6.417	0.00	0.19	0.598	O	|	|	|	|	1.66
6.500	0.00	0.19	0.597	O	|	|	|	|	1.66
6.583	0.00	0.19	0.596	O	|	|	|	|	1.65
6.667	0.00	0.19	0.594	O	|	|	|	|	1.65
6.750	0.00	0.19	0.593	O	|	|	|	|	1.65
6.833	0.00	0.18	0.592	O	|	|	|	|	1.65
6.917	0.00	0.18	0.591	O	|	|	|	|	1.64
7.000	0.00	0.18	0.589	O	|	|	|	|	1.64
7.083	0.00	0.18	0.588	O	|	|	|	|	1.64
7.167	0.00	0.18	0.587	O	|	|	|	|	1.64
7.250	0.00	0.18	0.586	O	|	|	|	|	1.63
7.333	0.00	0.18	0.584	O	|	|	|	|	1.63
7.417	0.00	0.18	0.583	O	|	|	|	|	1.63
7.500	0.00	0.18	0.582	O	|	|	|	|	1.63
7.583	0.00	0.18	0.581	O	|	|	|	|	1.62
7.667	0.00	0.18	0.579	O	|	|	|	|	1.62
7.750	0.00	0.18	0.578	O	|	|	|	|	1.62
7.833	0.00	0.18	0.577	O	|	|	|	|	1.62
7.917	0.00	0.17	0.576	O	|	|	|	|	1.61
8.000	0.00	0.17	0.575	O	|	|	|	|	1.61
8.083	0.00	0.17	0.573	O	|	|	|	|	1.61
8.167	0.00	0.17	0.572	O	|	|	|	|	1.61
8.250	0.00	0.17	0.571	O	|	|	|	|	1.60
8.333	0.00	0.17	0.570	O	|	|	|	|	1.60
8.417	0.00	0.17	0.569	O	|	|	|	|	1.60
8.500	0.00	0.17	0.568	O	|	|	|	|	1.60
8.583	0.00	0.17	0.566	O	|	|	|	|	1.59
8.667	0.00	0.17	0.565	O	|	|	|	|	1.59
8.750	0.00	0.17	0.564	O	|	|	|	|	

1.59

8.833	0.00	0.17	0.563	O	|	|	|	1.59
8.917	0.00	0.17	0.562	O	|	|	|	1.58
9.000	0.00	0.16	0.561	O	|	|	|	1.58
9.083	0.00	0.16	0.560	O	|	|	|	1.58
9.167	0.00	0.16	0.558	O	|	|	|	1.58
9.250	0.00	0.16	0.557	O	|	|	|	1.58
9.333	0.00	0.16	0.556	O	|	|	|	1.57
9.417	0.00	0.16	0.555	O	|	|	|	1.57
9.500	0.00	0.16	0.554	O	|	|	|	1.57
9.583	0.00	0.16	0.553	O	|	|	|	1.57
9.667	0.00	0.16	0.552	O	|	|	|	1.56
9.750	0.00	0.16	0.551	O	|	|	|	1.56
9.833	0.00	0.16	0.550	O	|	|	|	1.56
9.917	0.00	0.16	0.549	O	|	|	|	1.56
10.000	0.00	0.16	0.547	O	|	|	|	1.56
10.083	0.00	0.16	0.546	O	|	|	|	1.55
10.167	0.00	0.15	0.545	O	|	|	|	1.55
10.250	0.00	0.15	0.544	O	|	|	|	1.55
10.333	0.00	0.15	0.543	O	|	|	|	1.55
10.417	0.00	0.15	0.542	O	|	|	|	1.54
10.500	0.00	0.15	0.541	O	|	|	|	1.54
10.583	0.00	0.15	0.540	O	|	|	|	1.54
10.667	0.00	0.15	0.539	O	|	|	|	1.54
10.750	0.00	0.15	0.538	O	|	|	|	1.54
10.833	0.00	0.15	0.537	O	|	|	|	1.53
10.917	0.00	0.15	0.536	O	|	|	|	1.53
11.000	0.00	0.15	0.535	O	|	|	|	1.53
11.083	0.00	0.15	0.534	O	|	|	|	1.53

11.167	0.00	0.15	0.533	O	|	|	|	|	1.53
11.250	0.00	0.15	0.532	O	|	|	|	|	1.52
11.333	0.00	0.15	0.531	O	|	|	|	|	1.52
11.417	0.00	0.14	0.530	O	|	|	|	|	1.52
11.500	0.00	0.14	0.529	O	|	|	|	|	1.52
11.583	0.00	0.14	0.528	O	|	|	|	|	1.52
11.667	0.00	0.14	0.527	O	|	|	|	|	1.51
11.750	0.00	0.14	0.526	O	|	|	|	|	1.51
11.833	0.00	0.14	0.525	O	|	|	|	|	1.51
11.917	0.00	0.14	0.524	O	|	|	|	|	1.51
12.000	0.00	0.14	0.523	O	|	|	|	|	1.51
12.083	0.00	0.14	0.522	O	|	|	|	|	1.50
12.167	0.00	0.14	0.521	O	|	|	|	|	1.50
12.250	0.00	0.14	0.520	O	|	|	|	|	1.50
12.333	0.00	0.14	0.519	O	|	|	|	|	1.50
12.417	0.00	0.14	0.518	O	|	|	|	|	1.50
12.500	0.00	0.14	0.517	O	|	|	|	|	1.49
12.583	0.00	0.14	0.516	O	|	|	|	|	1.49
12.667	0.00	0.14	0.515	O	|	|	|	|	1.49
12.750	0.00	0.14	0.514	O	|	|	|	|	1.49
12.833	0.00	0.14	0.514	O	|	|	|	|	1.49
12.917	0.00	0.14	0.513	O	|	|	|	|	1.48
13.000	0.00	0.14	0.512	O	|	|	|	|	1.48
13.083	0.00	0.13	0.511	O	|	|	|	|	1.48
13.167	0.00	0.13	0.510	O	|	|	|	|	1.48
13.250	0.00	0.13	0.509	O	|	|	|	|	1.48
13.333	0.00	0.13	0.508	O	|	|	|	|	1.47
13.417	0.00	0.13	0.507	O	|	|	|	|	1.47
13.500	0.00	0.13	0.506	O	|	|	|	|	

1.47

13.583	0.00	0.13	0.505	O	|	|	|	|	1.47
13.667	0.00	0.13	0.504	O	|	|	|	|	1.47
13.750	0.00	0.13	0.503	O	|	|	|	|	1.46
13.833	0.00	0.13	0.502	O	|	|	|	|	1.46
13.917	0.00	0.13	0.502	O	|	|	|	|	1.46
14.000	0.00	0.13	0.501	O	|	|	|	|	1.46
14.083	0.00	0.13	0.500	O	|	|	|	|	1.46
14.167	0.00	0.13	0.499	O	|	|	|	|	1.45
14.250	0.00	0.13	0.498	O	|	|	|	|	1.45
14.333	0.00	0.13	0.497	O	|	|	|	|	1.45
14.417	0.00	0.13	0.496	O	|	|	|	|	1.45
14.500	0.00	0.13	0.495	O	|	|	|	|	1.45
14.583	0.00	0.13	0.494	O	|	|	|	|	1.45
14.667	0.00	0.13	0.494	O	|	|	|	|	1.44
14.750	0.00	0.13	0.493	O	|	|	|	|	1.44
14.833	0.00	0.13	0.492	O	|	|	|	|	1.44
14.917	0.00	0.13	0.491	O	|	|	|	|	1.44
15.000	0.00	0.13	0.490	O	|	|	|	|	1.44
15.083	0.00	0.13	0.489	O	|	|	|	|	1.43
15.167	0.00	0.13	0.488	O	|	|	|	|	1.43
15.250	0.00	0.13	0.487	O	|	|	|	|	1.43
15.333	0.00	0.13	0.486	O	|	|	|	|	1.43
15.417	0.00	0.13	0.486	O	|	|	|	|	1.43
15.500	0.00	0.13	0.485	O	|	|	|	|	1.42
15.583	0.00	0.13	0.484	O	|	|	|	|	1.42
15.667	0.00	0.13	0.483	O	|	|	|	|	1.42
15.750	0.00	0.12	0.482	O	|	|	|	|	1.42
15.833	0.00	0.12	0.481	O	|	|	|	|	1.42

15.917	0.00	0.12	0.480	O	|	|	|	|	1.42
16.000	0.00	0.12	0.480	O	|	|	|	|	1.41
16.083	0.00	0.12	0.479	O	|	|	|	|	1.41
16.167	0.00	0.12	0.478	O	|	|	|	|	1.41
16.250	0.00	0.12	0.477	O	|	|	|	|	1.41
16.333	0.00	0.12	0.476	O	|	|	|	|	1.41
16.417	0.00	0.12	0.475	O	|	|	|	|	1.40
16.500	0.00	0.12	0.475	O	|	|	|	|	1.40
16.583	0.00	0.12	0.474	O	|	|	|	|	1.40
16.667	0.00	0.12	0.473	O	|	|	|	|	1.40
16.750	0.00	0.12	0.472	O	|	|	|	|	1.40
16.833	0.00	0.12	0.471	O	|	|	|	|	1.40
16.917	0.00	0.12	0.470	O	|	|	|	|	1.39
17.000	0.00	0.12	0.470	O	|	|	|	|	1.39
17.083	0.00	0.12	0.469	O	|	|	|	|	1.39
17.167	0.00	0.12	0.468	O	|	|	|	|	1.39
17.250	0.00	0.12	0.467	O	|	|	|	|	1.39
17.333	0.00	0.12	0.466	O	|	|	|	|	1.39
17.417	0.00	0.12	0.465	O	|	|	|	|	1.38
17.500	0.00	0.12	0.465	O	|	|	|	|	1.38
17.583	0.00	0.12	0.464	O	|	|	|	|	1.38
17.667	0.00	0.12	0.463	O	|	|	|	|	1.38
17.750	0.00	0.12	0.462	O	|	|	|	|	1.38
17.833	0.00	0.12	0.461	O	|	|	|	|	1.37
17.917	0.00	0.12	0.461	O	|	|	|	|	1.37
18.000	0.00	0.12	0.460	O	|	|	|	|	1.37
18.083	0.00	0.12	0.459	O	|	|	|	|	1.37
18.167	0.00	0.12	0.458	O	|	|	|	|	1.37
18.250	0.00	0.12	0.457	O	|	|	|	|	

1.37

18.333	0.00	0.12	0.456	O	|	|	|	1.36
18.417	0.00	0.12	0.456	O	|	|	|	1.36
18.500	0.00	0.12	0.455	O	|	|	|	1.36
18.583	0.00	0.11	0.454	O	|	|	|	1.36
18.667	0.00	0.11	0.453	O	|	|	|	1.36
18.750	0.00	0.11	0.453	O	|	|	|	1.36
18.833	0.00	0.11	0.452	O	|	|	|	1.35
18.917	0.00	0.11	0.451	O	|	|	|	1.35
19.000	0.00	0.11	0.450	O	|	|	|	1.35
19.083	0.00	0.11	0.449	O	|	|	|	1.35
19.167	0.00	0.11	0.449	O	|	|	|	1.35
19.250	0.00	0.11	0.448	O	|	|	|	1.35
19.333	0.00	0.11	0.447	O	|	|	|	1.34
19.417	0.00	0.11	0.446	O	|	|	|	1.34
19.500	0.00	0.11	0.446	O	|	|	|	1.34
19.583	0.00	0.11	0.445	O	|	|	|	1.34
19.667	0.00	0.11	0.444	O	|	|	|	1.34
19.750	0.00	0.11	0.443	O	|	|	|	1.34
19.833	0.00	0.11	0.442	O	|	|	|	1.33
19.917	0.00	0.11	0.442	O	|	|	|	1.33
20.000	0.00	0.11	0.441	O	|	|	|	1.33
20.083	0.00	0.11	0.440	O	|	|	|	1.33
20.167	0.00	0.11	0.439	O	|	|	|	1.33
20.250	0.00	0.11	0.439	O	|	|	|	1.33
20.333	0.00	0.11	0.438	O	|	|	|	1.32
20.417	0.00	0.11	0.437	O	|	|	|	1.32
20.500	0.00	0.11	0.436	O	|	|	|	1.32
20.583	0.00	0.11	0.436	O	|	|	|	1.32

20.667	0.00	0.11	0.435	O	|	|	|	|	1.32
20.750	0.00	0.11	0.434	O	|	|	|	|	1.32
20.833	0.00	0.11	0.433	O	|	|	|	|	1.32
20.917	0.00	0.11	0.433	O	|	|	|	|	1.31
21.000	0.00	0.11	0.432	O	|	|	|	|	1.31
21.083	0.00	0.11	0.431	O	|	|	|	|	1.31
21.167	0.00	0.11	0.430	O	|	|	|	|	1.31
21.250	0.00	0.11	0.430	O	|	|	|	|	1.31
21.333	0.00	0.11	0.429	O	|	|	|	|	1.31
21.417	0.00	0.11	0.428	O	|	|	|	|	1.30
21.500	0.00	0.11	0.428	O	|	|	|	|	1.30
21.583	0.00	0.11	0.427	O	|	|	|	|	1.30
21.667	0.00	0.11	0.426	O	|	|	|	|	1.30
21.750	0.00	0.10	0.425	O	|	|	|	|	1.30
21.833	0.00	0.10	0.425	O	|	|	|	|	1.30
21.917	0.00	0.10	0.424	O	|	|	|	|	1.29
22.000	0.00	0.10	0.423	O	|	|	|	|	1.29
22.083	0.00	0.10	0.423	O	|	|	|	|	1.29
22.167	0.00	0.10	0.422	O	|	|	|	|	1.29
22.250	0.00	0.10	0.421	O	|	|	|	|	1.29
22.333	0.00	0.10	0.420	O	|	|	|	|	1.29
22.417	0.00	0.10	0.420	O	|	|	|	|	1.29
22.500	0.00	0.10	0.419	O	|	|	|	|	1.28
22.583	0.00	0.10	0.418	O	|	|	|	|	1.28
22.667	0.00	0.10	0.418	O	|	|	|	|	1.28
22.750	0.00	0.10	0.417	O	|	|	|	|	1.28
22.833	0.00	0.10	0.416	O	|	|	|	|	1.28
22.917	0.00	0.10	0.415	O	|	|	|	|	1.28
23.000	0.00	0.10	0.415	O	|	|	|	|	

1.28

23.083	0.00	0.10	0.414	O	|	|	|	1.27
23.167	0.00	0.10	0.413	O	|	|	|	1.27
23.250	0.00	0.10	0.413	O	|	|	|	1.27
23.333	0.00	0.10	0.412	O	|	|	|	1.27
23.417	0.00	0.10	0.411	O	|	|	|	1.27
23.500	0.00	0.10	0.411	O	|	|	|	1.27
23.583	0.00	0.10	0.410	O	|	|	|	1.26
23.667	0.00	0.10	0.409	O	|	|	|	1.26
23.750	0.00	0.10	0.409	O	|	|	|	1.26
23.833	0.00	0.10	0.408	O	|	|	|	1.26
23.917	0.00	0.10	0.407	O	|	|	|	1.26
24.000	0.00	0.10	0.407	O	|	|	|	1.26
24.083	0.00	0.10	0.406	O	|	|	|	1.26
24.167	0.00	0.10	0.405	O	|	|	|	1.25
24.250	0.00	0.10	0.404	O	|	|	|	1.25
24.333	0.00	0.10	0.404	O	|	|	|	1.25
24.417	0.00	0.10	0.403	O	|	|	|	1.25
24.500	0.00	0.10	0.402	O	|	|	|	1.25
24.583	0.00	0.10	0.402	O	|	|	|	1.25
24.667	0.00	0.10	0.401	O	|	|	|	1.25
24.750	0.00	0.09	0.401	O	|	|	|	1.24
24.833	0.00	0.09	0.400	O	|	|	|	1.24
24.917	0.00	0.09	0.399	O	|	|	|	1.24
25.000	0.00	0.09	0.399	O	|	|	|	1.24
25.083	0.00	0.09	0.398	O	|	|	|	1.24
25.167	0.00	0.09	0.397	O	|	|	|	1.24
25.250	0.00	0.09	0.397	O	|	|	|	1.24
25.333	0.00	0.09	0.396	O	|	|	|	1.23

25.417	0.00	0.09	0.395	O	|	|	|	|	1.23
25.500	0.00	0.09	0.395	O	|	|	|	|	1.23
25.583	0.00	0.09	0.394	O	|	|	|	|	1.23
25.667	0.00	0.09	0.394	O	|	|	|	|	1.23
25.750	0.00	0.09	0.393	O	|	|	|	|	1.23
25.833	0.00	0.09	0.392	O	|	|	|	|	1.23
25.917	0.00	0.09	0.392	O	|	|	|	|	1.22
26.000	0.00	0.09	0.391	O	|	|	|	|	1.22
26.083	0.00	0.09	0.391	O	|	|	|	|	1.22
26.167	0.00	0.09	0.390	O	|	|	|	|	1.22
26.250	0.00	0.08	0.389	O	|	|	|	|	1.22
26.333	0.00	0.08	0.389	O	|	|	|	|	1.22
26.417	0.00	0.08	0.388	O	|	|	|	|	1.22
26.500	0.00	0.08	0.388	O	|	|	|	|	1.21
26.583	0.00	0.08	0.387	O	|	|	|	|	1.21
26.667	0.00	0.08	0.386	O	|	|	|	|	1.21
26.750	0.00	0.08	0.386	O	|	|	|	|	1.21
26.833	0.00	0.08	0.385	O	|	|	|	|	1.21
26.917	0.00	0.08	0.385	O	|	|	|	|	1.21
27.000	0.00	0.08	0.384	O	|	|	|	|	1.21
27.083	0.00	0.08	0.384	O	|	|	|	|	1.21
27.167	0.00	0.08	0.383	O	|	|	|	|	1.20
27.250	0.00	0.08	0.383	O	|	|	|	|	1.20
27.333	0.00	0.08	0.382	O	|	|	|	|	1.20
27.417	0.00	0.08	0.382	O	|	|	|	|	1.20
27.500	0.00	0.08	0.381	O	|	|	|	|	1.20
27.583	0.00	0.08	0.380	O	|	|	|	|	1.20
27.667	0.00	0.08	0.380	O	|	|	|	|	1.20
27.750	0.00	0.08	0.379	O	|	|	|	|	

1.20

27.833	0.00	0.08	0.379	O	|	|	|	|	1.19
27.917	0.00	0.08	0.378	O	|	|	|	|	1.19
28.000	0.00	0.07	0.378	O	|	|	|	|	1.19
28.083	0.00	0.07	0.377	O	|	|	|	|	1.19
28.167	0.00	0.07	0.377	O	|	|	|	|	1.19
28.250	0.00	0.07	0.376	O	|	|	|	|	1.19
28.333	0.00	0.07	0.376	O	|	|	|	|	1.19
28.417	0.00	0.07	0.375	O	|	|	|	|	1.19
28.500	0.00	0.07	0.375	O	|	|	|	|	1.19
28.583	0.00	0.07	0.374	O	|	|	|	|	1.18
28.667	0.00	0.07	0.374	O	|	|	|	|	1.18
28.750	0.00	0.07	0.373	O	|	|	|	|	1.18
28.833	0.00	0.07	0.373	O	|	|	|	|	1.18
28.917	0.00	0.07	0.372	O	|	|	|	|	1.18
29.000	0.00	0.07	0.372	O	|	|	|	|	1.18
29.083	0.00	0.07	0.371	O	|	|	|	|	1.18
29.167	0.00	0.07	0.371	O	|	|	|	|	1.18
29.250	0.00	0.07	0.370	O	|	|	|	|	1.18
29.333	0.00	0.07	0.370	O	|	|	|	|	1.17
29.417	0.00	0.07	0.370	O	|	|	|	|	1.17
29.500	0.00	0.07	0.369	O	|	|	|	|	1.17
29.583	0.00	0.07	0.369	O	|	|	|	|	1.17
29.667	0.00	0.07	0.368	O	|	|	|	|	1.17
29.750	0.00	0.07	0.368	O	|	|	|	|	1.17
29.833	0.00	0.07	0.367	O	|	|	|	|	1.17
29.917	0.00	0.07	0.367	O	|	|	|	|	1.17
30.000	0.00	0.06	0.366	O	|	|	|	|	1.17
30.083	0.00	0.06	0.366	O	|	|	|	|	1.16

30.167	0.00	0.06	0.365	O	|	|	|	|	1.16
30.250	0.00	0.06	0.365	O	|	|	|	|	1.16
30.333	0.00	0.06	0.365	O	|	|	|	|	1.16
30.417	0.00	0.06	0.364	O	|	|	|	|	1.16
30.500	0.00	0.06	0.364	O	|	|	|	|	1.16
30.583	0.00	0.06	0.363	O	|	|	|	|	1.16
30.667	0.00	0.06	0.363	O	|	|	|	|	1.16
30.750	0.00	0.06	0.362	O	|	|	|	|	1.16
30.833	0.00	0.06	0.362	O	|	|	|	|	1.16
30.917	0.00	0.06	0.362	O	|	|	|	|	1.15
31.000	0.00	0.06	0.361	O	|	|	|	|	1.15
31.083	0.00	0.06	0.361	O	|	|	|	|	1.15
31.167	0.00	0.06	0.360	O	|	|	|	|	1.15
31.250	0.00	0.06	0.360	O	|	|	|	|	1.15
31.333	0.00	0.06	0.360	O	|	|	|	|	1.15
31.417	0.00	0.06	0.359	O	|	|	|	|	1.15
31.500	0.00	0.06	0.359	O	|	|	|	|	1.15
31.583	0.00	0.06	0.358	O	|	|	|	|	1.15
31.667	0.00	0.06	0.358	O	|	|	|	|	1.15
31.750	0.00	0.06	0.358	O	|	|	|	|	1.15
31.833	0.00	0.06	0.357	O	|	|	|	|	1.14
31.917	0.00	0.06	0.357	O	|	|	|	|	1.14
32.000	0.00	0.06	0.356	O	|	|	|	|	1.14
32.083	0.00	0.06	0.356	O	|	|	|	|	1.14
32.167	0.00	0.06	0.356	O	|	|	|	|	1.14
32.250	0.00	0.05	0.355	O	|	|	|	|	1.14
32.333	0.00	0.05	0.355	O	|	|	|	|	1.14
32.417	0.00	0.05	0.354	O	|	|	|	|	1.14
32.500	0.00	0.05	0.354	O	|	|	|	|	

