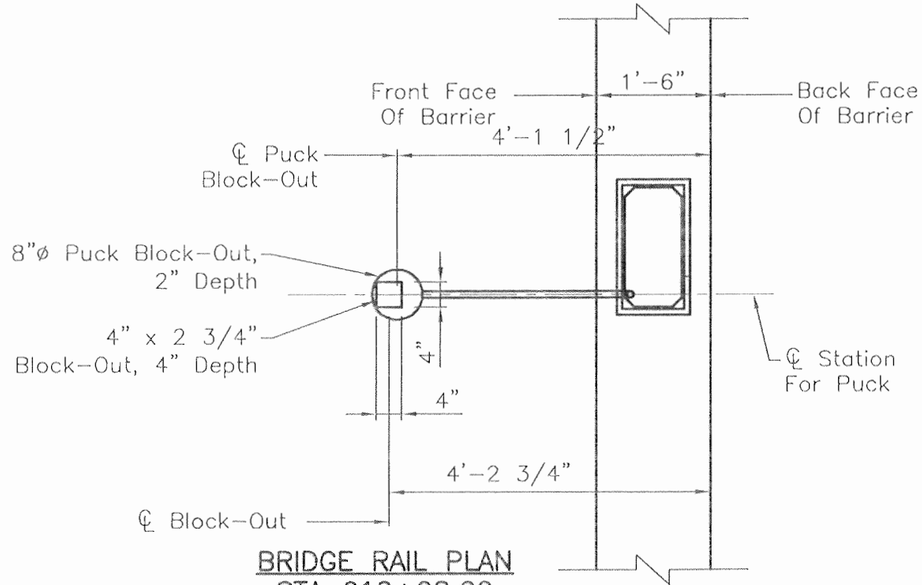

## BRIDGE RAIL ELEVATION

Scale" 1/2" = 1'-0"




## TYPICAL BRIDGE RAIL PLAN

Scale" 1/2" = 1'-0"




## BRIDGE RAIL PLAN
## STA 612+08.00

Scale" 1/2" = 1'-0"

| Quantities | INITIAL | XXX | Quantities By | Checked By | DATE | MM/YY | MM/YY |
|---|---|---|---|---|---|---|---|
| Detail | INITIAL | RJK | Detailed By | Checked By | DATE | 07/08 | MM/YY |
| Design | INITIAL | JMH | Designed By | Checked By | DATE | 07/08 | MM/YY |
| | | XXX | | | | | |

Print Date: Wednesday, September 01, 2010
File Name: 0208005.08P101-RAMP D.DWG
Horiz. Scale: As Noted Vert. Scale: As Noted
Unit Information Unit Leader Initials

Lamp, Rynearson & Associates, Inc.
ENVIROTECH

R-X

| Sheet Revisions | | |
|---|---|---|
| Date: | Comments | Init. |
| | | |
| | | |
| | | |
| | | |


Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
3803 North Main Avenue
Suite 200
Durango, CO 81301
Phone: 970-385-1440 FAX: 970-385-8365
Region 5 EJA


As Constructed
No Revisions: 11/1/09
Revised:
Void:

BRIDGE RAIL ELEVATION

Designer: Daniel Hull
Detailer: Rick Keller
Sheet Subset: Anti-Icing
Structure Numbers: P-05-Y
Subset Sheets: AIS4 of AIS5

Project No./Code
NH 1602-114
16042
Sheet Number 345