1.14

32.583	0.00	0.05	0.354	O	|	|	|	|	1.14
32.667	0.00	0.05	0.353	O	|	|	|	|	1.14
32.750	0.00	0.05	0.353	O	|	|	|	|	1.14
32.833	0.00	0.05	0.353	O	|	|	|	|	1.13
32.917	0.00	0.05	0.352	O	|	|	|	|	1.13
33.000	0.00	0.05	0.352	O	|	|	|	|	1.13
33.083	0.00	0.05	0.352	O	|	|	|	|	1.13
33.167	0.00	0.05	0.351	O	|	|	|	|	1.13
33.250	0.00	0.05	0.351	O	|	|	|	|	1.13
33.333	0.00	0.05	0.350	O	|	|	|	|	1.13
33.417	0.00	0.05	0.350	O	|	|	|	|	1.13
33.500	0.00	0.05	0.350	O	|	|	|	|	1.13
33.583	0.00	0.05	0.349	O	|	|	|	|	1.13
33.667	0.00	0.05	0.349	O	|	|	|	|	1.13
33.750	0.00	0.05	0.349	O	|	|	|	|	1.13
33.833	0.00	0.05	0.348	O	|	|	|	|	1.12
33.917	0.00	0.05	0.348	O	|	|	|	|	1.12
34.000	0.00	0.05	0.348	O	|	|	|	|	1.12
34.083	0.00	0.05	0.347	O	|	|	|	|	1.12
34.167	0.00	0.05	0.347	O	|	|	|	|	1.12
34.250	0.00	0.05	0.347	O	|	|	|	|	1.12
34.333	0.00	0.05	0.346	O	|	|	|	|	1.12
34.417	0.00	0.05	0.346	O	|	|	|	|	1.12
34.500	0.00	0.05	0.346	O	|	|	|	|	1.12
34.583	0.00	0.05	0.345	O	|	|	|	|	1.12
34.667	0.00	0.05	0.345	O	|	|	|	|	1.12
34.750	0.00	0.05	0.345	O	|	|	|	|	1.12
34.833	0.00	0.05	0.345	O	|	|	|	|	1.12

34.917	0.00	0.05	0.344	O	|	|	|	|	1.12
35.000	0.00	0.04	0.344	O	|	|	|	|	1.11
35.083	0.00	0.04	0.344	O	|	|	|	|	1.11
35.167	0.00	0.04	0.343	O	|	|	|	|	1.11
35.250	0.00	0.04	0.343	O	|	|	|	|	1.11
35.333	0.00	0.04	0.343	O	|	|	|	|	1.11
35.417	0.00	0.04	0.342	O	|	|	|	|	1.11
35.500	0.00	0.04	0.342	O	|	|	|	|	1.11
35.583	0.00	0.04	0.342	O	|	|	|	|	1.11
35.667	0.00	0.04	0.341	O	|	|	|	|	1.11
35.750	0.00	0.04	0.341	O	|	|	|	|	1.11
35.833	0.00	0.04	0.341	O	|	|	|	|	1.11
35.917	0.00	0.04	0.341	O	|	|	|	|	1.11
36.000	0.00	0.04	0.340	O	|	|	|	|	1.11
36.083	0.00	0.04	0.340	O	|	|	|	|	1.11
36.167	0.00	0.04	0.340	O	|	|	|	|	1.10
36.250	0.00	0.04	0.339	O	|	|	|	|	1.10
36.333	0.00	0.04	0.339	O	|	|	|	|	1.10
36.417	0.00	0.04	0.339	O	|	|	|	|	1.10
36.500	0.00	0.04	0.339	O	|	|	|	|	1.10
36.583	0.00	0.04	0.338	O	|	|	|	|	1.10
36.667	0.00	0.04	0.338	O	|	|	|	|	1.10
36.750	0.00	0.04	0.338	O	|	|	|	|	1.10
36.833	0.00	0.04	0.338	O	|	|	|	|	1.10
36.917	0.00	0.04	0.337	O	|	|	|	|	1.10
37.000	0.00	0.04	0.337	O	|	|	|	|	1.10
37.083	0.00	0.04	0.337	O	|	|	|	|	1.10
37.167	0.00	0.04	0.336	O	|	|	|	|	1.10
37.250	0.00	0.04	0.336	O	|	|	|	|	

1.10

37.333	0.00	0.04	0.336	O	|	|	|	|	1.10
37.417	0.00	0.04	0.336	O	|	|	|	|	1.10
37.500	0.00	0.04	0.335	O	|	|	|	|	1.09
37.583	0.00	0.04	0.335	O	|	|	|	|	1.09
37.667	0.00	0.04	0.335	O	|	|	|	|	1.09
37.750	0.00	0.04	0.335	O	|	|	|	|	1.09
37.833	0.00	0.04	0.334	O	|	|	|	|	1.09
37.917	0.00	0.04	0.334	O	|	|	|	|	1.09
38.000	0.00	0.04	0.334	O	|	|	|	|	1.09
38.083	0.00	0.04	0.334	O	|	|	|	|	1.09
38.167	0.00	0.04	0.333	O	|	|	|	|	1.09
38.250	0.00	0.04	0.333	O	|	|	|	|	1.09
38.333	0.00	0.04	0.333	O	|	|	|	|	1.09
38.417	0.00	0.04	0.333	O	|	|	|	|	1.09
38.500	0.00	0.03	0.332	O	|	|	|	|	1.09
38.583	0.00	0.03	0.332	O	|	|	|	|	1.09
38.667	0.00	0.03	0.332	O	|	|	|	|	1.09
38.750	0.00	0.03	0.332	O	|	|	|	|	1.09
38.833	0.00	0.03	0.331	O	|	|	|	|	1.09
38.917	0.00	0.03	0.331	O	|	|	|	|	1.09
39.000	0.00	0.03	0.331	O	|	|	|	|	1.08
39.083	0.00	0.03	0.331	O	|	|	|	|	1.08
39.167	0.00	0.03	0.331	O	|	|	|	|	1.08
39.250	0.00	0.03	0.330	O	|	|	|	|	1.08
39.333	0.00	0.03	0.330	O	|	|	|	|	1.08
39.417	0.00	0.03	0.330	O	|	|	|	|	1.08
39.500	0.00	0.03	0.330	O	|	|	|	|	1.08
39.583	0.00	0.03	0.329	O	|	|	|	|	1.08

39.667	0.00	0.03	0.329	O	|	|	|	|	1.08
39.750	0.00	0.03	0.329	O	|	|	|	|	1.08
39.833	0.00	0.03	0.329	O	|	|	|	|	1.08
39.917	0.00	0.03	0.329	O	|	|	|	|	1.08
40.000	0.00	0.03	0.328	O	|	|	|	|	1.08
40.083	0.00	0.03	0.328	O	|	|	|	|	1.08
40.167	0.00	0.03	0.328	O	|	|	|	|	1.08
40.250	0.00	0.03	0.328	O	|	|	|	|	1.08
40.333	0.00	0.03	0.327	O	|	|	|	|	1.08
40.417	0.00	0.03	0.327	O	|	|	|	|	1.08
40.500	0.00	0.03	0.327	O	|	|	|	|	1.08
40.583	0.00	0.03	0.327	O	|	|	|	|	1.08
40.667	0.00	0.03	0.327	O	|	|	|	|	1.07
40.750	0.00	0.03	0.326	O	|	|	|	|	1.07
40.833	0.00	0.03	0.326	O	|	|	|	|	1.07
40.917	0.00	0.03	0.326	O	|	|	|	|	1.07
41.000	0.00	0.03	0.326	O	|	|	|	|	1.07
41.083	0.00	0.03	0.326	O	|	|	|	|	1.07
41.167	0.00	0.03	0.325	O	|	|	|	|	1.07
41.250	0.00	0.03	0.325	O	|	|	|	|	1.07
41.333	0.00	0.03	0.325	O	|	|	|	|	1.07
41.417	0.00	0.03	0.325	O	|	|	|	|	1.07
41.500	0.00	0.03	0.325	O	|	|	|	|	1.07
41.583	0.00	0.03	0.324	O	|	|	|	|	1.07
41.667	0.00	0.03	0.324	O	|	|	|	|	1.07
41.750	0.00	0.03	0.324	O	|	|	|	|	1.07
41.833	0.00	0.03	0.324	O	|	|	|	|	1.07
41.917	0.00	0.03	0.324	O	|	|	|	|	1.07
42.000	0.00	0.03	0.324	O	|	|	|	|	

1.07

42.083	0.00	0.03	0.323	O	|	|	|	1.07
42.167	0.00	0.03	0.323	O	|	|	|	1.07
42.250	0.00	0.03	0.323	O	|	|	|	1.07
42.333	0.00	0.03	0.323	O	|	|	|	1.07
42.417	0.00	0.03	0.323	O	|	|	|	1.07
42.500	0.00	0.03	0.322	O	|	|	|	1.07
42.583	0.00	0.03	0.322	O	|	|	|	1.06
42.667	0.00	0.03	0.322	O	|	|	|	1.06
42.750	0.00	0.03	0.322	O	|	|	|	1.06
42.833	0.00	0.03	0.322	O	|	|	|	1.06
42.917	0.00	0.03	0.322	O	|	|	|	1.06
43.000	0.00	0.03	0.321	O	|	|	|	1.06
43.083	0.00	0.02	0.321	O	|	|	|	1.06
43.167	0.00	0.02	0.321	O	|	|	|	1.06
43.250	0.00	0.02	0.321	O	|	|	|	1.06
43.333	0.00	0.02	0.321	O	|	|	|	1.06
43.417	0.00	0.02	0.321	O	|	|	|	1.06
43.500	0.00	0.02	0.320	O	|	|	|	1.06
43.583	0.00	0.02	0.320	O	|	|	|	1.06
43.667	0.00	0.02	0.320	O	|	|	|	1.06
43.750	0.00	0.02	0.320	O	|	|	|	1.06
43.833	0.00	0.02	0.320	O	|	|	|	1.06
43.917	0.00	0.02	0.320	O	|	|	|	1.06
44.000	0.00	0.02	0.319	O	|	|	|	1.06
44.083	0.00	0.02	0.319	O	|	|	|	1.06
44.167	0.00	0.02	0.319	O	|	|	|	1.06
44.250	0.00	0.02	0.319	O	|	|	|	1.06
44.333	0.00	0.02	0.319	O	|	|	|	1.06

44.417	0.00	0.02	0.319	O	|	|	|	|	1.06
44.500	0.00	0.02	0.318	O	|	|	|	|	1.06
44.583	0.00	0.02	0.318	O	|	|	|	|	1.06
44.667	0.00	0.02	0.318	O	|	|	|	|	1.06
44.750	0.00	0.02	0.318	O	|	|	|	|	1.05
44.833	0.00	0.02	0.318	O	|	|	|	|	1.05
44.917	0.00	0.02	0.318	O	|	|	|	|	1.05
45.000	0.00	0.02	0.318	O	|	|	|	|	1.05
45.083	0.00	0.02	0.317	O	|	|	|	|	1.05
45.167	0.00	0.02	0.317	O	|	|	|	|	1.05
45.250	0.00	0.02	0.317	O	|	|	|	|	1.05
45.333	0.00	0.02	0.317	O	|	|	|	|	1.05
45.417	0.00	0.02	0.317	O	|	|	|	|	1.05
45.500	0.00	0.02	0.317	O	|	|	|	|	1.05
45.583	0.00	0.02	0.316	O	|	|	|	|	1.05
45.667	0.00	0.02	0.316	O	|	|	|	|	1.05
45.750	0.00	0.02	0.316	O	|	|	|	|	1.05
45.833	0.00	0.02	0.316	O	|	|	|	|	1.05
45.917	0.00	0.02	0.316	O	|	|	|	|	1.05
46.000	0.00	0.02	0.316	O	|	|	|	|	1.05
46.083	0.00	0.02	0.316	O	|	|	|	|	1.05
46.167	0.00	0.02	0.316	O	|	|	|	|	1.05
46.250	0.00	0.02	0.315	O	|	|	|	|	1.05
46.333	0.00	0.02	0.315	O	|	|	|	|	1.05
46.417	0.00	0.02	0.315	O	|	|	|	|	1.05
46.500	0.00	0.02	0.315	O	|	|	|	|	1.05
46.583	0.00	0.02	0.315	O	|	|	|	|	1.05
46.667	0.00	0.02	0.315	O	|	|	|	|	1.05
46.750	0.00	0.02	0.315	O	|	|	|	|	

1.05

46.833	0.00	0.02	0.314	O	|	|	|	|	1.05
46.917	0.00	0.02	0.314	O	|	|	|	|	1.05
47.000	0.00	0.02	0.314	O	|	|	|	|	1.05
47.083	0.00	0.02	0.314	O	|	|	|	|	1.05
47.167	0.00	0.02	0.314	O	|	|	|	|	1.05
47.250	0.00	0.02	0.314	O	|	|	|	|	1.05
47.333	0.00	0.02	0.314	O	|	|	|	|	1.05
47.417	0.00	0.02	0.314	O	|	|	|	|	1.04
47.500	0.00	0.02	0.313	O	|	|	|	|	1.04
47.583	0.00	0.02	0.313	O	|	|	|	|	1.04
47.667	0.00	0.02	0.313	O	|	|	|	|	1.04
47.750	0.00	0.02	0.313	O	|	|	|	|	1.04
47.833	0.00	0.02	0.313	O	|	|	|	|	1.04
47.917	0.00	0.02	0.313	O	|	|	|	|	1.04
48.000	0.00	0.02	0.313	O	|	|	|	|	1.04
48.083	0.00	0.02	0.313	O	|	|	|	|	1.04
48.167	0.00	0.02	0.312	O	|	|	|	|	1.04
48.250	0.00	0.02	0.312	O	|	|	|	|	1.04
48.333	0.00	0.02	0.312	O	|	|	|	|	1.04
48.417	0.00	0.02	0.312	O	|	|	|	|	1.04
48.500	0.00	0.02	0.312	O	|	|	|	|	1.04
48.583	0.00	0.02	0.312	O	|	|	|	|	1.04
48.667	0.00	0.02	0.312	O	|	|	|	|	1.04
48.750	0.00	0.02	0.312	O	|	|	|	|	1.04
48.833	0.00	0.02	0.312	O	|	|	|	|	1.04
48.917	0.00	0.02	0.311	O	|	|	|	|	1.04
49.000	0.00	0.02	0.311	O	|	|	|	|	1.04
49.083	0.00	0.02	0.311	O	|	|	|	|	1.04

49.167	0.00	0.02	0.311	O	|	|	|	|	1.04
49.250	0.00	0.02	0.311	O	|	|	|	|	1.04
49.333	0.00	0.02	0.311	O	|	|	|	|	1.04
49.417	0.00	0.02	0.311	O	|	|	|	|	1.04
49.500	0.00	0.02	0.311	O	|	|	|	|	1.04
49.583	0.00	0.02	0.311	O	|	|	|	|	1.04
49.667	0.00	0.02	0.310	O	|	|	|	|	1.04
49.750	0.00	0.02	0.310	O	|	|	|	|	1.04
49.833	0.00	0.02	0.310	O	|	|	|	|	1.04
49.917	0.00	0.02	0.310	O	|	|	|	|	1.04
50.000	0.00	0.02	0.310	O	|	|	|	|	1.04
50.083	0.00	0.01	0.310	O	|	|	|	|	1.04
50.167	0.00	0.01	0.310	O	|	|	|	|	1.04
50.250	0.00	0.01	0.310	O	|	|	|	|	1.04
50.333	0.00	0.01	0.310	O	|	|	|	|	1.04
50.417	0.00	0.01	0.309	O	|	|	|	|	1.04
50.500	0.00	0.01	0.309	O	|	|	|	|	1.04
50.583	0.00	0.01	0.309	O	|	|	|	|	1.04
50.667	0.00	0.01	0.309	O	|	|	|	|	1.03
50.750	0.00	0.01	0.309	O	|	|	|	|	1.03
50.833	0.00	0.01	0.309	O	|	|	|	|	1.03
50.917	0.00	0.01	0.309	O	|	|	|	|	1.03
51.000	0.00	0.01	0.309	O	|	|	|	|	1.03
51.083	0.00	0.01	0.309	O	|	|	|	|	1.03
51.167	0.00	0.01	0.309	O	|	|	|	|	1.03
51.250	0.00	0.01	0.309	O	|	|	|	|	1.03
51.333	0.00	0.01	0.308	O	|	|	|	|	1.03
51.417	0.00	0.01	0.308	O	|	|	|	|	1.03
51.500	0.00	0.01	0.308	O	|	|	|	|	

1.03

51.583	0.00	0.01	0.308	O	|	|	|	|	1.03
51.667	0.00	0.01	0.308	O	|	|	|	|	1.03
51.750	0.00	0.01	0.308	O	|	|	|	|	1.03
51.833	0.00	0.01	0.308	O	|	|	|	|	1.03
51.917	0.00	0.01	0.308	O	|	|	|	|	1.03
52.000	0.00	0.01	0.308	O	|	|	|	|	1.03
52.083	0.00	0.01	0.308	O	|	|	|	|	1.03
52.167	0.00	0.01	0.307	O	|	|	|	|	1.03
52.250	0.00	0.01	0.307	O	|	|	|	|	1.03
52.333	0.00	0.01	0.307	O	|	|	|	|	1.03
52.417	0.00	0.01	0.307	O	|	|	|	|	1.03
52.500	0.00	0.01	0.307	O	|	|	|	|	1.03
52.583	0.00	0.01	0.307	O	|	|	|	|	1.03
52.667	0.00	0.01	0.307	O	|	|	|	|	1.03
52.750	0.00	0.01	0.307	O	|	|	|	|	1.03
52.833	0.00	0.01	0.307	O	|	|	|	|	1.03
52.917	0.00	0.01	0.307	O	|	|	|	|	1.03
53.000	0.00	0.01	0.307	O	|	|	|	|	1.03
53.083	0.00	0.01	0.307	O	|	|	|	|	1.03
53.167	0.00	0.01	0.306	O	|	|	|	|	1.03
53.250	0.00	0.01	0.306	O	|	|	|	|	1.03
53.333	0.00	0.01	0.306	O	|	|	|	|	1.03
53.417	0.00	0.01	0.306	O	|	|	|	|	1.03
53.500	0.00	0.01	0.306	O	|	|	|	|	1.03
53.583	0.00	0.01	0.306	O	|	|	|	|	1.03
53.667	0.00	0.01	0.306	O	|	|	|	|	1.03
53.750	0.00	0.01	0.306	O	|	|	|	|	1.03
53.833	0.00	0.01	0.306	O	|	|	|	|	1.03

53.917	0.00	0.01	0.306	O	|	|	|	|	1.03
54.000	0.00	0.01	0.306	O	|	|	|	|	1.03
54.083	0.00	0.01	0.306	O	|	|	|	|	1.03
54.167	0.00	0.01	0.306	O	|	|	|	|	1.03
54.250	0.00	0.01	0.305	O	|	|	|	|	1.03
54.333	0.00	0.01	0.305	O	|	|	|	|	1.03
54.417	0.00	0.01	0.305	O	|	|	|	|	1.03
54.500	0.00	0.01	0.305	O	|	|	|	|	1.03
54.583	0.00	0.01	0.305	O	|	|	|	|	1.03
54.667	0.00	0.01	0.305	O	|	|	|	|	1.03
54.750	0.00	0.01	0.305	O	|	|	|	|	1.03
54.833	0.00	0.01	0.305	O	|	|	|	|	1.03
54.917	0.00	0.01	0.305	O	|	|	|	|	1.02
55.000	0.00	0.01	0.305	O	|	|	|	|	1.02
55.083	0.00	0.01	0.305	O	|	|	|	|	1.02
55.167	0.00	0.01	0.305	O	|	|	|	|	1.02
55.250	0.00	0.01	0.305	O	|	|	|	|	1.02
55.333	0.00	0.01	0.304	O	|	|	|	|	1.02
55.417	0.00	0.01	0.304	O	|	|	|	|	1.02
55.500	0.00	0.01	0.304	O	|	|	|	|	1.02
55.583	0.00	0.01	0.304	O	|	|	|	|	1.02
55.667	0.00	0.01	0.304	O	|	|	|	|	1.02
55.750	0.00	0.01	0.304	O	|	|	|	|	1.02
55.833	0.00	0.01	0.304	O	|	|	|	|	1.02
55.917	0.00	0.01	0.304	O	|	|	|	|	1.02
56.000	0.00	0.01	0.304	O	|	|	|	|	1.02
56.083	0.00	0.01	0.304	O	|	|	|	|	1.02
56.167	0.00	0.01	0.304	O	|	|	|	|	1.02
56.250	0.00	0.01	0.304	O	|	|	|	|	

1.02

56.333	0.00	0.01	0.304	O	|	|	|	|	1.02
56.417	0.00	0.01	0.304	O	|	|	|	|	1.02
56.500	0.00	0.01	0.304	O	|	|	|	|	1.02
56.583	0.00	0.01	0.303	O	|	|	|	|	1.02
56.667	0.00	0.01	0.303	O	|	|	|	|	1.02
56.750	0.00	0.01	0.303	O	|	|	|	|	1.02
56.833	0.00	0.01	0.303	O	|	|	|	|	1.02
56.917	0.00	0.01	0.303	O	|	|	|	|	1.02
57.000	0.00	0.01	0.303	O	|	|	|	|	1.02
57.083	0.00	0.01	0.303	O	|	|	|	|	1.02
57.167	0.00	0.01	0.303	O	|	|	|	|	1.02
57.250	0.00	0.01	0.303	O	|	|	|	|	1.02
57.333	0.00	0.01	0.303	O	|	|	|	|	1.02
57.417	0.00	0.01	0.303	O	|	|	|	|	1.02
57.500	0.00	0.01	0.303	O	|	|	|	|	1.02
57.583	0.00	0.01	0.303	O	|	|	|	|	1.02
57.667	0.00	0.01	0.303	O	|	|	|	|	1.02
57.750	0.00	0.01	0.303	O	|	|	|	|	1.02
57.833	0.00	0.01	0.303	O	|	|	|	|	1.02
57.917	0.00	0.01	0.302	O	|	|	|	|	1.02
58.000	0.00	0.01	0.302	O	|	|	|	|	1.02
58.083	0.00	0.01	0.302	O	|	|	|	|	1.02
58.167	0.00	0.01	0.302	O	|	|	|	|	1.02
58.250	0.00	0.01	0.302	O	|	|	|	|	1.02
58.333	0.00	0.01	0.302	O	|	|	|	|	1.02
58.417	0.00	0.01	0.302	O	|	|	|	|	1.02
58.500	0.00	0.01	0.302	O	|	|	|	|	1.02
58.583	0.00	0.01	0.302	O	|	|	|	|	1.02

58.667	0.00	0.01	0.302	O	|	|	|	|	1.02
58.750	0.00	0.01	0.302	O	|	|	|	|	1.02
58.833	0.00	0.01	0.302	O	|	|	|	|	1.02
58.917	0.00	0.01	0.302	O	|	|	|	|	1.02
59.000	0.00	0.01	0.302	O	|	|	|	|	1.02
59.083	0.00	0.01	0.302	O	|	|	|	|	1.02
59.167	0.00	0.01	0.302	O	|	|	|	|	1.02
59.250	0.00	0.01	0.302	O	|	|	|	|	1.02
59.333	0.00	0.01	0.302	O	|	|	|	|	1.02
59.417	0.00	0.01	0.301	O	|	|	|	|	1.02
59.500	0.00	0.01	0.301	O	|	|	|	|	1.02
59.583	0.00	0.01	0.301	O	|	|	|	|	1.02
59.667	0.00	0.01	0.301	O	|	|	|	|	1.02
59.750	0.00	0.01	0.301	O	|	|	|	|	1.02
59.833	0.00	0.01	0.301	O	|	|	|	|	1.02
59.917	0.00	0.01	0.301	O	|	|	|	|	1.02
60.000	0.00	0.01	0.301	O	|	|	|	|	1.02
60.083	0.00	0.01	0.301	O	|	|	|	|	1.02
60.167	0.00	0.01	0.301	O	|	|	|	|	1.02
60.250	0.00	0.01	0.301	O	|	|	|	|	1.02
60.333	0.00	0.01	0.301	O	|	|	|	|	1.02
60.417	0.00	0.01	0.301	O	|	|	|	|	1.02
60.500	0.00	0.01	0.301	O	|	|	|	|	1.02
60.583	0.00	0.01	0.301	O	|	|	|	|	1.02
60.667	0.00	0.01	0.301	O	|	|	|	|	1.02
60.750	0.00	0.01	0.301	O	|	|	|	|	1.02
60.833	0.00	0.01	0.301	O	|	|	|	|	1.02
60.917	0.00	0.01	0.301	O	|	|	|	|	1.02
61.000	0.00	0.01	0.301	O	|	|	|	|	

1.02

61.083	0.00	0.01	0.301	O					1.01
61.167	0.00	0.01	0.300	O					1.01
61.250	0.00	0.01	0.300	O					1.01
61.333	0.00	0.01	0.300	O					1.01
61.417	0.00	0.01	0.300	O					1.01
61.500	0.00	0.01	0.300	O					1.01
61.583	0.00	0.01	0.300	O					1.01
61.667	0.00	0.01	0.300	O					1.01
61.750	0.00	0.01	0.300	O					1.01
61.833	0.00	0.01	0.300	O					1.01
61.917	0.00	0.01	0.300	O					1.01
62.000	0.00	0.01	0.300	O					1.01
62.083	0.00	0.01	0.300	O					1.01
62.167	0.00	0.01	0.300	O					1.01
62.250	0.00	0.01	0.300	O					1.01
62.333	0.00	0.01	0.300	O					1.01
62.417	0.00	0.01	0.300	O					1.01
62.500	0.00	0.01	0.300	O					1.01
62.583	0.00	0.01	0.300	O					1.01
62.667	0.00	0.01	0.300	O					1.01
62.750	0.00	0.01	0.300	O					1.01
62.833	0.00	0.01	0.300	O					1.01
62.917	0.00	0.01	0.300	O					1.01
63.000	0.00	0.01	0.300	O					1.01
63.083	0.00	0.01	0.299	O					1.01
63.167	0.00	0.01	0.299	O					1.01
63.250	0.00	0.01	0.299	O					1.01
63.333	0.00	0.01	0.299	O					1.01

63.417	0.00	0.01	0.299	O	|	|	|	|	1.01
63.500	0.00	0.01	0.299	O	|	|	|	|	1.01
63.583	0.00	0.01	0.299	O	|	|	|	|	1.01
63.667	0.00	0.01	0.299	O	|	|	|	|	1.01
63.750	0.00	0.01	0.299	O	|	|	|	|	1.01
63.833	0.00	0.01	0.299	O	|	|	|	|	1.01
63.917	0.00	0.01	0.299	O	|	|	|	|	1.01
64.000	0.00	0.01	0.299	O	|	|	|	|	1.01
64.083	0.00	0.01	0.299	O	|	|	|	|	1.01
64.167	0.00	0.01	0.299	O	|	|	|	|	1.01
64.250	0.00	0.01	0.299	O	|	|	|	|	1.01
64.333	0.00	0.01	0.299	O	|	|	|	|	1.01
64.417	0.00	0.01	0.299	O	|	|	|	|	1.01
64.500	0.00	0.01	0.299	O	|	|	|	|	1.01
64.583	0.00	0.01	0.299	O	|	|	|	|	1.01
64.667	0.00	0.01	0.299	O	|	|	|	|	1.01
64.750	0.00	0.01	0.299	O	|	|	|	|	1.01
64.833	0.00	0.01	0.299	O	|	|	|	|	1.01
64.917	0.00	0.01	0.299	O	|	|	|	|	1.01
65.000	0.00	0.01	0.299	O	|	|	|	|	1.01
65.083	0.00	0.01	0.299	O	|	|	|	|	1.01
65.167	0.00	0.01	0.299	O	|	|	|	|	1.01
65.250	0.00	0.00	0.299	O	|	|	|	|	1.01
65.333	0.00	0.00	0.298	O	|	|	|	|	1.01
65.417	0.00	0.00	0.298	O	|	|	|	|	1.01
65.500	0.00	0.00	0.298	O	|	|	|	|	1.01
65.583	0.00	0.00	0.298	O	|	|	|	|	1.01
65.667	0.00	0.00	0.298	O	|	|	|	|	1.01
65.750	0.00	0.00	0.298	O	|	|	|	|	

1.01

65.833	0.00	0.00	0.298	O	|	|	|	|	1.01
65.917	0.00	0.00	0.298	O	|	|	|	|	1.01
66.000	0.00	0.00	0.298	O	|	|	|	|	1.01
66.083	0.00	0.00	0.298	O	|	|	|	|	1.01
66.167	0.00	0.00	0.298	O	|	|	|	|	1.01
66.250	0.00	0.00	0.298	O	|	|	|	|	1.01
66.333	0.00	0.00	0.298	O	|	|	|	|	1.01
66.417	0.00	0.00	0.298	O	|	|	|	|	1.01
66.500	0.00	0.00	0.298	O	|	|	|	|	1.01
66.583	0.00	0.00	0.298	O	|	|	|	|	1.01
66.667	0.00	0.00	0.298	O	|	|	|	|	1.01
66.750	0.00	0.00	0.298	O	|	|	|	|	1.01
66.833	0.00	0.00	0.298	O	|	|	|	|	1.01
66.917	0.00	0.00	0.298	O	|	|	|	|	1.01
67.000	0.00	0.00	0.298	O	|	|	|	|	1.01
67.083	0.00	0.00	0.298	O	|	|	|	|	1.01
67.167	0.00	0.00	0.298	O	|	|	|	|	1.01
67.250	0.00	0.00	0.298	O	|	|	|	|	1.01
67.333	0.00	0.00	0.298	O	|	|	|	|	1.01
67.417	0.00	0.00	0.298	O	|	|	|	|	1.01
67.500	0.00	0.00	0.298	O	|	|	|	|	1.01
67.583	0.00	0.00	0.298	O	|	|	|	|	1.01
67.667	0.00	0.00	0.298	O	|	|	|	|	1.01
67.750	0.00	0.00	0.298	O	|	|	|	|	1.01
67.833	0.00	0.00	0.298	O	|	|	|	|	1.01
67.917	0.00	0.00	0.298	O	|	|	|	|	1.01
68.000	0.00	0.00	0.297	O	|	|	|	|	1.01
68.083	0.00	0.00	0.297	O	|	|	|	|	1.01

68.167	0.00	0.00	0.297	O	|	|	|	|	1.01
68.250	0.00	0.00	0.297	O	|	|	|	|	1.01
68.333	0.00	0.00	0.297	O	|	|	|	|	1.01
68.417	0.00	0.00	0.297	O	|	|	|	|	1.01
68.500	0.00	0.00	0.297	O	|	|	|	|	1.01
68.583	0.00	0.00	0.297	O	|	|	|	|	1.01
68.667	0.00	0.00	0.297	O	|	|	|	|	1.01
68.750	0.00	0.00	0.297	O	|	|	|	|	1.01
68.833	0.00	0.00	0.297	O	|	|	|	|	1.01
68.917	0.00	0.00	0.297	O	|	|	|	|	1.01
69.000	0.00	0.00	0.297	O	|	|	|	|	1.01
69.083	0.00	0.00	0.297	O	|	|	|	|	1.01
69.167	0.00	0.00	0.297	O	|	|	|	|	1.01
69.250	0.00	0.00	0.297	O	|	|	|	|	1.01
69.333	0.00	0.00	0.297	O	|	|	|	|	1.01
69.417	0.00	0.00	0.297	O	|	|	|	|	1.01
69.500	0.00	0.00	0.297	O	|	|	|	|	1.01
69.583	0.00	0.00	0.297	O	|	|	|	|	1.01
69.667	0.00	0.00	0.297	O	|	|	|	|	1.01
69.750	0.00	0.00	0.297	O	|	|	|	|	1.01
69.833	0.00	0.00	0.297	O	|	|	|	|	1.01
69.917	0.00	0.00	0.297	O	|	|	|	|	1.01
70.000	0.00	0.00	0.297	O	|	|	|	|	1.01
70.083	0.00	0.00	0.297	O	|	|	|	|	1.01
70.167	0.00	0.00	0.297	O	|	|	|	|	1.01
70.250	0.00	0.00	0.297	O	|	|	|	|	1.01
70.333	0.00	0.00	0.297	O	|	|	|	|	1.01
70.417	0.00	0.00	0.297	O	|	|	|	|	1.01
70.500	0.00	0.00	0.297	O	|	|	|	|	

1.01

70.583	0.00	0.00	0.297	O	|	|	|	|	1.01
70.667	0.00	0.00	0.297	O	|	|	|	|	1.01
70.750	0.00	0.00	0.297	O	|	|	|	|	1.01
70.833	0.00	0.00	0.297	O	|	|	|	|	1.01
70.917	0.00	0.00	0.297	O	|	|	|	|	1.01
71.000	0.00	0.00	0.297	O	|	|	|	|	1.01
71.083	0.00	0.00	0.297	O	|	|	|	|	1.01
71.167	0.00	0.00	0.297	O	|	|	|	|	1.01
71.250	0.00	0.00	0.297	O	|	|	|	|	1.01
71.333	0.00	0.00	0.296	O	|	|	|	|	1.01
71.417	0.00	0.00	0.296	O	|	|	|	|	1.01
71.500	0.00	0.00	0.296	O	|	|	|	|	1.01
71.583	0.00	0.00	0.296	O	|	|	|	|	1.01
71.667	0.00	0.00	0.296	O	|	|	|	|	1.01
71.750	0.00	0.00	0.296	O	|	|	|	|	1.01
71.833	0.00	0.00	0.296	O	|	|	|	|	1.01
71.917	0.00	0.00	0.296	O	|	|	|	|	1.01
72.000	0.00	0.00	0.296	O	|	|	|	|	1.01
72.083	0.00	0.00	0.296	O	|	|	|	|	1.01
72.167	0.00	0.00	0.296	O	|	|	|	|	1.01
72.250	0.00	0.00	0.296	O	|	|	|	|	1.01
72.333	0.00	0.00	0.296	O	|	|	|	|	1.01
72.417	0.00	0.00	0.296	O	|	|	|	|	1.01
72.500	0.00	0.00	0.296	O	|	|	|	|	1.01
72.583	0.00	0.00	0.296	O	|	|	|	|	1.00
72.667	0.00	0.00	0.296	O	|	|	|	|	1.00
72.750	0.00	0.00	0.296	O	|	|	|	|	1.00
72.833	0.00	0.00	0.296	O	|	|	|	|	1.00

72.917	0.00	0.00	0.296	O	|	|	|	|	1.00
73.000	0.00	0.00	0.296	O	|	|	|	|	1.00
73.083	0.00	0.00	0.296	O	|	|	|	|	1.00
73.167	0.00	0.00	0.296	O	|	|	|	|	1.00
73.250	0.00	0.00	0.296	O	|	|	|	|	1.00
73.333	0.00	0.00	0.296	O	|	|	|	|	1.00
73.417	0.00	0.00	0.296	O	|	|	|	|	1.00
73.500	0.00	0.00	0.296	O	|	|	|	|	1.00
73.583	0.00	0.00	0.296	O	|	|	|	|	1.00
73.667	0.00	0.00	0.296	O	|	|	|	|	1.00
73.750	0.00	0.00	0.296	O	|	|	|	|	1.00
73.833	0.00	0.00	0.296	O	|	|	|	|	1.00
73.917	0.00	0.00	0.296	O	|	|	|	|	1.00
74.000	0.00	0.00	0.296	O	|	|	|	|	1.00
74.083	0.00	0.00	0.296	O	|	|	|	|	1.00
74.167	0.00	0.00	0.296	O	|	|	|	|	1.00
74.250	0.00	0.00	0.296	O	|	|	|	|	1.00
74.333	0.00	0.00	0.296	O	|	|	|	|	1.00
74.417	0.00	0.00	0.296	O	|	|	|	|	1.00
74.500	0.00	0.00	0.296	O	|	|	|	|	1.00
74.583	0.00	0.00	0.296	O	|	|	|	|	1.00
74.667	0.00	0.00	0.296	O	|	|	|	|	1.00
74.750	0.00	0.00	0.296	O	|	|	|	|	1.00
74.833	0.00	0.00	0.296	O	|	|	|	|	1.00
74.917	0.00	0.00	0.296	O	|	|	|	|	1.00
75.000	0.00	0.00	0.296	O	|	|	|	|	1.00
75.083	0.00	0.00	0.296	O	|	|	|	|	1.00
75.167	0.00	0.00	0.296	O	|	|	|	|	1.00
75.250	0.00	0.00	0.296	O	|	|	|	|	

1.00

75.333	0.00	0.00	0.296	O	|	|	|	1.00
75.417	0.00	0.00	0.296	O	|	|	|	1.00
75.500	0.00	0.00	0.296	O	|	|	|	1.00
75.583	0.00	0.00	0.296	O	|	|	|	1.00
75.667	0.00	0.00	0.296	O	|	|	|	1.00
75.750	0.00	0.00	0.295	O	|	|	|	1.00
75.833	0.00	0.00	0.295	O	|	|	|	1.00
75.917	0.00	0.00	0.295	O	|	|	|	1.00
76.000	0.00	0.00	0.295	O	|	|	|	1.00
76.083	0.00	0.00	0.295	O	|	|	|	1.00
76.167	0.00	0.00	0.295	O	|	|	|	1.00
76.250	0.00	0.00	0.295	O	|	|	|	1.00
76.333	0.00	0.00	0.295	O	|	|	|	1.00
76.417	0.00	0.00	0.295	O	|	|	|	1.00
76.500	0.00	0.00	0.295	O	|	|	|	1.00
76.583	0.00	0.00	0.295	O	|	|	|	1.00
76.667	0.00	0.00	0.295	O	|	|	|	1.00
76.750	0.00	0.00	0.295	O	|	|	|	1.00
76.833	0.00	0.00	0.295	O	|	|	|	1.00
76.917	0.00	0.00	0.295	O	|	|	|	1.00
77.000	0.00	0.00	0.295	O	|	|	|	1.00
77.083	0.00	0.00	0.295	O	|	|	|	1.00
77.167	0.00	0.00	0.295	O	|	|	|	1.00
77.250	0.00	0.00	0.295	O	|	|	|	1.00
77.333	0.00	0.00	0.295	O	|	|	|	1.00
77.417	0.00	0.00	0.295	O	|	|	|	1.00
77.500	0.00	0.00	0.295	O	|	|	|	1.00
77.583	0.00	0.00	0.295	O	|	|	|	1.00

77.667	0.00	0.00	0.295	O	|	|	|	|	1.00
77.750	0.00	0.00	0.295	O	|	|	|	|	1.00
77.833	0.00	0.00	0.295	O	|	|	|	|	1.00
77.917	0.00	0.00	0.295	O	|	|	|	|	1.00
78.000	0.00	0.00	0.295	O	|	|	|	|	1.00
78.083	0.00	0.00	0.295	O	|	|	|	|	1.00
78.167	0.00	0.00	0.295	O	|	|	|	|	1.00
78.250	0.00	0.00	0.295	O	|	|	|	|	1.00
78.333	0.00	0.00	0.295	O	|	|	|	|	1.00
78.417	0.00	0.00	0.295	O	|	|	|	|	1.00
78.500	0.00	0.00	0.295	O	|	|	|	|	1.00
78.583	0.00	0.00	0.295	O	|	|	|	|	1.00
78.667	0.00	0.00	0.295	O	|	|	|	|	1.00
78.750	0.00	0.00	0.295	O	|	|	|	|	1.00
78.833	0.00	0.00	0.295	O	|	|	|	|	1.00
78.917	0.00	0.00	0.295	O	|	|	|	|	1.00
79.000	0.00	0.00	0.295	O	|	|	|	|	1.00
79.083	0.00	0.00	0.295	O	|	|	|	|	1.00
79.167	0.00	0.00	0.295	O	|	|	|	|	1.00
79.250	0.00	0.00	0.295	O	|	|	|	|	1.00
79.333	0.00	0.00	0.295	O	|	|	|	|	1.00
79.417	0.00	0.00	0.295	O	|	|	|	|	1.00
79.500	0.00	0.00	0.295	O	|	|	|	|	1.00
79.583	0.00	0.00	0.295	O	|	|	|	|	1.00
79.667	0.00	0.00	0.295	O	|	|	|	|	1.00
79.750	0.00	0.00	0.295	O	|	|	|	|	1.00
79.833	0.00	0.00	0.295	O	|	|	|	|	1.00
79.917	0.00	0.00	0.295	O	|	|	|	|	1.00
80.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

80.083	0.00	0.00	0.295	O	|	|	|	|	1.00
80.167	0.00	0.00	0.295	O	|	|	|	|	1.00
80.250	0.00	0.00	0.295	O	|	|	|	|	1.00
80.333	0.00	0.00	0.295	O	|	|	|	|	1.00
80.417	0.00	0.00	0.295	O	|	|	|	|	1.00
80.500	0.00	0.00	0.295	O	|	|	|	|	1.00
80.583	0.00	0.00	0.295	O	|	|	|	|	1.00
80.667	0.00	0.00	0.295	O	|	|	|	|	1.00
80.750	0.00	0.00	0.295	O	|	|	|	|	1.00
80.833	0.00	0.00	0.295	O	|	|	|	|	1.00
80.917	0.00	0.00	0.295	O	|	|	|	|	1.00
81.000	0.00	0.00	0.295	O	|	|	|	|	1.00
81.083	0.00	0.00	0.295	O	|	|	|	|	1.00
81.167	0.00	0.00	0.295	O	|	|	|	|	1.00
81.250	0.00	0.00	0.295	O	|	|	|	|	1.00
81.333	0.00	0.00	0.295	O	|	|	|	|	1.00
81.417	0.00	0.00	0.295	O	|	|	|	|	1.00
81.500	0.00	0.00	0.295	O	|	|	|	|	1.00
81.583	0.00	0.00	0.295	O	|	|	|	|	1.00
81.667	0.00	0.00	0.295	O	|	|	|	|	1.00
81.750	0.00	0.00	0.295	O	|	|	|	|	1.00
81.833	0.00	0.00	0.295	O	|	|	|	|	1.00
81.917	0.00	0.00	0.295	O	|	|	|	|	1.00
82.000	0.00	0.00	0.295	O	|	|	|	|	1.00
82.083	0.00	0.00	0.295	O	|	|	|	|	1.00
82.167	0.00	0.00	0.295	O	|	|	|	|	1.00
82.250	0.00	0.00	0.295	O	|	|	|	|	1.00
82.333	0.00	0.00	0.294	O	|	|	|	|	1.00

82.417	0.00	0.00	0.294	O	|	|	|	|	1.00
82.500	0.00	0.00	0.294	O	|	|	|	|	1.00
82.583	0.00	0.00	0.294	O	|	|	|	|	1.00
82.667	0.00	0.00	0.294	O	|	|	|	|	1.00
82.750	0.00	0.00	0.294	O	|	|	|	|	1.00
82.833	0.00	0.00	0.294	O	|	|	|	|	1.00
82.917	0.00	0.00	0.294	O	|	|	|	|	1.00
83.000	0.00	0.00	0.294	O	|	|	|	|	1.00
83.083	0.00	0.00	0.294	O	|	|	|	|	1.00
83.167	0.00	0.00	0.294	O	|	|	|	|	1.00
83.250	0.00	0.00	0.294	O	|	|	|	|	1.00
83.333	0.00	0.00	0.294	O	|	|	|	|	1.00
83.417	0.00	0.00	0.294	O	|	|	|	|	1.00
83.500	0.00	0.00	0.294	O	|	|	|	|	1.00
83.583	0.00	0.00	0.294	O	|	|	|	|	1.00
83.667	0.00	0.00	0.294	O	|	|	|	|	1.00
83.750	0.00	0.00	0.294	O	|	|	|	|	1.00
83.833	0.00	0.00	0.294	O	|	|	|	|	1.00
83.917	0.00	0.00	0.294	O	|	|	|	|	1.00
84.000	0.00	0.00	0.294	O	|	|	|	|	1.00
84.083	0.00	0.00	0.294	O	|	|	|	|	1.00
84.167	0.00	0.00	0.294	O	|	|	|	|	1.00
84.250	0.00	0.00	0.294	O	|	|	|	|	1.00
84.333	0.00	0.00	0.294	O	|	|	|	|	1.00
84.417	0.00	0.00	0.294	O	|	|	|	|	1.00
84.500	0.00	0.00	0.294	O	|	|	|	|	1.00
84.583	0.00	0.00	0.294	O	|	|	|	|	1.00
84.667	0.00	0.00	0.294	O	|	|	|	|	1.00
84.750	0.00	0.00	0.294	O	|	|	|	|	

1.00

84.833	0.00	0.00	0.294	O	|	|	|	1.00
84.917	0.00	0.00	0.294	O	|	|	|	1.00
85.000	0.00	0.00	0.294	O	|	|	|	1.00
85.083	0.00	0.00	0.294	O	|	|	|	1.00
85.167	0.00	0.00	0.294	O	|	|	|	1.00
85.250	0.00	0.00	0.294	O	|	|	|	1.00
85.333	0.00	0.00	0.294	O	|	|	|	1.00
85.417	0.00	0.00	0.294	O	|	|	|	1.00
85.500	0.00	0.00	0.294	O	|	|	|	1.00
85.583	0.00	0.00	0.294	O	|	|	|	1.00
85.667	0.00	0.00	0.294	O	|	|	|	1.00
85.750	0.00	0.00	0.294	O	|	|	|	1.00
85.833	0.00	0.00	0.294	O	|	|	|	1.00
85.917	0.00	0.00	0.294	O	|	|	|	1.00
86.000	0.00	0.00	0.294	O	|	|	|	1.00
86.083	0.00	0.00	0.294	O	|	|	|	1.00
86.167	0.00	0.00	0.294	O	|	|	|	1.00
86.250	0.00	0.00	0.294	O	|	|	|	1.00
86.333	0.00	0.00	0.294	O	|	|	|	1.00
86.417	0.00	0.00	0.294	O	|	|	|	1.00
86.500	0.00	0.00	0.294	O	|	|	|	1.00
86.583	0.00	0.00	0.294	O	|	|	|	1.00
86.667	0.00	0.00	0.294	O	|	|	|	1.00
86.750	0.00	0.00	0.294	O	|	|	|	1.00
86.833	0.00	0.00	0.294	O	|	|	|	1.00
86.917	0.00	0.00	0.294	O	|	|	|	1.00
87.000	0.00	0.00	0.294	O	|	|	|	1.00
87.083	0.00	0.00	0.294	O	|	|	|	1.00

87.167	0.00	0.00	0.294	O	|	|	|	|	1.00
87.250	0.00	0.00	0.294	O	|	|	|	|	1.00
87.333	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1048
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.235 (CFS)
Total volume = 0.404 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 3 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP3100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 12.464 (CFS)
Total volume = 1.032 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.1 6.23 9.35 12.46	Depth (Ft.)
0.083	1.07	0.00	0.004	O I | | | |	0.01
0.167	1.78	0.00	0.013	O I | | | |	0.05
0.250	1.73	0.00	0.026	O I | | | |	0.09
0.333	1.95	0.00	0.038	O I | | | |	0.13
0.417	2.15	0.00	0.052	O I | | | |	0.18
0.500	2.43	0.00	0.068	O I | | | |	0.23
0.583	2.35	0.00	0.085	O I | | | |	0.29
0.667	2.46	0.00	0.101	O I | | | |	0.34
0.750	2.59	0.00	0.119	O I | | | |	0.40
0.833	2.37	0.00	0.136	O I | | | |	0.46
0.917	2.29	0.00	0.152	O I | | | |	0.52
1.000	2.49	0.00	0.168	O I | | | |	0.57
1.083	2.93	0.00	0.187	O I| | | |	0.64
1.167	3.17	0.00	0.208	O I | | |	0.71
1.250	3.20	0.00	0.230	O I | | |	0.78
1.333	3.04	0.00	0.251	O I| | | |	0.85
1.417	3.43	0.00	0.274	O I | | |	0.93
1.500	3.81	0.00	0.298	O |I | | |	1.01
1.583	3.68	0.03	0.324	O |I | | |	1.07
1.667	3.77	0.05	0.349	O |I | | |	

1.13

1.750	4.40	0.07	0.377	O	|	I	|	|	1.19
1.833	4.59	0.10	0.408	O	|	I	|	|	1.26
1.917	4.37	0.11	0.438	O	|	I	|	|	1.32
2.000	4.32	0.12	0.467	O	|	I	|	|	1.39
2.083	4.44	0.13	0.496	O	|	I	|	|	1.45
2.167	5.48	0.14	0.529	O	|	I	|	|	1.52
2.250	6.91	0.17	0.571	O	|	I	|	|	1.60
2.333	6.11	0.20	0.614	O	|	I	|	|	1.69
2.417	8.46	0.23	0.663	O	|	I	|	|	1.79
2.500	10.90	0.25	0.728	O	|	I	|	|	1.92
2.583	12.46	0.27	0.807	O	|	I	|	|	2.07
2.667	10.84	0.30	0.885	O	|	I	|	|	2.22
2.750	5.89	0.31	0.941	O	|	I	|	|	2.33
2.833	3.14	0.32	0.970	O	I	|	|	|	2.38
2.917	2.64	0.32	0.987	O	I	|	|	|	2.42
3.000	1.63	0.33	1.000	O	I	|	|	|	2.44
3.083	0.49	0.33	1.005	OI	|	|	|	|	2.45
3.167	0.05	0.33	1.004	O	|	|	|	|	2.45
3.250	0.00	0.33	1.002	O	|	|	|	|	2.45
3.333	0.00	0.33	1.000	O	|	|	|	|	2.44
3.417	0.00	0.33	0.998	O	|	|	|	|	2.44
3.500	0.00	0.33	0.996	O	|	|	|	|	2.43
3.583	0.00	0.33	0.993	O	|	|	|	|	2.43
3.667	0.00	0.33	0.991	O	|	|	|	|	2.42
3.750	0.00	0.33	0.989	O	|	|	|	|	2.42
3.833	0.00	0.32	0.987	O	|	|	|	|	2.42
3.917	0.00	0.32	0.984	O	|	|	|	|	2.41
4.000	0.00	0.32	0.982	O	|	|	|	|	2.41
4.083	0.00	0.32	0.980	O	|	|	|	|	2.40

4.167	0.00	0.32	0.978	O	|	|	|	|	2.40
4.250	0.00	0.32	0.975	O	|	|	|	|	2.39
4.333	0.00	0.32	0.973	O	|	|	|	|	2.39
4.417	0.00	0.32	0.971	O	|	|	|	|	2.39
4.500	0.00	0.32	0.969	O	|	|	|	|	2.38
4.583	0.00	0.32	0.967	O	|	|	|	|	2.38
4.667	0.00	0.32	0.964	O	|	|	|	|	2.37
4.750	0.00	0.32	0.962	O	|	|	|	|	2.37
4.833	0.00	0.32	0.960	O	|	|	|	|	2.36
4.917	0.00	0.32	0.958	O	|	|	|	|	2.36
5.000	0.00	0.32	0.956	O	|	|	|	|	2.36
5.083	0.00	0.32	0.953	O	|	|	|	|	2.35
5.167	0.00	0.32	0.951	O	|	|	|	|	2.35
5.250	0.00	0.31	0.949	O	|	|	|	|	2.34
5.333	0.00	0.31	0.947	O	|	|	|	|	2.34
5.417	0.00	0.31	0.945	O	|	|	|	|	2.34
5.500	0.00	0.31	0.943	O	|	|	|	|	2.33
5.583	0.00	0.31	0.941	O	|	|	|	|	2.33
5.667	0.00	0.31	0.938	O	|	|	|	|	2.32
5.750	0.00	0.31	0.936	O	|	|	|	|	2.32
5.833	0.00	0.31	0.934	O	|	|	|	|	2.32
5.917	0.00	0.31	0.932	O	|	|	|	|	2.31
6.000	0.00	0.31	0.930	O	|	|	|	|	2.31
6.083	0.00	0.31	0.928	O	|	|	|	|	2.30
6.167	0.00	0.31	0.926	O	|	|	|	|	2.30
6.250	0.00	0.31	0.923	O	|	|	|	|	2.29
6.333	0.00	0.31	0.921	O	|	|	|	|	2.29
6.417	0.00	0.31	0.919	O	|	|	|	|	2.29
6.500	0.00	0.31	0.917	O	|	|	|	|	

2.28

6.583	0.00	0.31	0.915	O	|	|	|	2.28
6.667	0.00	0.31	0.913	O	|	|	|	2.27
6.750	0.00	0.30	0.911	O	|	|	|	2.27
6.833	0.00	0.30	0.909	O	|	|	|	2.27
6.917	0.00	0.30	0.907	O	|	|	|	2.26
7.000	0.00	0.30	0.904	O	|	|	|	2.26
7.083	0.00	0.30	0.902	O	|	|	|	2.25
7.167	0.00	0.30	0.900	O	|	|	|	2.25
7.250	0.00	0.30	0.898	O	|	|	|	2.25
7.333	0.00	0.30	0.896	O	|	|	|	2.24
7.417	0.00	0.30	0.894	O	|	|	|	2.24
7.500	0.00	0.30	0.892	O	|	|	|	2.23
7.583	0.00	0.30	0.890	O	|	|	|	2.23
7.667	0.00	0.30	0.888	O	|	|	|	2.23
7.750	0.00	0.30	0.886	O	|	|	|	2.22
7.833	0.00	0.30	0.884	O	|	|	|	2.22
7.917	0.00	0.30	0.882	O	|	|	|	2.21
8.000	0.00	0.30	0.880	O	|	|	|	2.21
8.083	0.00	0.30	0.878	O	|	|	|	2.21
8.167	0.00	0.29	0.876	O	|	|	|	2.20
8.250	0.00	0.29	0.874	O	|	|	|	2.20
8.333	0.00	0.29	0.872	O	|	|	|	2.20
8.417	0.00	0.29	0.870	O	|	|	|	2.19
8.500	0.00	0.29	0.868	O	|	|	|	2.19
8.583	0.00	0.29	0.866	O	|	|	|	2.18
8.667	0.00	0.29	0.864	O	|	|	|	2.18
8.750	0.00	0.29	0.862	O	|	|	|	2.18
8.833	0.00	0.29	0.860	O	|	|	|	2.17

8.917	0.00	0.29	0.858	O	|	|	|	2.17
9.000	0.00	0.29	0.856	O	|	|	|	2.16
9.083	0.00	0.29	0.854	O	|	|	|	2.16
9.167	0.00	0.29	0.852	O	|	|	|	2.16
9.250	0.00	0.29	0.850	O	|	|	|	2.15
9.333	0.00	0.29	0.848	O	|	|	|	2.15
9.417	0.00	0.29	0.846	O	|	|	|	2.15
9.500	0.00	0.29	0.844	O	|	|	|	2.14
9.583	0.00	0.28	0.842	O	|	|	|	2.14
9.667	0.00	0.28	0.840	O	|	|	|	2.13
9.750	0.00	0.28	0.838	O	|	|	|	2.13
9.833	0.00	0.28	0.836	O	|	|	|	2.13
9.917	0.00	0.28	0.834	O	|	|	|	2.12
10.000	0.00	0.28	0.832	O	|	|	|	2.12
10.083	0.00	0.28	0.830	O	|	|	|	2.12
10.167	0.00	0.28	0.828	O	|	|	|	2.11
10.250	0.00	0.28	0.826	O	|	|	|	2.11
10.333	0.00	0.28	0.824	O	|	|	|	2.10
10.417	0.00	0.28	0.822	O	|	|	|	2.10
10.500	0.00	0.28	0.820	O	|	|	|	2.10
10.583	0.00	0.28	0.818	O	|	|	|	2.09
10.667	0.00	0.28	0.817	O	|	|	|	2.09
10.750	0.00	0.28	0.815	O	|	|	|	2.09
10.833	0.00	0.28	0.813	O	|	|	|	2.08
10.917	0.00	0.28	0.811	O	|	|	|	2.08
11.000	0.00	0.28	0.809	O	|	|	|	2.07
11.083	0.00	0.27	0.807	O	|	|	|	2.07
11.167	0.00	0.27	0.805	O	|	|	|	2.07
11.250	0.00	0.27	0.803	O	|	|	|	

2.06

11.333	0.00	0.27	0.801	O	|	|	|	2.06
11.417	0.00	0.27	0.799	O	|	|	|	2.06
11.500	0.00	0.27	0.798	O	|	|	|	2.05
11.583	0.00	0.27	0.796	O	|	|	|	2.05
11.667	0.00	0.27	0.794	O	|	|	|	2.05
11.750	0.00	0.27	0.792	O	|	|	|	2.04
11.833	0.00	0.27	0.790	O	|	|	|	2.04
11.917	0.00	0.27	0.788	O	|	|	|	2.04
12.000	0.00	0.27	0.786	O	|	|	|	2.03
12.083	0.00	0.27	0.785	O	|	|	|	2.03
12.167	0.00	0.27	0.783	O	|	|	|	2.02
12.250	0.00	0.27	0.781	O	|	|	|	2.02
12.333	0.00	0.27	0.779	O	|	|	|	2.02
12.417	0.00	0.27	0.777	O	|	|	|	2.01
12.500	0.00	0.27	0.775	O	|	|	|	2.01
12.583	0.00	0.27	0.774	O	|	|	|	2.01
12.667	0.00	0.26	0.772	O	|	|	|	2.00
12.750	0.00	0.26	0.770	O	|	|	|	2.00
12.833	0.00	0.26	0.768	O	|	|	|	2.00
12.917	0.00	0.26	0.766	O	|	|	|	1.99
13.000	0.00	0.26	0.764	O	|	|	|	1.99
13.083	0.00	0.26	0.763	O	|	|	|	1.99
13.167	0.00	0.26	0.761	O	|	|	|	1.98
13.250	0.00	0.26	0.759	O	|	|	|	1.98
13.333	0.00	0.26	0.757	O	|	|	|	1.97
13.417	0.00	0.26	0.756	O	|	|	|	1.97
13.500	0.00	0.26	0.754	O	|	|	|	1.97
13.583	0.00	0.26	0.752	O	|	|	|	1.96

13.667	0.00	0.26	0.750	O	|	|	|	|	1.96
13.750	0.00	0.26	0.748	O	|	|	|	|	1.96
13.833	0.00	0.26	0.747	O	|	|	|	|	1.95
13.917	0.00	0.25	0.745	O	|	|	|	|	1.95
14.000	0.00	0.25	0.743	O	|	|	|	|	1.95
14.083	0.00	0.25	0.741	O	|	|	|	|	1.94
14.167	0.00	0.25	0.740	O	|	|	|	|	1.94
14.250	0.00	0.25	0.738	O	|	|	|	|	1.94
14.333	0.00	0.25	0.736	O	|	|	|	|	1.93
14.417	0.00	0.25	0.734	O	|	|	|	|	1.93
14.500	0.00	0.25	0.733	O	|	|	|	|	1.93
14.583	0.00	0.25	0.731	O	|	|	|	|	1.92
14.667	0.00	0.25	0.729	O	|	|	|	|	1.92
14.750	0.00	0.25	0.728	O	|	|	|	|	1.92
14.833	0.00	0.25	0.726	O	|	|	|	|	1.91
14.917	0.00	0.25	0.724	O	|	|	|	|	1.91
15.000	0.00	0.25	0.722	O	|	|	|	|	1.91
15.083	0.00	0.25	0.721	O	|	|	|	|	1.90
15.167	0.00	0.25	0.719	O	|	|	|	|	1.90
15.250	0.00	0.24	0.717	O	|	|	|	|	1.90
15.333	0.00	0.24	0.716	O	|	|	|	|	1.89
15.417	0.00	0.24	0.714	O	|	|	|	|	1.89
15.500	0.00	0.24	0.712	O	|	|	|	|	1.89
15.583	0.00	0.24	0.711	O	|	|	|	|	1.88
15.667	0.00	0.24	0.709	O	|	|	|	|	1.88
15.750	0.00	0.24	0.707	O	|	|	|	|	1.88
15.833	0.00	0.24	0.706	O	|	|	|	|	1.87
15.917	0.00	0.24	0.704	O	|	|	|	|	1.87
16.000	0.00	0.24	0.702	O	|	|	|	|	

1.87

16.083	0.00	0.24	0.701	O	|	|	|	1.86
16.167	0.00	0.24	0.699	O	|	|	|	1.86
16.250	0.00	0.24	0.697	O	|	|	|	1.86
16.333	0.00	0.24	0.696	O	|	|	|	1.85
16.417	0.00	0.24	0.694	O	|	|	|	1.85
16.500	0.00	0.24	0.693	O	|	|	|	1.85
16.583	0.00	0.24	0.691	O	|	|	|	1.84
16.667	0.00	0.23	0.689	O	|	|	|	1.84
16.750	0.00	0.23	0.688	O	|	|	|	1.84
16.833	0.00	0.23	0.686	O	|	|	|	1.83
16.917	0.00	0.23	0.684	O	|	|	|	1.83
17.000	0.00	0.23	0.683	O	|	|	|	1.83
17.083	0.00	0.23	0.681	O	|	|	|	1.83
17.167	0.00	0.23	0.680	O	|	|	|	1.82
17.250	0.00	0.23	0.678	O	|	|	|	1.82
17.333	0.00	0.23	0.676	O	|	|	|	1.82
17.417	0.00	0.23	0.675	O	|	|	|	1.81
17.500	0.00	0.23	0.673	O	|	|	|	1.81
17.583	0.00	0.23	0.672	O	|	|	|	1.81
17.667	0.00	0.23	0.670	O	|	|	|	1.80
17.750	0.00	0.23	0.669	O	|	|	|	1.80
17.833	0.00	0.23	0.667	O	|	|	|	1.80
17.917	0.00	0.23	0.665	O	|	|	|	1.79
18.000	0.00	0.23	0.664	O	|	|	|	1.79
18.083	0.00	0.23	0.662	O	|	|	|	1.79
18.167	0.00	0.22	0.661	O	|	|	|	1.79
18.250	0.00	0.22	0.659	O	|	|	|	1.78
18.333	0.00	0.22	0.658	O	|	|	|	1.78

18.417	0.00	0.22	0.656	O	|	|	|	|	1.78
18.500	0.00	0.22	0.655	O	|	|	|	|	1.77
18.583	0.00	0.22	0.653	O	|	|	|	|	1.77
18.667	0.00	0.22	0.652	O	|	|	|	|	1.77
18.750	0.00	0.22	0.650	O	|	|	|	|	1.76
18.833	0.00	0.22	0.649	O	|	|	|	|	1.76
18.917	0.00	0.22	0.647	O	|	|	|	|	1.76
19.000	0.00	0.22	0.646	O	|	|	|	|	1.76
19.083	0.00	0.22	0.644	O	|	|	|	|	1.75
19.167	0.00	0.22	0.643	O	|	|	|	|	1.75
19.250	0.00	0.22	0.641	O	|	|	|	|	1.75
19.333	0.00	0.22	0.640	O	|	|	|	|	1.74
19.417	0.00	0.21	0.638	O	|	|	|	|	1.74
19.500	0.00	0.21	0.637	O	|	|	|	|	1.74
19.583	0.00	0.21	0.635	O	|	|	|	|	1.73
19.667	0.00	0.21	0.634	O	|	|	|	|	1.73
19.750	0.00	0.21	0.632	O	|	|	|	|	1.73
19.833	0.00	0.21	0.631	O	|	|	|	|	1.73
19.917	0.00	0.21	0.629	O	|	|	|	|	1.72
20.000	0.00	0.21	0.628	O	|	|	|	|	1.72
20.083	0.00	0.21	0.626	O	|	|	|	|	1.72
20.167	0.00	0.21	0.625	O	|	|	|	|	1.71
20.250	0.00	0.21	0.624	O	|	|	|	|	1.71
20.333	0.00	0.20	0.622	O	|	|	|	|	1.71
20.417	0.00	0.20	0.621	O	|	|	|	|	1.70
20.500	0.00	0.20	0.619	O	|	|	|	|	1.70
20.583	0.00	0.20	0.618	O	|	|	|	|	1.70
20.667	0.00	0.20	0.617	O	|	|	|	|	1.70
20.750	0.00	0.20	0.615	O	|	|	|	|	

1.69

20.833	0.00	0.20	0.614	O	|	|	|	1.69
20.917	0.00	0.20	0.612	O	|	|	|	1.69
21.000	0.00	0.20	0.611	O	|	|	|	1.69
21.083	0.00	0.20	0.610	O	|	|	|	1.68
21.167	0.00	0.20	0.608	O	|	|	|	1.68
21.250	0.00	0.19	0.607	O	|	|	|	1.68
21.333	0.00	0.19	0.606	O	|	|	|	1.67
21.417	0.00	0.19	0.604	O	|	|	|	1.67
21.500	0.00	0.19	0.603	O	|	|	|	1.67
21.583	0.00	0.19	0.602	O	|	|	|	1.67
21.667	0.00	0.19	0.600	O	|	|	|	1.66
21.750	0.00	0.19	0.599	O	|	|	|	1.66
21.833	0.00	0.19	0.598	O	|	|	|	1.66
21.917	0.00	0.19	0.597	O	|	|	|	1.66
22.000	0.00	0.19	0.595	O	|	|	|	1.65
22.083	0.00	0.19	0.594	O	|	|	|	1.65
22.167	0.00	0.19	0.593	O	|	|	|	1.65
22.250	0.00	0.18	0.591	O	|	|	|	1.65
22.333	0.00	0.18	0.590	O	|	|	|	1.64
22.417	0.00	0.18	0.589	O	|	|	|	1.64
22.500	0.00	0.18	0.588	O	|	|	|	1.64
22.583	0.00	0.18	0.586	O	|	|	|	1.63
22.667	0.00	0.18	0.585	O	|	|	|	1.63
22.750	0.00	0.18	0.584	O	|	|	|	1.63
22.833	0.00	0.18	0.583	O	|	|	|	1.63
22.917	0.00	0.18	0.581	O	|	|	|	1.62
23.000	0.00	0.18	0.580	O	|	|	|	1.62
23.083	0.00	0.18	0.579	O	|	|	|	1.62

23.167	0.00	0.18	0.578	O	|	|	|	|	1.62
23.250	0.00	0.17	0.577	O	|	|	|	|	1.62
23.333	0.00	0.17	0.575	O	|	|	|	|	1.61
23.417	0.00	0.17	0.574	O	|	|	|	|	1.61
23.500	0.00	0.17	0.573	O	|	|	|	|	1.61
23.583	0.00	0.17	0.572	O	|	|	|	|	1.61
23.667	0.00	0.17	0.571	O	|	|	|	|	1.60
23.750	0.00	0.17	0.569	O	|	|	|	|	1.60
23.833	0.00	0.17	0.568	O	|	|	|	|	1.60
23.917	0.00	0.17	0.567	O	|	|	|	|	1.60
24.000	0.00	0.17	0.566	O	|	|	|	|	1.59
24.083	0.00	0.17	0.565	O	|	|	|	|	1.59
24.167	0.00	0.17	0.564	O	|	|	|	|	1.59
24.250	0.00	0.17	0.563	O	|	|	|	|	1.59
24.333	0.00	0.16	0.561	O	|	|	|	|	1.58
24.417	0.00	0.16	0.560	O	|	|	|	|	1.58
24.500	0.00	0.16	0.559	O	|	|	|	|	1.58
24.583	0.00	0.16	0.558	O	|	|	|	|	1.58
24.667	0.00	0.16	0.557	O	|	|	|	|	1.57
24.750	0.00	0.16	0.556	O	|	|	|	|	1.57
24.833	0.00	0.16	0.555	O	|	|	|	|	1.57
24.917	0.00	0.16	0.554	O	|	|	|	|	1.57
25.000	0.00	0.16	0.552	O	|	|	|	|	1.57
25.083	0.00	0.16	0.551	O	|	|	|	|	1.56
25.167	0.00	0.16	0.550	O	|	|	|	|	1.56
25.250	0.00	0.16	0.549	O	|	|	|	|	1.56
25.333	0.00	0.16	0.548	O	|	|	|	|	1.56
25.417	0.00	0.16	0.547	O	|	|	|	|	1.55
25.500	0.00	0.15	0.546	O	|	|	|	|	

1.55

25.583	0.00	0.15	0.545	O	|	|	|	1.55
25.667	0.00	0.15	0.544	O	|	|	|	1.55
25.750	0.00	0.15	0.543	O	|	|	|	1.55
25.833	0.00	0.15	0.542	O	|	|	|	1.54
25.917	0.00	0.15	0.541	O	|	|	|	1.54
26.000	0.00	0.15	0.540	O	|	|	|	1.54
26.083	0.00	0.15	0.539	O	|	|	|	1.54
26.167	0.00	0.15	0.538	O	|	|	|	1.54
26.250	0.00	0.15	0.537	O	|	|	|	1.53
26.333	0.00	0.15	0.536	O	|	|	|	1.53
26.417	0.00	0.15	0.535	O	|	|	|	1.53
26.500	0.00	0.15	0.534	O	|	|	|	1.53
26.583	0.00	0.15	0.532	O	|	|	|	1.53
26.667	0.00	0.15	0.531	O	|	|	|	1.52
26.750	0.00	0.14	0.530	O	|	|	|	1.52
26.833	0.00	0.14	0.529	O	|	|	|	1.52
26.917	0.00	0.14	0.529	O	|	|	|	1.52
27.000	0.00	0.14	0.528	O	|	|	|	1.52
27.083	0.00	0.14	0.527	O	|	|	|	1.51
27.167	0.00	0.14	0.526	O	|	|	|	1.51
27.250	0.00	0.14	0.525	O	|	|	|	1.51
27.333	0.00	0.14	0.524	O	|	|	|	1.51
27.417	0.00	0.14	0.523	O	|	|	|	1.51
27.500	0.00	0.14	0.522	O	|	|	|	1.50
27.583	0.00	0.14	0.521	O	|	|	|	1.50
27.667	0.00	0.14	0.520	O	|	|	|	1.50
27.750	0.00	0.14	0.519	O	|	|	|	1.50
27.833	0.00	0.14	0.518	O	|	|	|	1.50

27.917	0.00	0.14	0.517	O	|	|	|	|	1.49
28.000	0.00	0.14	0.516	O	|	|	|	|	1.49
28.083	0.00	0.14	0.515	O	|	|	|	|	1.49
28.167	0.00	0.14	0.514	O	|	|	|	|	1.49
28.250	0.00	0.14	0.513	O	|	|	|	|	1.49
28.333	0.00	0.14	0.512	O	|	|	|	|	1.48
28.417	0.00	0.13	0.511	O	|	|	|	|	1.48
28.500	0.00	0.13	0.510	O	|	|	|	|	1.48
28.583	0.00	0.13	0.509	O	|	|	|	|	1.48
28.667	0.00	0.13	0.509	O	|	|	|	|	1.48
28.750	0.00	0.13	0.508	O	|	|	|	|	1.47
28.833	0.00	0.13	0.507	O	|	|	|	|	1.47
28.917	0.00	0.13	0.506	O	|	|	|	|	1.47
29.000	0.00	0.13	0.505	O	|	|	|	|	1.47
29.083	0.00	0.13	0.504	O	|	|	|	|	1.47
29.167	0.00	0.13	0.503	O	|	|	|	|	1.46
29.250	0.00	0.13	0.502	O	|	|	|	|	1.46
29.333	0.00	0.13	0.501	O	|	|	|	|	1.46
29.417	0.00	0.13	0.500	O	|	|	|	|	1.46
29.500	0.00	0.13	0.499	O	|	|	|	|	1.46
29.583	0.00	0.13	0.499	O	|	|	|	|	1.45
29.667	0.00	0.13	0.498	O	|	|	|	|	1.45
29.750	0.00	0.13	0.497	O	|	|	|	|	1.45
29.833	0.00	0.13	0.496	O	|	|	|	|	1.45
29.917	0.00	0.13	0.495	O	|	|	|	|	1.45
30.000	0.00	0.13	0.494	O	|	|	|	|	1.44
30.083	0.00	0.13	0.493	O	|	|	|	|	1.44
30.167	0.00	0.13	0.492	O	|	|	|	|	1.44
30.250	0.00	0.13	0.491	O	|	|	|	|	

1.44

30.333	0.00	0.13	0.491	O	|	|	|	|	1.44
30.417	0.00	0.13	0.490	O	|	|	|	|	1.44
30.500	0.00	0.13	0.489	O	|	|	|	|	1.43
30.583	0.00	0.13	0.488	O	|	|	|	|	1.43
30.667	0.00	0.13	0.487	O	|	|	|	|	1.43
30.750	0.00	0.13	0.486	O	|	|	|	|	1.43
30.833	0.00	0.13	0.485	O	|	|	|	|	1.43
30.917	0.00	0.13	0.484	O	|	|	|	|	1.42
31.000	0.00	0.13	0.484	O	|	|	|	|	1.42
31.083	0.00	0.12	0.483	O	|	|	|	|	1.42
31.167	0.00	0.12	0.482	O	|	|	|	|	1.42
31.250	0.00	0.12	0.481	O	|	|	|	|	1.42
31.333	0.00	0.12	0.480	O	|	|	|	|	1.41
31.417	0.00	0.12	0.479	O	|	|	|	|	1.41
31.500	0.00	0.12	0.478	O	|	|	|	|	1.41
31.583	0.00	0.12	0.478	O	|	|	|	|	1.41
31.667	0.00	0.12	0.477	O	|	|	|	|	1.41
31.750	0.00	0.12	0.476	O	|	|	|	|	1.41
31.833	0.00	0.12	0.475	O	|	|	|	|	1.40
31.917	0.00	0.12	0.474	O	|	|	|	|	1.40
32.000	0.00	0.12	0.473	O	|	|	|	|	1.40
32.083	0.00	0.12	0.473	O	|	|	|	|	1.40
32.167	0.00	0.12	0.472	O	|	|	|	|	1.40
32.250	0.00	0.12	0.471	O	|	|	|	|	1.40
32.333	0.00	0.12	0.470	O	|	|	|	|	1.39
32.417	0.00	0.12	0.469	O	|	|	|	|	1.39
32.500	0.00	0.12	0.468	O	|	|	|	|	1.39
32.583	0.00	0.12	0.468	O	|	|	|	|	1.39

32.667	0.00	0.12	0.467	O	|	|	|	|	1.39
32.750	0.00	0.12	0.466	O	|	|	|	|	1.38
32.833	0.00	0.12	0.465	O	|	|	|	|	1.38
32.917	0.00	0.12	0.464	O	|	|	|	|	1.38
33.000	0.00	0.12	0.463	O	|	|	|	|	1.38
33.083	0.00	0.12	0.463	O	|	|	|	|	1.38
33.167	0.00	0.12	0.462	O	|	|	|	|	1.38
33.250	0.00	0.12	0.461	O	|	|	|	|	1.37
33.333	0.00	0.12	0.460	O	|	|	|	|	1.37
33.417	0.00	0.12	0.459	O	|	|	|	|	1.37
33.500	0.00	0.12	0.459	O	|	|	|	|	1.37
33.583	0.00	0.12	0.458	O	|	|	|	|	1.37
33.667	0.00	0.12	0.457	O	|	|	|	|	1.37
33.750	0.00	0.12	0.456	O	|	|	|	|	1.36
33.833	0.00	0.12	0.455	O	|	|	|	|	1.36
33.917	0.00	0.12	0.455	O	|	|	|	|	1.36
34.000	0.00	0.11	0.454	O	|	|	|	|	1.36
34.083	0.00	0.11	0.453	O	|	|	|	|	1.36
34.167	0.00	0.11	0.452	O	|	|	|	|	1.36
34.250	0.00	0.11	0.451	O	|	|	|	|	1.35
34.333	0.00	0.11	0.451	O	|	|	|	|	1.35
34.417	0.00	0.11	0.450	O	|	|	|	|	1.35
34.500	0.00	0.11	0.449	O	|	|	|	|	1.35
34.583	0.00	0.11	0.448	O	|	|	|	|	1.35
34.667	0.00	0.11	0.448	O	|	|	|	|	1.35
34.750	0.00	0.11	0.447	O	|	|	|	|	1.34
34.833	0.00	0.11	0.446	O	|	|	|	|	1.34
34.917	0.00	0.11	0.445	O	|	|	|	|	1.34
35.000	0.00	0.11	0.444	O	|	|	|	|	

1.34

35.083	0.00	0.11	0.444	O	|	|	|	|	1.34
35.167	0.00	0.11	0.443	O	|	|	|	|	1.34
35.250	0.00	0.11	0.442	O	|	|	|	|	1.33
35.333	0.00	0.11	0.441	O	|	|	|	|	1.33
35.417	0.00	0.11	0.441	O	|	|	|	|	1.33
35.500	0.00	0.11	0.440	O	|	|	|	|	1.33
35.583	0.00	0.11	0.439	O	|	|	|	|	1.33
35.667	0.00	0.11	0.438	O	|	|	|	|	1.33
35.750	0.00	0.11	0.438	O	|	|	|	|	1.32
35.833	0.00	0.11	0.437	O	|	|	|	|	1.32
35.917	0.00	0.11	0.436	O	|	|	|	|	1.32
36.000	0.00	0.11	0.435	O	|	|	|	|	1.32
36.083	0.00	0.11	0.435	O	|	|	|	|	1.32
36.167	0.00	0.11	0.434	O	|	|	|	|	1.32
36.250	0.00	0.11	0.433	O	|	|	|	|	1.31
36.333	0.00	0.11	0.432	O	|	|	|	|	1.31
36.417	0.00	0.11	0.432	O	|	|	|	|	1.31
36.500	0.00	0.11	0.431	O	|	|	|	|	1.31
36.583	0.00	0.11	0.430	O	|	|	|	|	1.31
36.667	0.00	0.11	0.429	O	|	|	|	|	1.31
36.750	0.00	0.11	0.429	O	|	|	|	|	1.31
36.833	0.00	0.11	0.428	O	|	|	|	|	1.30
36.917	0.00	0.11	0.427	O	|	|	|	|	1.30
37.000	0.00	0.11	0.427	O	|	|	|	|	1.30
37.083	0.00	0.11	0.426	O	|	|	|	|	1.30
37.167	0.00	0.10	0.425	O	|	|	|	|	1.30
37.250	0.00	0.10	0.424	O	|	|	|	|	1.30
37.333	0.00	0.10	0.424	O	|	|	|	|	1.29

37.417	0.00	0.10	0.423	O	|	|	|	|	1.29
37.500	0.00	0.10	0.422	O	|	|	|	|	1.29
37.583	0.00	0.10	0.422	O	|	|	|	|	1.29
37.667	0.00	0.10	0.421	O	|	|	|	|	1.29
37.750	0.00	0.10	0.420	O	|	|	|	|	1.29
37.833	0.00	0.10	0.419	O	|	|	|	|	1.29
37.917	0.00	0.10	0.419	O	|	|	|	|	1.28
38.000	0.00	0.10	0.418	O	|	|	|	|	1.28
38.083	0.00	0.10	0.417	O	|	|	|	|	1.28
38.167	0.00	0.10	0.417	O	|	|	|	|	1.28
38.250	0.00	0.10	0.416	O	|	|	|	|	1.28
38.333	0.00	0.10	0.415	O	|	|	|	|	1.28
38.417	0.00	0.10	0.414	O	|	|	|	|	1.27
38.500	0.00	0.10	0.414	O	|	|	|	|	1.27
38.583	0.00	0.10	0.413	O	|	|	|	|	1.27
38.667	0.00	0.10	0.412	O	|	|	|	|	1.27
38.750	0.00	0.10	0.412	O	|	|	|	|	1.27
38.833	0.00	0.10	0.411	O	|	|	|	|	1.27
38.917	0.00	0.10	0.410	O	|	|	|	|	1.27
39.000	0.00	0.10	0.410	O	|	|	|	|	1.26
39.083	0.00	0.10	0.409	O	|	|	|	|	1.26
39.167	0.00	0.10	0.408	O	|	|	|	|	1.26
39.250	0.00	0.10	0.408	O	|	|	|	|	1.26
39.333	0.00	0.10	0.407	O	|	|	|	|	1.26
39.417	0.00	0.10	0.406	O	|	|	|	|	1.26
39.500	0.00	0.10	0.406	O	|	|	|	|	1.26
39.583	0.00	0.10	0.405	O	|	|	|	|	1.25
39.667	0.00	0.10	0.404	O	|	|	|	|	1.25
39.750	0.00	0.10	0.404	O	|	|	|	|	

1.25

39.833	0.00	0.10	0.403	O	|	|	|	1.25
39.917	0.00	0.10	0.402	O	|	|	|	1.25
40.000	0.00	0.10	0.402	O	|	|	|	1.25
40.083	0.00	0.10	0.401	O	|	|	|	1.25
40.167	0.00	0.09	0.400	O	|	|	|	1.24
40.250	0.00	0.09	0.400	O	|	|	|	1.24
40.333	0.00	0.09	0.399	O	|	|	|	1.24
40.417	0.00	0.09	0.398	O	|	|	|	1.24
40.500	0.00	0.09	0.398	O	|	|	|	1.24
40.583	0.00	0.09	0.397	O	|	|	|	1.24
40.667	0.00	0.09	0.396	O	|	|	|	1.23
40.750	0.00	0.09	0.396	O	|	|	|	1.23
40.833	0.00	0.09	0.395	O	|	|	|	1.23
40.917	0.00	0.09	0.395	O	|	|	|	1.23
41.000	0.00	0.09	0.394	O	|	|	|	1.23
41.083	0.00	0.09	0.393	O	|	|	|	1.23
41.167	0.00	0.09	0.393	O	|	|	|	1.23
41.250	0.00	0.09	0.392	O	|	|	|	1.23
41.333	0.00	0.09	0.392	O	|	|	|	1.22
41.417	0.00	0.09	0.391	O	|	|	|	1.22
41.500	0.00	0.09	0.390	O	|	|	|	1.22
41.583	0.00	0.09	0.390	O	|	|	|	1.22
41.667	0.00	0.08	0.389	O	|	|	|	1.22
41.750	0.00	0.08	0.389	O	|	|	|	1.22
41.833	0.00	0.08	0.388	O	|	|	|	1.22
41.917	0.00	0.08	0.387	O	|	|	|	1.21
42.000	0.00	0.08	0.387	O	|	|	|	1.21
42.083	0.00	0.08	0.386	O	|	|	|	1.21

42.167	0.00	0.08	0.386	O	|	|	|	|	1.21
42.250	0.00	0.08	0.385	O	|	|	|	|	1.21
42.333	0.00	0.08	0.385	O	|	|	|	|	1.21
42.417	0.00	0.08	0.384	O	|	|	|	|	1.21
42.500	0.00	0.08	0.383	O	|	|	|	|	1.21
42.583	0.00	0.08	0.383	O	|	|	|	|	1.20
42.667	0.00	0.08	0.382	O	|	|	|	|	1.20
42.750	0.00	0.08	0.382	O	|	|	|	|	1.20
42.833	0.00	0.08	0.381	O	|	|	|	|	1.20
42.917	0.00	0.08	0.381	O	|	|	|	|	1.20
43.000	0.00	0.08	0.380	O	|	|	|	|	1.20
43.083	0.00	0.08	0.380	O	|	|	|	|	1.20
43.167	0.00	0.08	0.379	O	|	|	|	|	1.20
43.250	0.00	0.08	0.379	O	|	|	|	|	1.19
43.333	0.00	0.08	0.378	O	|	|	|	|	1.19
43.417	0.00	0.07	0.378	O	|	|	|	|	1.19
43.500	0.00	0.07	0.377	O	|	|	|	|	1.19
43.583	0.00	0.07	0.377	O	|	|	|	|	1.19
43.667	0.00	0.07	0.376	O	|	|	|	|	1.19
43.750	0.00	0.07	0.376	O	|	|	|	|	1.19
43.833	0.00	0.07	0.375	O	|	|	|	|	1.19
43.917	0.00	0.07	0.375	O	|	|	|	|	1.18
44.000	0.00	0.07	0.374	O	|	|	|	|	1.18
44.083	0.00	0.07	0.374	O	|	|	|	|	1.18
44.167	0.00	0.07	0.373	O	|	|	|	|	1.18
44.250	0.00	0.07	0.373	O	|	|	|	|	1.18
44.333	0.00	0.07	0.372	O	|	|	|	|	1.18
44.417	0.00	0.07	0.372	O	|	|	|	|	1.18
44.500	0.00	0.07	0.371	O	|	|	|	|	

1.18

44.583	0.00	0.07	0.371	O	|	|	|	1.18
44.667	0.00	0.07	0.370	O	|	|	|	1.17
44.750	0.00	0.07	0.370	O	|	|	|	1.17
44.833	0.00	0.07	0.369	O	|	|	|	1.17
44.917	0.00	0.07	0.369	O	|	|	|	1.17
45.000	0.00	0.07	0.368	O	|	|	|	1.17
45.083	0.00	0.07	0.368	O	|	|	|	1.17
45.167	0.00	0.07	0.367	O	|	|	|	1.17
45.250	0.00	0.07	0.367	O	|	|	|	1.17
45.333	0.00	0.06	0.367	O	|	|	|	1.17
45.417	0.00	0.06	0.366	O	|	|	|	1.17
45.500	0.00	0.06	0.366	O	|	|	|	1.16
45.583	0.00	0.06	0.365	O	|	|	|	1.16
45.667	0.00	0.06	0.365	O	|	|	|	1.16
45.750	0.00	0.06	0.364	O	|	|	|	1.16
45.833	0.00	0.06	0.364	O	|	|	|	1.16
45.917	0.00	0.06	0.364	O	|	|	|	1.16
46.000	0.00	0.06	0.363	O	|	|	|	1.16
46.083	0.00	0.06	0.363	O	|	|	|	1.16
46.167	0.00	0.06	0.362	O	|	|	|	1.16
46.250	0.00	0.06	0.362	O	|	|	|	1.16
46.333	0.00	0.06	0.361	O	|	|	|	1.15
46.417	0.00	0.06	0.361	O	|	|	|	1.15
46.500	0.00	0.06	0.361	O	|	|	|	1.15
46.583	0.00	0.06	0.360	O	|	|	|	1.15
46.667	0.00	0.06	0.360	O	|	|	|	1.15
46.750	0.00	0.06	0.359	O	|	|	|	1.15
46.833	0.00	0.06	0.359	O	|	|	|	1.15

46.917	0.00	0.06	0.359	O	|	|	|	|	1.15
47.000	0.00	0.06	0.358	O	|	|	|	|	1.15
47.083	0.00	0.06	0.358	O	|	|	|	|	1.15
47.167	0.00	0.06	0.357	O	|	|	|	|	1.15
47.250	0.00	0.06	0.357	O	|	|	|	|	1.14
47.333	0.00	0.06	0.357	O	|	|	|	|	1.14
47.417	0.00	0.06	0.356	O	|	|	|	|	1.14
47.500	0.00	0.06	0.356	O	|	|	|	|	1.14
47.583	0.00	0.06	0.355	O	|	|	|	|	1.14
47.667	0.00	0.05	0.355	O	|	|	|	|	1.14
47.750	0.00	0.05	0.355	O	|	|	|	|	1.14
47.833	0.00	0.05	0.354	O	|	|	|	|	1.14
47.917	0.00	0.05	0.354	O	|	|	|	|	1.14
48.000	0.00	0.05	0.354	O	|	|	|	|	1.14
48.083	0.00	0.05	0.353	O	|	|	|	|	1.14
48.167	0.00	0.05	0.353	O	|	|	|	|	1.13
48.250	0.00	0.05	0.352	O	|	|	|	|	1.13
48.333	0.00	0.05	0.352	O	|	|	|	|	1.13
48.417	0.00	0.05	0.352	O	|	|	|	|	1.13
48.500	0.00	0.05	0.351	O	|	|	|	|	1.13
48.583	0.00	0.05	0.351	O	|	|	|	|	1.13
48.667	0.00	0.05	0.351	O	|	|	|	|	1.13
48.750	0.00	0.05	0.350	O	|	|	|	|	1.13
48.833	0.00	0.05	0.350	O	|	|	|	|	1.13
48.917	0.00	0.05	0.350	O	|	|	|	|	1.13
49.000	0.00	0.05	0.349	O	|	|	|	|	1.13
49.083	0.00	0.05	0.349	O	|	|	|	|	1.13
49.167	0.00	0.05	0.349	O	|	|	|	|	1.13
49.250	0.00	0.05	0.348	O	|	|	|	|	

1.12

49.333	0.00	0.05	0.348	O	|	|	|	|	1.12
49.417	0.00	0.05	0.348	O	|	|	|	|	1.12
49.500	0.00	0.05	0.347	O	|	|	|	|	1.12
49.583	0.00	0.05	0.347	O	|	|	|	|	1.12
49.667	0.00	0.05	0.347	O	|	|	|	|	1.12
49.750	0.00	0.05	0.346	O	|	|	|	|	1.12
49.833	0.00	0.05	0.346	O	|	|	|	|	1.12
49.917	0.00	0.05	0.346	O	|	|	|	|	1.12
50.000	0.00	0.05	0.345	O	|	|	|	|	1.12
50.083	0.00	0.05	0.345	O	|	|	|	|	1.12
50.167	0.00	0.05	0.345	O	|	|	|	|	1.12
50.250	0.00	0.05	0.344	O	|	|	|	|	1.12
50.333	0.00	0.05	0.344	O	|	|	|	|	1.11
50.417	0.00	0.04	0.344	O	|	|	|	|	1.11
50.500	0.00	0.04	0.343	O	|	|	|	|	1.11
50.583	0.00	0.04	0.343	O	|	|	|	|	1.11
50.667	0.00	0.04	0.343	O	|	|	|	|	1.11
50.750	0.00	0.04	0.343	O	|	|	|	|	1.11
50.833	0.00	0.04	0.342	O	|	|	|	|	1.11
50.917	0.00	0.04	0.342	O	|	|	|	|	1.11
51.000	0.00	0.04	0.342	O	|	|	|	|	1.11
51.083	0.00	0.04	0.341	O	|	|	|	|	1.11
51.167	0.00	0.04	0.341	O	|	|	|	|	1.11
51.250	0.00	0.04	0.341	O	|	|	|	|	1.11
51.333	0.00	0.04	0.341	O	|	|	|	|	1.11
51.417	0.00	0.04	0.340	O	|	|	|	|	1.11
51.500	0.00	0.04	0.340	O	|	|	|	|	1.11
51.583	0.00	0.04	0.340	O	|	|	|	|	1.10

51.667	0.00	0.04	0.339	O	|	|	|	|	1.10
51.750	0.00	0.04	0.339	O	|	|	|	|	1.10
51.833	0.00	0.04	0.339	O	|	|	|	|	1.10
51.917	0.00	0.04	0.339	O	|	|	|	|	1.10
52.000	0.00	0.04	0.338	O	|	|	|	|	1.10
52.083	0.00	0.04	0.338	O	|	|	|	|	1.10
52.167	0.00	0.04	0.338	O	|	|	|	|	1.10
52.250	0.00	0.04	0.337	O	|	|	|	|	1.10
52.333	0.00	0.04	0.337	O	|	|	|	|	1.10
52.417	0.00	0.04	0.337	O	|	|	|	|	1.10
52.500	0.00	0.04	0.337	O	|	|	|	|	1.10
52.583	0.00	0.04	0.336	O	|	|	|	|	1.10
52.667	0.00	0.04	0.336	O	|	|	|	|	1.10
52.750	0.00	0.04	0.336	O	|	|	|	|	1.10
52.833	0.00	0.04	0.336	O	|	|	|	|	1.10
52.917	0.00	0.04	0.335	O	|	|	|	|	1.09
53.000	0.00	0.04	0.335	O	|	|	|	|	1.09
53.083	0.00	0.04	0.335	O	|	|	|	|	1.09
53.167	0.00	0.04	0.335	O	|	|	|	|	1.09
53.250	0.00	0.04	0.334	O	|	|	|	|	1.09
53.333	0.00	0.04	0.334	O	|	|	|	|	1.09
53.417	0.00	0.04	0.334	O	|	|	|	|	1.09
53.500	0.00	0.04	0.334	O	|	|	|	|	1.09
53.583	0.00	0.04	0.333	O	|	|	|	|	1.09
53.667	0.00	0.04	0.333	O	|	|	|	|	1.09
53.750	0.00	0.04	0.333	O	|	|	|	|	1.09
53.833	0.00	0.03	0.333	O	|	|	|	|	1.09
53.917	0.00	0.03	0.332	O	|	|	|	|	1.09
54.000	0.00	0.03	0.332	O	|	|	|	|	

1.09

54.083	0.00	0.03	0.332	O	|	|	|	1.09
54.167	0.00	0.03	0.332	O	|	|	|	1.09
54.250	0.00	0.03	0.331	O	|	|	|	1.09
54.333	0.00	0.03	0.331	O	|	|	|	1.09
54.417	0.00	0.03	0.331	O	|	|	|	1.08
54.500	0.00	0.03	0.331	O	|	|	|	1.08
54.583	0.00	0.03	0.330	O	|	|	|	1.08
54.667	0.00	0.03	0.330	O	|	|	|	1.08
54.750	0.00	0.03	0.330	O	|	|	|	1.08
54.833	0.00	0.03	0.330	O	|	|	|	1.08
54.917	0.00	0.03	0.330	O	|	|	|	1.08
55.000	0.00	0.03	0.329	O	|	|	|	1.08
55.083	0.00	0.03	0.329	O	|	|	|	1.08
55.167	0.00	0.03	0.329	O	|	|	|	1.08
55.250	0.00	0.03	0.329	O	|	|	|	1.08
55.333	0.00	0.03	0.328	O	|	|	|	1.08
55.417	0.00	0.03	0.328	O	|	|	|	1.08
55.500	0.00	0.03	0.328	O	|	|	|	1.08
55.583	0.00	0.03	0.328	O	|	|	|	1.08
55.667	0.00	0.03	0.328	O	|	|	|	1.08
55.750	0.00	0.03	0.327	O	|	|	|	1.08
55.833	0.00	0.03	0.327	O	|	|	|	1.08
55.917	0.00	0.03	0.327	O	|	|	|	1.08
56.000	0.00	0.03	0.327	O	|	|	|	1.08
56.083	0.00	0.03	0.327	O	|	|	|	1.07
56.167	0.00	0.03	0.326	O	|	|	|	1.07
56.250	0.00	0.03	0.326	O	|	|	|	1.07
56.333	0.00	0.03	0.326	O	|	|	|	1.07

56.417	0.00	0.03	0.326	O	|	|	|	|	1.07
56.500	0.00	0.03	0.326	O	|	|	|	|	1.07
56.583	0.00	0.03	0.325	O	|	|	|	|	1.07
56.667	0.00	0.03	0.325	O	|	|	|	|	1.07
56.750	0.00	0.03	0.325	O	|	|	|	|	1.07
56.833	0.00	0.03	0.325	O	|	|	|	|	1.07
56.917	0.00	0.03	0.325	O	|	|	|	|	1.07
57.000	0.00	0.03	0.324	O	|	|	|	|	1.07
57.083	0.00	0.03	0.324	O	|	|	|	|	1.07
57.167	0.00	0.03	0.324	O	|	|	|	|	1.07
57.250	0.00	0.03	0.324	O	|	|	|	|	1.07
57.333	0.00	0.03	0.324	O	|	|	|	|	1.07
57.417	0.00	0.03	0.323	O	|	|	|	|	1.07
57.500	0.00	0.03	0.323	O	|	|	|	|	1.07
57.583	0.00	0.03	0.323	O	|	|	|	|	1.07
57.667	0.00	0.03	0.323	O	|	|	|	|	1.07
57.750	0.00	0.03	0.323	O	|	|	|	|	1.07
57.833	0.00	0.03	0.323	O	|	|	|	|	1.07
57.917	0.00	0.03	0.322	O	|	|	|	|	1.07
58.000	0.00	0.03	0.322	O	|	|	|	|	1.06
58.083	0.00	0.03	0.322	O	|	|	|	|	1.06
58.167	0.00	0.03	0.322	O	|	|	|	|	1.06
58.250	0.00	0.03	0.322	O	|	|	|	|	1.06
58.333	0.00	0.03	0.321	O	|	|	|	|	1.06
58.417	0.00	0.03	0.321	O	|	|	|	|	1.06
58.500	0.00	0.02	0.321	O	|	|	|	|	1.06
58.583	0.00	0.02	0.321	O	|	|	|	|	1.06
58.667	0.00	0.02	0.321	O	|	|	|	|	1.06
58.750	0.00	0.02	0.321	O	|	|	|	|	

1.06

58.833	0.00	0.02	0.320	O	|	|	|	|	1.06
58.917	0.00	0.02	0.320	O	|	|	|	|	1.06
59.000	0.00	0.02	0.320	O	|	|	|	|	1.06
59.083	0.00	0.02	0.320	O	|	|	|	|	1.06
59.167	0.00	0.02	0.320	O	|	|	|	|	1.06
59.250	0.00	0.02	0.320	O	|	|	|	|	1.06
59.333	0.00	0.02	0.319	O	|	|	|	|	1.06
59.417	0.00	0.02	0.319	O	|	|	|	|	1.06
59.500	0.00	0.02	0.319	O	|	|	|	|	1.06
59.583	0.00	0.02	0.319	O	|	|	|	|	1.06
59.667	0.00	0.02	0.319	O	|	|	|	|	1.06
59.750	0.00	0.02	0.319	O	|	|	|	|	1.06
59.833	0.00	0.02	0.319	O	|	|	|	|	1.06
59.917	0.00	0.02	0.318	O	|	|	|	|	1.06
60.000	0.00	0.02	0.318	O	|	|	|	|	1.06
60.083	0.00	0.02	0.318	O	|	|	|	|	1.06
60.167	0.00	0.02	0.318	O	|	|	|	|	1.05
60.250	0.00	0.02	0.318	O	|	|	|	|	1.05
60.333	0.00	0.02	0.318	O	|	|	|	|	1.05
60.417	0.00	0.02	0.317	O	|	|	|	|	1.05
60.500	0.00	0.02	0.317	O	|	|	|	|	1.05
60.583	0.00	0.02	0.317	O	|	|	|	|	1.05
60.667	0.00	0.02	0.317	O	|	|	|	|	1.05
60.750	0.00	0.02	0.317	O	|	|	|	|	1.05
60.833	0.00	0.02	0.317	O	|	|	|	|	1.05
60.917	0.00	0.02	0.317	O	|	|	|	|	1.05
61.000	0.00	0.02	0.316	O	|	|	|	|	1.05
61.083	0.00	0.02	0.316	O	|	|	|	|	1.05

61.167	0.00	0.02	0.316	O	|	|	|	|	1.05
61.250	0.00	0.02	0.316	O	|	|	|	|	1.05
61.333	0.00	0.02	0.316	O	|	|	|	|	1.05
61.417	0.00	0.02	0.316	O	|	|	|	|	1.05
61.500	0.00	0.02	0.316	O	|	|	|	|	1.05
61.583	0.00	0.02	0.315	O	|	|	|	|	1.05
61.667	0.00	0.02	0.315	O	|	|	|	|	1.05
61.750	0.00	0.02	0.315	O	|	|	|	|	1.05
61.833	0.00	0.02	0.315	O	|	|	|	|	1.05
61.917	0.00	0.02	0.315	O	|	|	|	|	1.05
62.000	0.00	0.02	0.315	O	|	|	|	|	1.05
62.083	0.00	0.02	0.315	O	|	|	|	|	1.05
62.167	0.00	0.02	0.315	O	|	|	|	|	1.05
62.250	0.00	0.02	0.314	O	|	|	|	|	1.05
62.333	0.00	0.02	0.314	O	|	|	|	|	1.05
62.417	0.00	0.02	0.314	O	|	|	|	|	1.05
62.500	0.00	0.02	0.314	O	|	|	|	|	1.05
62.583	0.00	0.02	0.314	O	|	|	|	|	1.05
62.667	0.00	0.02	0.314	O	|	|	|	|	1.05
62.750	0.00	0.02	0.314	O	|	|	|	|	1.04
62.833	0.00	0.02	0.313	O	|	|	|	|	1.04
62.917	0.00	0.02	0.313	O	|	|	|	|	1.04
63.000	0.00	0.02	0.313	O	|	|	|	|	1.04
63.083	0.00	0.02	0.313	O	|	|	|	|	1.04
63.167	0.00	0.02	0.313	O	|	|	|	|	1.04
63.250	0.00	0.02	0.313	O	|	|	|	|	1.04
63.333	0.00	0.02	0.313	O	|	|	|	|	1.04
63.417	0.00	0.02	0.313	O	|	|	|	|	1.04
63.500	0.00	0.02	0.313	O	|	|	|	|	

1.04

63.583	0.00	0.02	0.312	O	|	|	|	|	1.04
63.667	0.00	0.02	0.312	O	|	|	|	|	1.04
63.750	0.00	0.02	0.312	O	|	|	|	|	1.04
63.833	0.00	0.02	0.312	O	|	|	|	|	1.04
63.917	0.00	0.02	0.312	O	|	|	|	|	1.04
64.000	0.00	0.02	0.312	O	|	|	|	|	1.04
64.083	0.00	0.02	0.312	O	|	|	|	|	1.04
64.167	0.00	0.02	0.312	O	|	|	|	|	1.04
64.250	0.00	0.02	0.311	O	|	|	|	|	1.04
64.333	0.00	0.02	0.311	O	|	|	|	|	1.04
64.417	0.00	0.02	0.311	O	|	|	|	|	1.04
64.500	0.00	0.02	0.311	O	|	|	|	|	1.04
64.583	0.00	0.02	0.311	O	|	|	|	|	1.04
64.667	0.00	0.02	0.311	O	|	|	|	|	1.04
64.750	0.00	0.02	0.311	O	|	|	|	|	1.04
64.833	0.00	0.02	0.311	O	|	|	|	|	1.04
64.917	0.00	0.02	0.311	O	|	|	|	|	1.04
65.000	0.00	0.02	0.310	O	|	|	|	|	1.04
65.083	0.00	0.02	0.310	O	|	|	|	|	1.04
65.167	0.00	0.02	0.310	O	|	|	|	|	1.04
65.250	0.00	0.02	0.310	O	|	|	|	|	1.04
65.333	0.00	0.02	0.310	O	|	|	|	|	1.04
65.417	0.00	0.02	0.310	O	|	|	|	|	1.04
65.500	0.00	0.01	0.310	O	|	|	|	|	1.04
65.583	0.00	0.01	0.310	O	|	|	|	|	1.04
65.667	0.00	0.01	0.310	O	|	|	|	|	1.04
65.750	0.00	0.01	0.310	O	|	|	|	|	1.04
65.833	0.00	0.01	0.309	O	|	|	|	|	1.04

65.917	0.00	0.01	0.309	O	|	|	|	|	1.04
66.000	0.00	0.01	0.309	O	|	|	|	|	1.03
66.083	0.00	0.01	0.309	O	|	|	|	|	1.03
66.167	0.00	0.01	0.309	O	|	|	|	|	1.03
66.250	0.00	0.01	0.309	O	|	|	|	|	1.03
66.333	0.00	0.01	0.309	O	|	|	|	|	1.03
66.417	0.00	0.01	0.309	O	|	|	|	|	1.03
66.500	0.00	0.01	0.309	O	|	|	|	|	1.03
66.583	0.00	0.01	0.309	O	|	|	|	|	1.03
66.667	0.00	0.01	0.308	O	|	|	|	|	1.03
66.750	0.00	0.01	0.308	O	|	|	|	|	1.03
66.833	0.00	0.01	0.308	O	|	|	|	|	1.03
66.917	0.00	0.01	0.308	O	|	|	|	|	1.03
67.000	0.00	0.01	0.308	O	|	|	|	|	1.03
67.083	0.00	0.01	0.308	O	|	|	|	|	1.03
67.167	0.00	0.01	0.308	O	|	|	|	|	1.03
67.250	0.00	0.01	0.308	O	|	|	|	|	1.03
67.333	0.00	0.01	0.308	O	|	|	|	|	1.03
67.417	0.00	0.01	0.308	O	|	|	|	|	1.03
67.500	0.00	0.01	0.308	O	|	|	|	|	1.03
67.583	0.00	0.01	0.307	O	|	|	|	|	1.03
67.667	0.00	0.01	0.307	O	|	|	|	|	1.03
67.750	0.00	0.01	0.307	O	|	|	|	|	1.03
67.833	0.00	0.01	0.307	O	|	|	|	|	1.03
67.917	0.00	0.01	0.307	O	|	|	|	|	1.03
68.000	0.00	0.01	0.307	O	|	|	|	|	1.03
68.083	0.00	0.01	0.307	O	|	|	|	|	1.03
68.167	0.00	0.01	0.307	O	|	|	|	|	1.03
68.250	0.00	0.01	0.307	O	|	|	|	|	

1.03

68.333	0.00	0.01	0.307	O	|	|	|	|	1.03
68.417	0.00	0.01	0.307	O	|	|	|	|	1.03
68.500	0.00	0.01	0.307	O	|	|	|	|	1.03
68.583	0.00	0.01	0.306	O	|	|	|	|	1.03
68.667	0.00	0.01	0.306	O	|	|	|	|	1.03
68.750	0.00	0.01	0.306	O	|	|	|	|	1.03
68.833	0.00	0.01	0.306	O	|	|	|	|	1.03
68.917	0.00	0.01	0.306	O	|	|	|	|	1.03
69.000	0.00	0.01	0.306	O	|	|	|	|	1.03
69.083	0.00	0.01	0.306	O	|	|	|	|	1.03
69.167	0.00	0.01	0.306	O	|	|	|	|	1.03
69.250	0.00	0.01	0.306	O	|	|	|	|	1.03
69.333	0.00	0.01	0.306	O	|	|	|	|	1.03
69.417	0.00	0.01	0.306	O	|	|	|	|	1.03
69.500	0.00	0.01	0.306	O	|	|	|	|	1.03
69.583	0.00	0.01	0.305	O	|	|	|	|	1.03
69.667	0.00	0.01	0.305	O	|	|	|	|	1.03
69.750	0.00	0.01	0.305	O	|	|	|	|	1.03
69.833	0.00	0.01	0.305	O	|	|	|	|	1.03
69.917	0.00	0.01	0.305	O	|	|	|	|	1.03
70.000	0.00	0.01	0.305	O	|	|	|	|	1.03
70.083	0.00	0.01	0.305	O	|	|	|	|	1.03
70.167	0.00	0.01	0.305	O	|	|	|	|	1.03
70.250	0.00	0.01	0.305	O	|	|	|	|	1.02
70.333	0.00	0.01	0.305	O	|	|	|	|	1.02
70.417	0.00	0.01	0.305	O	|	|	|	|	1.02
70.500	0.00	0.01	0.305	O	|	|	|	|	1.02
70.583	0.00	0.01	0.305	O	|	|	|	|	1.02

70.667	0.00	0.01	0.305	O	|	|	|	|	1.02
70.750	0.00	0.01	0.304	O	|	|	|	|	1.02
70.833	0.00	0.01	0.304	O	|	|	|	|	1.02
70.917	0.00	0.01	0.304	O	|	|	|	|	1.02
71.000	0.00	0.01	0.304	O	|	|	|	|	1.02
71.083	0.00	0.01	0.304	O	|	|	|	|	1.02
71.167	0.00	0.01	0.304	O	|	|	|	|	1.02
71.250	0.00	0.01	0.304	O	|	|	|	|	1.02
71.333	0.00	0.01	0.304	O	|	|	|	|	1.02
71.417	0.00	0.01	0.304	O	|	|	|	|	1.02
71.500	0.00	0.01	0.304	O	|	|	|	|	1.02
71.583	0.00	0.01	0.304	O	|	|	|	|	1.02
71.667	0.00	0.01	0.304	O	|	|	|	|	1.02
71.750	0.00	0.01	0.304	O	|	|	|	|	1.02
71.833	0.00	0.01	0.304	O	|	|	|	|	1.02
71.917	0.00	0.01	0.304	O	|	|	|	|	1.02
72.000	0.00	0.01	0.303	O	|	|	|	|	1.02
72.083	0.00	0.01	0.303	O	|	|	|	|	1.02
72.167	0.00	0.01	0.303	O	|	|	|	|	1.02
72.250	0.00	0.01	0.303	O	|	|	|	|	1.02
72.333	0.00	0.01	0.303	O	|	|	|	|	1.02
72.417	0.00	0.01	0.303	O	|	|	|	|	1.02
72.500	0.00	0.01	0.303	O	|	|	|	|	1.02
72.583	0.00	0.01	0.303	O	|	|	|	|	1.02
72.667	0.00	0.01	0.303	O	|	|	|	|	1.02
72.750	0.00	0.01	0.303	O	|	|	|	|	1.02
72.833	0.00	0.01	0.303	O	|	|	|	|	1.02
72.917	0.00	0.01	0.303	O	|	|	|	|	1.02
73.000	0.00	0.01	0.303	O	|	|	|	|	

1.02

73.083	0.00	0.01	0.303	O	|	|	|	1.02
73.167	0.00	0.01	0.303	O	|	|	|	1.02
73.250	0.00	0.01	0.303	O	|	|	|	1.02
73.333	0.00	0.01	0.302	O	|	|	|	1.02
73.417	0.00	0.01	0.302	O	|	|	|	1.02
73.500	0.00	0.01	0.302	O	|	|	|	1.02
73.583	0.00	0.01	0.302	O	|	|	|	1.02
73.667	0.00	0.01	0.302	O	|	|	|	1.02
73.750	0.00	0.01	0.302	O	|	|	|	1.02
73.833	0.00	0.01	0.302	O	|	|	|	1.02
73.917	0.00	0.01	0.302	O	|	|	|	1.02
74.000	0.00	0.01	0.302	O	|	|	|	1.02
74.083	0.00	0.01	0.302	O	|	|	|	1.02
74.167	0.00	0.01	0.302	O	|	|	|	1.02
74.250	0.00	0.01	0.302	O	|	|	|	1.02
74.333	0.00	0.01	0.302	O	|	|	|	1.02
74.417	0.00	0.01	0.302	O	|	|	|	1.02
74.500	0.00	0.01	0.302	O	|	|	|	1.02
74.583	0.00	0.01	0.302	O	|	|	|	1.02
74.667	0.00	0.01	0.302	O	|	|	|	1.02
74.750	0.00	0.01	0.302	O	|	|	|	1.02
74.833	0.00	0.01	0.301	O	|	|	|	1.02
74.917	0.00	0.01	0.301	O	|	|	|	1.02
75.000	0.00	0.01	0.301	O	|	|	|	1.02
75.083	0.00	0.01	0.301	O	|	|	|	1.02
75.167	0.00	0.01	0.301	O	|	|	|	1.02
75.250	0.00	0.01	0.301	O	|	|	|	1.02
75.333	0.00	0.01	0.301	O	|	|	|	1.02

75.417	0.00	0.01	0.301	O	|	|	|	|	1.02
75.500	0.00	0.01	0.301	O	|	|	|	|	1.02
75.583	0.00	0.01	0.301	O	|	|	|	|	1.02
75.667	0.00	0.01	0.301	O	|	|	|	|	1.02
75.750	0.00	0.01	0.301	O	|	|	|	|	1.02
75.833	0.00	0.01	0.301	O	|	|	|	|	1.02
75.917	0.00	0.01	0.301	O	|	|	|	|	1.02
76.000	0.00	0.01	0.301	O	|	|	|	|	1.02
76.083	0.00	0.01	0.301	O	|	|	|	|	1.02
76.167	0.00	0.01	0.301	O	|	|	|	|	1.02
76.250	0.00	0.01	0.301	O	|	|	|	|	1.02
76.333	0.00	0.01	0.301	O	|	|	|	|	1.02
76.417	0.00	0.01	0.301	O	|	|	|	|	1.01
76.500	0.00	0.01	0.300	O	|	|	|	|	1.01
76.583	0.00	0.01	0.300	O	|	|	|	|	1.01
76.667	0.00	0.01	0.300	O	|	|	|	|	1.01
76.750	0.00	0.01	0.300	O	|	|	|	|	1.01
76.833	0.00	0.01	0.300	O	|	|	|	|	1.01
76.917	0.00	0.01	0.300	O	|	|	|	|	1.01
77.000	0.00	0.01	0.300	O	|	|	|	|	1.01
77.083	0.00	0.01	0.300	O	|	|	|	|	1.01
77.167	0.00	0.01	0.300	O	|	|	|	|	1.01
77.250	0.00	0.01	0.300	O	|	|	|	|	1.01
77.333	0.00	0.01	0.300	O	|	|	|	|	1.01
77.417	0.00	0.01	0.300	O	|	|	|	|	1.01
77.500	0.00	0.01	0.300	O	|	|	|	|	1.01
77.583	0.00	0.01	0.300	O	|	|	|	|	1.01
77.667	0.00	0.01	0.300	O	|	|	|	|	1.01
77.750	0.00	0.01	0.300	O	|	|	|	|	

1.01

77.833	0.00	0.01	0.300	O	|	|	|	|	1.01
77.917	0.00	0.01	0.300	O	|	|	|	|	1.01
78.000	0.00	0.01	0.300	O	|	|	|	|	1.01
78.083	0.00	0.01	0.300	O	|	|	|	|	1.01
78.167	0.00	0.01	0.300	O	|	|	|	|	1.01
78.250	0.00	0.01	0.300	O	|	|	|	|	1.01
78.333	0.00	0.01	0.300	O	|	|	|	|	1.01
78.417	0.00	0.01	0.299	O	|	|	|	|	1.01
78.500	0.00	0.01	0.299	O	|	|	|	|	1.01
78.583	0.00	0.01	0.299	O	|	|	|	|	1.01
78.667	0.00	0.01	0.299	O	|	|	|	|	1.01
78.750	0.00	0.01	0.299	O	|	|	|	|	1.01
78.833	0.00	0.01	0.299	O	|	|	|	|	1.01
78.917	0.00	0.01	0.299	O	|	|	|	|	1.01
79.000	0.00	0.01	0.299	O	|	|	|	|	1.01
79.083	0.00	0.01	0.299	O	|	|	|	|	1.01
79.167	0.00	0.01	0.299	O	|	|	|	|	1.01
79.250	0.00	0.01	0.299	O	|	|	|	|	1.01
79.333	0.00	0.01	0.299	O	|	|	|	|	1.01
79.417	0.00	0.01	0.299	O	|	|	|	|	1.01
79.500	0.00	0.01	0.299	O	|	|	|	|	1.01
79.583	0.00	0.01	0.299	O	|	|	|	|	1.01
79.667	0.00	0.01	0.299	O	|	|	|	|	1.01
79.750	0.00	0.01	0.299	O	|	|	|	|	1.01
79.833	0.00	0.01	0.299	O	|	|	|	|	1.01
79.917	0.00	0.01	0.299	O	|	|	|	|	1.01
80.000	0.00	0.01	0.299	O	|	|	|	|	1.01
80.083	0.00	0.01	0.299	O	|	|	|	|	1.01

80.167	0.00	0.01	0.299	O	|	|	|	|	1.01
80.250	0.00	0.01	0.299	O	|	|	|	|	1.01
80.333	0.00	0.01	0.299	O	|	|	|	|	1.01
80.417	0.00	0.01	0.299	O	|	|	|	|	1.01
80.500	0.00	0.01	0.299	O	|	|	|	|	1.01
80.583	0.00	0.00	0.299	O	|	|	|	|	1.01
80.667	0.00	0.00	0.298	O	|	|	|	|	1.01
80.750	0.00	0.00	0.298	O	|	|	|	|	1.01
80.833	0.00	0.00	0.298	O	|	|	|	|	1.01
80.917	0.00	0.00	0.298	O	|	|	|	|	1.01
81.000	0.00	0.00	0.298	O	|	|	|	|	1.01
81.083	0.00	0.00	0.298	O	|	|	|	|	1.01
81.167	0.00	0.00	0.298	O	|	|	|	|	1.01
81.250	0.00	0.00	0.298	O	|	|	|	|	1.01
81.333	0.00	0.00	0.298	O	|	|	|	|	1.01
81.417	0.00	0.00	0.298	O	|	|	|	|	1.01
81.500	0.00	0.00	0.298	O	|	|	|	|	1.01
81.583	0.00	0.00	0.298	O	|	|	|	|	1.01
81.667	0.00	0.00	0.298	O	|	|	|	|	1.01
81.750	0.00	0.00	0.298	O	|	|	|	|	1.01
81.833	0.00	0.00	0.298	O	|	|	|	|	1.01
81.917	0.00	0.00	0.298	O	|	|	|	|	1.01
82.000	0.00	0.00	0.298	O	|	|	|	|	1.01
82.083	0.00	0.00	0.298	O	|	|	|	|	1.01
82.167	0.00	0.00	0.298	O	|	|	|	|	1.01
82.250	0.00	0.00	0.298	O	|	|	|	|	1.01
82.333	0.00	0.00	0.298	O	|	|	|	|	1.01
82.417	0.00	0.00	0.298	O	|	|	|	|	1.01
82.500	0.00	0.00	0.298	O	|	|	|	|	

1.01

82.583	0.00	0.00	0.298	O	|	|	|	|	1.01
82.667	0.00	0.00	0.298	O	|	|	|	|	1.01
82.750	0.00	0.00	0.298	O	|	|	|	|	1.01
82.833	0.00	0.00	0.298	O	|	|	|	|	1.01
82.917	0.00	0.00	0.298	O	|	|	|	|	1.01
83.000	0.00	0.00	0.298	O	|	|	|	|	1.01
83.083	0.00	0.00	0.298	O	|	|	|	|	1.01
83.167	0.00	0.00	0.298	O	|	|	|	|	1.01
83.250	0.00	0.00	0.298	O	|	|	|	|	1.01
83.333	0.00	0.00	0.298	O	|	|	|	|	1.01
83.417	0.00	0.00	0.297	O	|	|	|	|	1.01
83.500	0.00	0.00	0.297	O	|	|	|	|	1.01
83.583	0.00	0.00	0.297	O	|	|	|	|	1.01
83.667	0.00	0.00	0.297	O	|	|	|	|	1.01
83.750	0.00	0.00	0.297	O	|	|	|	|	1.01
83.833	0.00	0.00	0.297	O	|	|	|	|	1.01
83.917	0.00	0.00	0.297	O	|	|	|	|	1.01
84.000	0.00	0.00	0.297	O	|	|	|	|	1.01
84.083	0.00	0.00	0.297	O	|	|	|	|	1.01
84.167	0.00	0.00	0.297	O	|	|	|	|	1.01
84.250	0.00	0.00	0.297	O	|	|	|	|	1.01
84.333	0.00	0.00	0.297	O	|	|	|	|	1.01
84.417	0.00	0.00	0.297	O	|	|	|	|	1.01
84.500	0.00	0.00	0.297	O	|	|	|	|	1.01
84.583	0.00	0.00	0.297	O	|	|	|	|	1.01
84.667	0.00	0.00	0.297	O	|	|	|	|	1.01
84.750	0.00	0.00	0.297	O	|	|	|	|	1.01
84.833	0.00	0.00	0.297	O	|	|	|	|	1.01

84.917	0.00	0.00	0.297	O	|	|	|	|	1.01
85.000	0.00	0.00	0.297	O	|	|	|	|	1.01
85.083	0.00	0.00	0.297	O	|	|	|	|	1.01
85.167	0.00	0.00	0.297	O	|	|	|	|	1.01
85.250	0.00	0.00	0.297	O	|	|	|	|	1.01
85.333	0.00	0.00	0.297	O	|	|	|	|	1.01
85.417	0.00	0.00	0.297	O	|	|	|	|	1.01
85.500	0.00	0.00	0.297	O	|	|	|	|	1.01
85.583	0.00	0.00	0.297	O	|	|	|	|	1.01
85.667	0.00	0.00	0.297	O	|	|	|	|	1.01
85.750	0.00	0.00	0.297	O	|	|	|	|	1.01
85.833	0.00	0.00	0.297	O	|	|	|	|	1.01
85.917	0.00	0.00	0.297	O	|	|	|	|	1.01
86.000	0.00	0.00	0.297	O	|	|	|	|	1.01
86.083	0.00	0.00	0.297	O	|	|	|	|	1.01
86.167	0.00	0.00	0.297	O	|	|	|	|	1.01
86.250	0.00	0.00	0.297	O	|	|	|	|	1.01
86.333	0.00	0.00	0.297	O	|	|	|	|	1.01
86.417	0.00	0.00	0.297	O	|	|	|	|	1.01
86.500	0.00	0.00	0.297	O	|	|	|	|	1.01
86.583	0.00	0.00	0.297	O	|	|	|	|	1.01
86.667	0.00	0.00	0.297	O	|	|	|	|	1.01
86.750	0.00	0.00	0.296	O	|	|	|	|	1.01
86.833	0.00	0.00	0.296	O	|	|	|	|	1.01
86.917	0.00	0.00	0.296	O	|	|	|	|	1.01
87.000	0.00	0.00	0.296	O	|	|	|	|	1.01
87.083	0.00	0.00	0.296	O	|	|	|	|	1.01
87.167	0.00	0.00	0.296	O	|	|	|	|	1.01
87.250	0.00	0.00	0.296	O	|	|	|	|	

1.01

87.333	0.00	0.00	0.296	O	|	|	|	|	1.01
87.417	0.00	0.00	0.296	O	|	|	|	|	1.01
87.500	0.00	0.00	0.296	O	|	|	|	|	1.01
87.583	0.00	0.00	0.296	O	|	|	|	|	1.01
87.667	0.00	0.00	0.296	O	|	|	|	|	1.01
87.750	0.00	0.00	0.296	O	|	|	|	|	1.01
87.833	0.00	0.00	0.296	O	|	|	|	|	1.01
87.917	0.00	0.00	0.296	O	|	|	|	|	1.01
88.000	0.00	0.00	0.296	O	|	|	|	|	1.00
88.083	0.00	0.00	0.296	O	|	|	|	|	1.00
88.167	0.00	0.00	0.296	O	|	|	|	|	1.00
88.250	0.00	0.00	0.296	O	|	|	|	|	1.00
88.333	0.00	0.00	0.296	O	|	|	|	|	1.00
88.417	0.00	0.00	0.296	O	|	|	|	|	1.00
88.500	0.00	0.00	0.296	O	|	|	|	|	1.00
88.583	0.00	0.00	0.296	O	|	|	|	|	1.00
88.667	0.00	0.00	0.296	O	|	|	|	|	1.00
88.750	0.00	0.00	0.296	O	|	|	|	|	1.00
88.833	0.00	0.00	0.296	O	|	|	|	|	1.00
88.917	0.00	0.00	0.296	O	|	|	|	|	1.00
89.000	0.00	0.00	0.296	O	|	|	|	|	1.00
89.083	0.00	0.00	0.296	O	|	|	|	|	1.00
89.167	0.00	0.00	0.296	O	|	|	|	|	1.00
89.250	0.00	0.00	0.296	O	|	|	|	|	1.00
89.333	0.00	0.00	0.296	O	|	|	|	|	1.00
89.417	0.00	0.00	0.296	O	|	|	|	|	1.00
89.500	0.00	0.00	0.296	O	|	|	|	|	1.00
89.583	0.00	0.00	0.296	O	|	|	|	|	1.00

89.667	0.00	0.00	0.296	O	|	|	|	|	1.00
89.750	0.00	0.00	0.296	O	|	|	|	|	1.00
89.833	0.00	0.00	0.296	O	|	|	|	|	1.00
89.917	0.00	0.00	0.296	O	|	|	|	|	1.00
90.000	0.00	0.00	0.296	O	|	|	|	|	1.00
90.083	0.00	0.00	0.296	O	|	|	|	|	1.00
90.167	0.00	0.00	0.296	O	|	|	|	|	1.00
90.250	0.00	0.00	0.296	O	|	|	|	|	1.00
90.333	0.00	0.00	0.296	O	|	|	|	|	1.00
90.417	0.00	0.00	0.296	O	|	|	|	|	1.00
90.500	0.00	0.00	0.296	O	|	|	|	|	1.00
90.583	0.00	0.00	0.296	O	|	|	|	|	1.00
90.667	0.00	0.00	0.296	O	|	|	|	|	1.00
90.750	0.00	0.00	0.296	O	|	|	|	|	1.00
90.833	0.00	0.00	0.296	O	|	|	|	|	1.00
90.917	0.00	0.00	0.296	O	|	|	|	|	1.00
91.000	0.00	0.00	0.296	O	|	|	|	|	1.00
91.083	0.00	0.00	0.296	O	|	|	|	|	1.00
91.167	0.00	0.00	0.295	O	|	|	|	|	1.00
91.250	0.00	0.00	0.295	O	|	|	|	|	1.00
91.333	0.00	0.00	0.295	O	|	|	|	|	1.00
91.417	0.00	0.00	0.295	O	|	|	|	|	1.00
91.500	0.00	0.00	0.295	O	|	|	|	|	1.00
91.583	0.00	0.00	0.295	O	|	|	|	|	1.00
91.667	0.00	0.00	0.295	O	|	|	|	|	1.00
91.750	0.00	0.00	0.295	O	|	|	|	|	1.00
91.833	0.00	0.00	0.295	O	|	|	|	|	1.00
91.917	0.00	0.00	0.295	O	|	|	|	|	1.00
92.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

92.083	0.00	0.00	0.295	O	|	|	|	|	1.00
92.167	0.00	0.00	0.295	O	|	|	|	|	1.00
92.250	0.00	0.00	0.295	O	|	|	|	|	1.00
92.333	0.00	0.00	0.295	O	|	|	|	|	1.00
92.417	0.00	0.00	0.295	O	|	|	|	|	1.00
92.500	0.00	0.00	0.295	O	|	|	|	|	1.00
92.583	0.00	0.00	0.295	O	|	|	|	|	1.00
92.667	0.00	0.00	0.295	O	|	|	|	|	1.00
92.750	0.00	0.00	0.295	O	|	|	|	|	1.00
92.833	0.00	0.00	0.295	O	|	|	|	|	1.00
92.917	0.00	0.00	0.295	O	|	|	|	|	1.00
93.000	0.00	0.00	0.295	O	|	|	|	|	1.00
93.083	0.00	0.00	0.295	O	|	|	|	|	1.00
93.167	0.00	0.00	0.295	O	|	|	|	|	1.00
93.250	0.00	0.00	0.295	O	|	|	|	|	1.00
93.333	0.00	0.00	0.295	O	|	|	|	|	1.00
93.417	0.00	0.00	0.295	O	|	|	|	|	1.00
93.500	0.00	0.00	0.295	O	|	|	|	|	1.00
93.583	0.00	0.00	0.295	O	|	|	|	|	1.00
93.667	0.00	0.00	0.295	O	|	|	|	|	1.00
93.750	0.00	0.00	0.295	O	|	|	|	|	1.00
93.833	0.00	0.00	0.295	O	|	|	|	|	1.00
93.917	0.00	0.00	0.295	O	|	|	|	|	1.00
94.000	0.00	0.00	0.295	O	|	|	|	|	1.00
94.083	0.00	0.00	0.295	O	|	|	|	|	1.00
94.167	0.00	0.00	0.295	O	|	|	|	|	1.00
94.250	0.00	0.00	0.295	O	|	|	|	|	1.00
94.333	0.00	0.00	0.295	O	|	|	|	|	1.00

94.417	0.00	0.00	0.295	O	|	|	|	|	1.00
94.500	0.00	0.00	0.295	O	|	|	|	|	1.00
94.583	0.00	0.00	0.295	O	|	|	|	|	1.00
94.667	0.00	0.00	0.295	O	|	|	|	|	1.00
94.750	0.00	0.00	0.295	O	|	|	|	|	1.00
94.833	0.00	0.00	0.295	O	|	|	|	|	1.00
94.917	0.00	0.00	0.295	O	|	|	|	|	1.00
95.000	0.00	0.00	0.295	O	|	|	|	|	1.00
95.083	0.00	0.00	0.295	O	|	|	|	|	1.00
95.167	0.00	0.00	0.295	O	|	|	|	|	1.00
95.250	0.00	0.00	0.295	O	|	|	|	|	1.00
95.333	0.00	0.00	0.295	O	|	|	|	|	1.00
95.417	0.00	0.00	0.295	O	|	|	|	|	1.00
95.500	0.00	0.00	0.295	O	|	|	|	|	1.00
95.583	0.00	0.00	0.295	O	|	|	|	|	1.00
95.667	0.00	0.00	0.295	O	|	|	|	|	1.00
95.750	0.00	0.00	0.295	O	|	|	|	|	1.00
95.833	0.00	0.00	0.295	O	|	|	|	|	1.00
95.917	0.00	0.00	0.295	O	|	|	|	|	1.00
96.000	0.00	0.00	0.295	O	|	|	|	|	1.00
96.083	0.00	0.00	0.295	O	|	|	|	|	1.00
96.167	0.00	0.00	0.295	O	|	|	|	|	1.00
96.250	0.00	0.00	0.295	O	|	|	|	|	1.00
96.333	0.00	0.00	0.295	O	|	|	|	|	1.00
96.417	0.00	0.00	0.295	O	|	|	|	|	1.00
96.500	0.00	0.00	0.295	O	|	|	|	|	1.00
96.583	0.00	0.00	0.295	O	|	|	|	|	1.00
96.667	0.00	0.00	0.295	O	|	|	|	|	1.00
96.750	0.00	0.00	0.295	O	|	|	|	|	

1.00

96.833	0.00	0.00	0.295	O	|	|	|	1.00
96.917	0.00	0.00	0.295	O	|	|	|	1.00
97.000	0.00	0.00	0.295	O	|	|	|	1.00
97.083	0.00	0.00	0.295	O	|	|	|	1.00
97.167	0.00	0.00	0.295	O	|	|	|	1.00
97.250	0.00	0.00	0.295	O	|	|	|	1.00
97.333	0.00	0.00	0.295	O	|	|	|	1.00
97.417	0.00	0.00	0.295	O	|	|	|	1.00
97.500	0.00	0.00	0.295	O	|	|	|	1.00
97.583	0.00	0.00	0.295	O	|	|	|	1.00
97.667	0.00	0.00	0.294	O	|	|	|	1.00
97.750	0.00	0.00	0.294	O	|	|	|	1.00
97.833	0.00	0.00	0.294	O	|	|	|	1.00
97.917	0.00	0.00	0.294	O	|	|	|	1.00
98.000	0.00	0.00	0.294	O	|	|	|	1.00
98.083	0.00	0.00	0.294	O	|	|	|	1.00
98.167	0.00	0.00	0.294	O	|	|	|	1.00
98.250	0.00	0.00	0.294	O	|	|	|	1.00
98.333	0.00	0.00	0.294	O	|	|	|	1.00
98.417	0.00	0.00	0.294	O	|	|	|	1.00
98.500	0.00	0.00	0.294	O	|	|	|	1.00
98.583	0.00	0.00	0.294	O	|	|	|	1.00
98.667	0.00	0.00	0.294	O	|	|	|	1.00
98.750	0.00	0.00	0.294	O	|	|	|	1.00
98.833	0.00	0.00	0.294	O	|	|	|	1.00
98.917	0.00	0.00	0.294	O	|	|	|	1.00
99.000	0.00	0.00	0.294	O	|	|	|	1.00
99.083	0.00	0.00	0.294	O	|	|	|	1.00

99.167	0.00	0.00	0.294	O	|	|	|	|	1.00
99.250	0.00	0.00	0.294	O	|	|	|	|	1.00
99.333	0.00	0.00	0.294	O	|	|	|	|	1.00
99.417	0.00	0.00	0.294	O	|	|	|	|	1.00
99.500	0.00	0.00	0.294	O	|	|	|	|	1.00
99.583	0.00	0.00	0.294	O	|	|	|	|	1.00
99.667	0.00	0.00	0.294	O	|	|	|	|	1.00
99.750	0.00	0.00	0.294	O	|	|	|	|	1.00
99.833	0.00	0.00	0.294	O	|	|	|	|	1.00
99.917	0.00	0.00	0.294	O	|	|	|	|	1.00
100.000	0.00	0.00	0.294	O	|	|	|	|	1.00
100.083	0.00	0.00	0.294	O	|	|	|	|	1.00
100.167	0.00	0.00	0.294	O	|	|	|	|	1.00
100.250	0.00	0.00	0.294	O	|	|	|	|	1.00
100.333	0.00	0.00	0.294	O	|	|	|	|	1.00
100.417	0.00	0.00	0.294	O	|	|	|	|	1.00
100.500	0.00	0.00	0.294	O	|	|	|	|	1.00
100.583	0.00	0.00	0.294	O	|	|	|	|	1.00
100.667	0.00	0.00	0.294	O	|	|	|	|	1.00
100.750	0.00	0.00	0.294	O	|	|	|	|	1.00
100.833	0.00	0.00	0.294	O	|	|	|	|	1.00
100.917	0.00	0.00	0.294	O	|	|	|	|	1.00
101.000	0.00	0.00	0.294	O	|	|	|	|	1.00
101.083	0.00	0.00	0.294	O	|	|	|	|	1.00
101.167	0.00	0.00	0.294	O	|	|	|	|	1.00
101.250	0.00	0.00	0.294	O	|	|	|	|	1.00
101.333	0.00	0.00	0.294	O	|	|	|	|	1.00
101.417	0.00	0.00	0.294	O	|	|	|	|	1.00
101.500	0.00	0.00	0.294	O	|	|	|	|	

1.00

101.583	0.00	0.00	0.294	O	|	|	|	1.00
101.667	0.00	0.00	0.294	O	|	|	|	1.00
101.750	0.00	0.00	0.294	O	|	|	|	1.00
101.833	0.00	0.00	0.294	O	|	|	|	1.00
101.917	0.00	0.00	0.294	O	|	|	|	1.00
102.000	0.00	0.00	0.294	O	|	|	|	1.00
102.083	0.00	0.00	0.294	O	|	|	|	1.00
102.167	0.00	0.00	0.294	O	|	|	|	1.00
102.250	0.00	0.00	0.294	O	|	|	|	1.00
102.333	0.00	0.00	0.294	O	|	|	|	1.00
102.417	0.00	0.00	0.294	O	|	|	|	1.00
102.500	0.00	0.00	0.294	O	|	|	|	1.00
102.583	0.00	0.00	0.294	O	|	|	|	1.00
102.667	0.00	0.00	0.294	O	|	|	|	1.00
102.750	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1233
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.329 (CFS)
Total volume = 0.738 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 6 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP6100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 74
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.994 (CFS)
Total volume = 1.481 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	3.0	6.00	9.00	11.99	Depth (Ft.)
0.083	0.60	0.00	0.002	OI	|	|	|	|	0.01
0.167	1.11	0.00	0.008	O I	|	|	|	|	0.03
0.250	1.25	0.00	0.016	O I	|	|	|	|	0.05
0.333	1.27	0.00	0.025	O I	|	|	|	|	0.08
0.417	1.27	0.00	0.033	O I	|	|	|	|	0.11
0.500	1.39	0.00	0.043	O I	|	|	|	|	0.14
0.583	1.47	0.00	0.052	O I	|	|	|	|	0.18
0.667	1.48	0.00	0.063	O I	|	|	|	|	0.21
0.750	1.48	0.00	0.073	O I	|	|	|	|	0.25
0.833	1.48	0.00	0.083	O I	|	|	|	|	0.28
0.917	1.48	0.00	0.093	O I	|	|	|	|	0.32
1.000	1.60	0.00	0.104	O I	|	|	|	|	0.35
1.083	1.68	0.00	0.115	O I	|	|	|	|	0.39
1.167	1.69	0.00	0.127	O I	|	|	|	|	0.43
1.250	1.69	0.00	0.138	O I	|	|	|	|	0.47
1.333	1.69	0.00	0.150	O I	|	|	|	|	0.51
1.417	1.69	0.00	0.161	O I	|	|	|	|	

0.55

1.500	1.69	0.00	0.173	O	I	|	|	|	0.59
1.583	1.69	0.00	0.185	O	I	|	|	|	0.63
1.667	1.69	0.00	0.196	O	I	|	|	|	0.67
1.750	1.69	0.00	0.208	O	I	|	|	|	0.71
1.833	1.69	0.00	0.220	O	I	|	|	|	0.75
1.917	1.69	0.00	0.231	O	I	|	|	|	0.79
2.000	1.81	0.00	0.243	O	I	|	|	|	0.83
2.083	1.77	0.00	0.256	O	I	|	|	|	0.87
2.167	1.82	0.00	0.268	O	I	|	|	|	0.91
2.250	1.89	0.00	0.281	O	I	|	|	|	0.95
2.333	1.90	0.00	0.294	O	I	|	|	|	1.00
2.417	1.90	0.01	0.307	O	I	|	|	|	1.03
2.500	1.90	0.02	0.320	O	I	|	|	|	1.06
2.583	1.90	0.04	0.333	O	I	|	|	|	1.09
2.667	1.90	0.05	0.345	O	I	|	|	|	1.12
2.750	2.02	0.06	0.359	O	I	|	|	|	1.15
2.833	2.10	0.07	0.372	O	I	|	|	|	1.18
2.917	2.11	0.08	0.386	O	I	|	|	|	1.21
3.000	2.11	0.09	0.400	O	I	|	|	|	1.24
3.083	2.11	0.10	0.414	O	I	|	|	|	1.27
3.167	2.23	0.11	0.428	O	I	|	|	|	1.30
3.250	2.31	0.11	0.443	O	I	|	|	|	1.34
3.333	2.32	0.12	0.458	O	I	|	|	|	1.37
3.417	2.44	0.12	0.474	O	I	|	|	|	1.40
3.500	2.64	0.13	0.491	O	I	|	|	|	1.44
3.583	2.85	0.13	0.509	O	I	|	|	|	1.48
3.667	2.94	0.14	0.528	O	I	|	|	|	1.52
3.750	3.08	0.16	0.547	O	I	|	|	|	1.56
3.833	3.15	0.17	0.568	O	I	|	|	|	1.60
3.917	3.29	0.18	0.589	O	I	|	|	|	

1.64

4.000	3.37	0.20	0.610	O	I	|	|	|	1.68
4.083	3.50	0.21	0.633	O	|I	|	|	|	1.73
4.167	3.70	0.22	0.656	O	|I	|	|	|	1.78
4.250	3.91	0.23	0.680	O	| I	|	|	|	1.82
4.333	4.12	0.24	0.706	O	| I	|	|	|	1.87
4.417	4.33	0.25	0.734	O	| I	|	|	|	1.93
4.500	4.42	0.26	0.762	O	| I	|	|	|	1.98
4.583	4.55	0.27	0.791	O	| I	|	|	|	2.04
4.667	4.75	0.28	0.822	O	| I	|	|	|	2.10
4.750	4.96	0.29	0.853	O	| I	|	|	|	2.16
4.833	5.06	0.30	0.886	O	| I	|	|	|	2.22
4.917	5.19	0.31	0.919	O	| I	|	|	|	2.29
5.000	5.39	0.32	0.953	O	| I	|	|	|	2.35
5.083	6.19	0.33	0.991	O	| I	|	|	|	2.42
5.167	7.38	0.34	1.035	O	| | I	|	|	|	2.51
5.250	8.36	0.35	1.087	O	| | I	|	|	|	2.61
5.333	9.15	0.36	1.145	O	| | I	|	|	|	2.72
5.417	10.19	0.38	1.209	|O	| |	|	| I	|	2.84
5.500	11.99	0.39	1.283	|O	| |	|	|	I	2.98
5.583	7.80	0.41	1.348	|O	| | I	|	|	|	3.11
5.667	3.39	0.41	1.384	|O	|I	|	|	|	3.18
5.750	1.67	0.42	1.398	|O I	|	|	|	|	3.21
5.833	1.19	0.42	1.405	|O I	|	|	|	|	3.22
5.917	0.83	0.42	1.409	|OI	|	|	|	|	3.23
6.000	0.54	0.42	1.411	|O	|	|	|	|	3.23
6.083	0.20	0.42	1.411	IO	|	|	|	|	3.23
6.167	0.03	0.42	1.409	IO	|	|	|	|	3.23
6.250	0.00	0.42	1.406	IO	|	|	|	|	3.22
6.333	0.00	0.42	1.403	IO	|	|	|	|	3.22
6.417	0.00	0.42	1.400	IO	|	|	|	|	3.21
6.500	0.00	0.42	1.397	IO	|	|	|	|	

3.21

6.583	0.00	0.42	1.394	IO				3.20
6.667	0.00	0.42	1.391	IO				3.20
6.750	0.00	0.41	1.389	IO				3.19
6.833	0.00	0.41	1.386	IO				3.18
6.917	0.00	0.41	1.383	IO				3.18
7.000	0.00	0.41	1.380	IO				3.17
7.083	0.00	0.41	1.377	IO				3.17
7.167	0.00	0.41	1.374	IO				3.16
7.250	0.00	0.41	1.372	IO				3.16
7.333	0.00	0.41	1.369	IO				3.15
7.417	0.00	0.41	1.366	IO				3.15
7.500	0.00	0.41	1.363	IO				3.14
7.583	0.00	0.41	1.360	IO				3.13
7.667	0.00	0.41	1.357	IO				3.13
7.750	0.00	0.41	1.355	IO				3.12
7.833	0.00	0.41	1.352	IO				3.12
7.917	0.00	0.41	1.349	IO				3.11
8.000	0.00	0.41	1.346	IO				3.11
8.083	0.00	0.41	1.343	IO				3.10
8.167	0.00	0.40	1.341	IO				3.10
8.250	0.00	0.40	1.338	IO				3.09
8.333	0.00	0.40	1.335	IO				3.08
8.417	0.00	0.40	1.332	IO				3.08
8.500	0.00	0.40	1.329	IO				3.07
8.583	0.00	0.40	1.327	IO				3.07
8.667	0.00	0.40	1.324	IO				3.06
8.750	0.00	0.40	1.321	IO				3.06
8.833	0.00	0.40	1.318	IO				3.05

8.917	0.00	0.40	1.316	IO	|	|	|	3.05
9.000	0.00	0.40	1.313	IO	|	|	|	3.04
9.083	0.00	0.40	1.310	IO	|	|	|	3.04
9.167	0.00	0.40	1.307	IO	|	|	|	3.03
9.250	0.00	0.40	1.305	IO	|	|	|	3.02
9.333	0.00	0.40	1.302	IO	|	|	|	3.02
9.417	0.00	0.40	1.299	IO	|	|	|	3.01
9.500	0.00	0.40	1.296	IO	|	|	|	3.01
9.583	0.00	0.40	1.294	IO	|	|	|	3.00
9.667	0.00	0.39	1.291	IO	|	|	|	3.00
9.750	0.00	0.39	1.288	IO	|	|	|	2.99
9.833	0.00	0.39	1.286	IO	|	|	|	2.99
9.917	0.00	0.39	1.283	IO	|	|	|	2.98
10.000	0.00	0.39	1.280	IO	|	|	|	2.98
10.083	0.00	0.39	1.278	IO	|	|	|	2.97
10.167	0.00	0.39	1.275	IO	|	|	|	2.97
10.250	0.00	0.39	1.272	IO	|	|	|	2.96
10.333	0.00	0.39	1.269	IO	|	|	|	2.96
10.417	0.00	0.39	1.267	IO	|	|	|	2.95
10.500	0.00	0.39	1.264	IO	|	|	|	2.95
10.583	0.00	0.39	1.261	IO	|	|	|	2.94
10.667	0.00	0.39	1.259	IO	|	|	|	2.94
10.750	0.00	0.39	1.256	IO	|	|	|	2.93
10.833	0.00	0.39	1.253	IO	|	|	|	2.93
10.917	0.00	0.39	1.251	IO	|	|	|	2.92
11.000	0.00	0.39	1.248	IO	|	|	|	2.91
11.083	0.00	0.38	1.245	IO	|	|	|	2.91
11.167	0.00	0.38	1.243	IO	|	|	|	2.90
11.250	0.00	0.38	1.240	IO	|	|	|	

2.90

11.333	0.00	0.38	1.237	IO	|	|	|	2.89
11.417	0.00	0.38	1.235	IO	|	|	|	2.89
11.500	0.00	0.38	1.232	IO	|	|	|	2.88
11.583	0.00	0.38	1.230	IO	|	|	|	2.88
11.667	0.00	0.38	1.227	IO	|	|	|	2.87
11.750	0.00	0.38	1.224	IO	|	|	|	2.87
11.833	0.00	0.38	1.222	IO	|	|	|	2.86
11.917	0.00	0.38	1.219	IO	|	|	|	2.86
12.000	0.00	0.38	1.216	IO	|	|	|	2.85
12.083	0.00	0.38	1.214	IO	|	|	|	2.85
12.167	0.00	0.38	1.211	IO	|	|	|	2.84
12.250	0.00	0.38	1.209	IO	|	|	|	2.84
12.333	0.00	0.38	1.206	IO	|	|	|	2.83
12.417	0.00	0.38	1.204	IO	|	|	|	2.83
12.500	0.00	0.38	1.201	IO	|	|	|	2.82
12.583	0.00	0.37	1.198	O	|	|	|	2.82
12.667	0.00	0.37	1.196	O	|	|	|	2.81
12.750	0.00	0.37	1.193	O	|	|	|	2.81
12.833	0.00	0.37	1.191	O	|	|	|	2.80
12.917	0.00	0.37	1.188	O	|	|	|	2.80
13.000	0.00	0.37	1.185	O	|	|	|	2.79
13.083	0.00	0.37	1.183	O	|	|	|	2.79
13.167	0.00	0.37	1.180	O	|	|	|	2.78
13.250	0.00	0.37	1.178	O	|	|	|	2.78
13.333	0.00	0.37	1.175	O	|	|	|	2.77
13.417	0.00	0.37	1.173	O	|	|	|	2.77
13.500	0.00	0.37	1.170	O	|	|	|	2.76
13.583	0.00	0.37	1.168	O	|	|	|	2.76

13.667	0.00	0.37	1.165	O	|	|	|	|	2.75
13.750	0.00	0.37	1.163	O	|	|	|	|	2.75
13.833	0.00	0.37	1.160	O	|	|	|	|	2.74
13.917	0.00	0.37	1.158	O	|	|	|	|	2.74
14.000	0.00	0.37	1.155	O	|	|	|	|	2.73
14.083	0.00	0.36	1.153	O	|	|	|	|	2.73
14.167	0.00	0.36	1.150	O	|	|	|	|	2.73
14.250	0.00	0.36	1.147	O	|	|	|	|	2.72
14.333	0.00	0.36	1.145	O	|	|	|	|	2.72
14.417	0.00	0.36	1.142	O	|	|	|	|	2.71
14.500	0.00	0.36	1.140	O	|	|	|	|	2.71
14.583	0.00	0.36	1.138	O	|	|	|	|	2.70
14.667	0.00	0.36	1.135	O	|	|	|	|	2.70
14.750	0.00	0.36	1.133	O	|	|	|	|	2.69
14.833	0.00	0.36	1.130	O	|	|	|	|	2.69
14.917	0.00	0.36	1.128	O	|	|	|	|	2.68
15.000	0.00	0.36	1.125	O	|	|	|	|	2.68
15.083	0.00	0.36	1.123	O	|	|	|	|	2.67
15.167	0.00	0.36	1.120	O	|	|	|	|	2.67
15.250	0.00	0.36	1.118	O	|	|	|	|	2.66
15.333	0.00	0.36	1.115	O	|	|	|	|	2.66
15.417	0.00	0.36	1.113	O	|	|	|	|	2.66
15.500	0.00	0.35	1.110	O	|	|	|	|	2.65
15.583	0.00	0.35	1.108	O	|	|	|	|	2.65
15.667	0.00	0.35	1.106	O	|	|	|	|	2.64
15.750	0.00	0.35	1.103	O	|	|	|	|	2.64
15.833	0.00	0.35	1.101	O	|	|	|	|	2.63
15.917	0.00	0.35	1.098	O	|	|	|	|	2.63
16.000	0.00	0.35	1.096	O	|	|	|	|	

2.62

16.083	0.00	0.35	1.093	O	|	|	|	2.62
16.167	0.00	0.35	1.091	O	|	|	|	2.61
16.250	0.00	0.35	1.089	O	|	|	|	2.61
16.333	0.00	0.35	1.086	O	|	|	|	2.60
16.417	0.00	0.35	1.084	O	|	|	|	2.60
16.500	0.00	0.35	1.081	O	|	|	|	2.60
16.583	0.00	0.35	1.079	O	|	|	|	2.59
16.667	0.00	0.35	1.077	O	|	|	|	2.59
16.750	0.00	0.35	1.074	O	|	|	|	2.58
16.833	0.00	0.35	1.072	O	|	|	|	2.58
16.917	0.00	0.35	1.069	O	|	|	|	2.57
17.000	0.00	0.34	1.067	O	|	|	|	2.57
17.083	0.00	0.34	1.065	O	|	|	|	2.56
17.167	0.00	0.34	1.062	O	|	|	|	2.56
17.250	0.00	0.34	1.060	O	|	|	|	2.55
17.333	0.00	0.34	1.058	O	|	|	|	2.55
17.417	0.00	0.34	1.055	O	|	|	|	2.55
17.500	0.00	0.34	1.053	O	|	|	|	2.54
17.583	0.00	0.34	1.051	O	|	|	|	2.54
17.667	0.00	0.34	1.048	O	|	|	|	2.53
17.750	0.00	0.34	1.046	O	|	|	|	2.53
17.833	0.00	0.34	1.044	O	|	|	|	2.52
17.917	0.00	0.34	1.041	O	|	|	|	2.52
18.000	0.00	0.34	1.039	O	|	|	|	2.51
18.083	0.00	0.34	1.037	O	|	|	|	2.51
18.167	0.00	0.34	1.034	O	|	|	|	2.51
18.250	0.00	0.34	1.032	O	|	|	|	2.50
18.333	0.00	0.34	1.030	O	|	|	|	2.50

18.417	0.00	0.34	1.027	O	|	|	|	|	2.49
18.500	0.00	0.33	1.025	O	|	|	|	|	2.49
18.583	0.00	0.33	1.023	O	|	|	|	|	2.48
18.667	0.00	0.33	1.020	O	|	|	|	|	2.48
18.750	0.00	0.33	1.018	O	|	|	|	|	2.48
18.833	0.00	0.33	1.016	O	|	|	|	|	2.47
18.917	0.00	0.33	1.014	O	|	|	|	|	2.47
19.000	0.00	0.33	1.011	O	|	|	|	|	2.46
19.083	0.00	0.33	1.009	O	|	|	|	|	2.46
19.167	0.00	0.33	1.007	O	|	|	|	|	2.45
19.250	0.00	0.33	1.004	O	|	|	|	|	2.45
19.333	0.00	0.33	1.002	O	|	|	|	|	2.44
19.417	0.00	0.33	1.000	O	|	|	|	|	2.44
19.500	0.00	0.33	0.998	O	|	|	|	|	2.44
19.583	0.00	0.33	0.995	O	|	|	|	|	2.43
19.667	0.00	0.33	0.993	O	|	|	|	|	2.43
19.750	0.00	0.33	0.991	O	|	|	|	|	2.42
19.833	0.00	0.33	0.989	O	|	|	|	|	2.42
19.917	0.00	0.32	0.986	O	|	|	|	|	2.41
20.000	0.00	0.32	0.984	O	|	|	|	|	2.41
20.083	0.00	0.32	0.982	O	|	|	|	|	2.41
20.167	0.00	0.32	0.980	O	|	|	|	|	2.40
20.250	0.00	0.32	0.978	O	|	|	|	|	2.40
20.333	0.00	0.32	0.975	O	|	|	|	|	2.39
20.417	0.00	0.32	0.973	O	|	|	|	|	2.39
20.500	0.00	0.32	0.971	O	|	|	|	|	2.39
20.583	0.00	0.32	0.969	O	|	|	|	|	2.38
20.667	0.00	0.32	0.966	O	|	|	|	|	2.38
20.750	0.00	0.32	0.964	O	|	|	|	|	

2.37

20.833	0.00	0.32	0.962	O	|	|	|	2.37
20.917	0.00	0.32	0.960	O	|	|	|	2.36
21.000	0.00	0.32	0.958	O	|	|	|	2.36
21.083	0.00	0.32	0.956	O	|	|	|	2.36
21.167	0.00	0.32	0.953	O	|	|	|	2.35
21.250	0.00	0.32	0.951	O	|	|	|	2.35
21.333	0.00	0.31	0.949	O	|	|	|	2.34
21.417	0.00	0.31	0.947	O	|	|	|	2.34
21.500	0.00	0.31	0.945	O	|	|	|	2.34
21.583	0.00	0.31	0.943	O	|	|	|	2.33
21.667	0.00	0.31	0.940	O	|	|	|	2.33
21.750	0.00	0.31	0.938	O	|	|	|	2.32
21.833	0.00	0.31	0.936	O	|	|	|	2.32
21.917	0.00	0.31	0.934	O	|	|	|	2.31
22.000	0.00	0.31	0.932	O	|	|	|	2.31
22.083	0.00	0.31	0.930	O	|	|	|	2.31
22.167	0.00	0.31	0.928	O	|	|	|	2.30
22.250	0.00	0.31	0.925	O	|	|	|	2.30
22.333	0.00	0.31	0.923	O	|	|	|	2.29
22.417	0.00	0.31	0.921	O	|	|	|	2.29
22.500	0.00	0.31	0.919	O	|	|	|	2.29
22.583	0.00	0.31	0.917	O	|	|	|	2.28
22.667	0.00	0.31	0.915	O	|	|	|	2.28
22.750	0.00	0.31	0.913	O	|	|	|	2.27
22.833	0.00	0.30	0.911	O	|	|	|	2.27
22.917	0.00	0.30	0.909	O	|	|	|	2.27
23.000	0.00	0.30	0.906	O	|	|	|	2.26
23.083	0.00	0.30	0.904	O	|	|	|	2.26

23.167	0.00	0.30	0.902	O	|	|	|	|	2.25
23.250	0.00	0.30	0.900	O	|	|	|	|	2.25
23.333	0.00	0.30	0.898	O	|	|	|	|	2.25
23.417	0.00	0.30	0.896	O	|	|	|	|	2.24
23.500	0.00	0.30	0.894	O	|	|	|	|	2.24
23.583	0.00	0.30	0.892	O	|	|	|	|	2.23
23.667	0.00	0.30	0.890	O	|	|	|	|	2.23
23.750	0.00	0.30	0.888	O	|	|	|	|	2.23
23.833	0.00	0.30	0.886	O	|	|	|	|	2.22
23.917	0.00	0.30	0.884	O	|	|	|	|	2.22
24.000	0.00	0.30	0.882	O	|	|	|	|	2.21
24.083	0.00	0.30	0.880	O	|	|	|	|	2.21
24.167	0.00	0.30	0.878	O	|	|	|	|	2.21
24.250	0.00	0.29	0.876	O	|	|	|	|	2.20
24.333	0.00	0.29	0.873	O	|	|	|	|	2.20
24.417	0.00	0.29	0.871	O	|	|	|	|	2.20
24.500	0.00	0.29	0.869	O	|	|	|	|	2.19
24.583	0.00	0.29	0.867	O	|	|	|	|	2.19
24.667	0.00	0.29	0.865	O	|	|	|	|	2.18
24.750	0.00	0.29	0.863	O	|	|	|	|	2.18
24.833	0.00	0.29	0.861	O	|	|	|	|	2.18
24.917	0.00	0.29	0.859	O	|	|	|	|	2.17
25.000	0.00	0.29	0.857	O	|	|	|	|	2.17
25.083	0.00	0.29	0.855	O	|	|	|	|	2.16
25.167	0.00	0.29	0.853	O	|	|	|	|	2.16
25.250	0.00	0.29	0.851	O	|	|	|	|	2.16
25.333	0.00	0.29	0.849	O	|	|	|	|	2.15
25.417	0.00	0.29	0.847	O	|	|	|	|	2.15
25.500	0.00	0.29	0.846	O	|	|	|	|	

2.15

25.583	0.00	0.29	0.844	O	|	|	|	2.14
25.667	0.00	0.28	0.842	O	|	|	|	2.14
25.750	0.00	0.28	0.840	O	|	|	|	2.13
25.833	0.00	0.28	0.838	O	|	|	|	2.13
25.917	0.00	0.28	0.836	O	|	|	|	2.13
26.000	0.00	0.28	0.834	O	|	|	|	2.12
26.083	0.00	0.28	0.832	O	|	|	|	2.12
26.167	0.00	0.28	0.830	O	|	|	|	2.12
26.250	0.00	0.28	0.828	O	|	|	|	2.11
26.333	0.00	0.28	0.826	O	|	|	|	2.11
26.417	0.00	0.28	0.824	O	|	|	|	2.10
26.500	0.00	0.28	0.822	O	|	|	|	2.10
26.583	0.00	0.28	0.820	O	|	|	|	2.10
26.667	0.00	0.28	0.818	O	|	|	|	2.09
26.750	0.00	0.28	0.816	O	|	|	|	2.09
26.833	0.00	0.28	0.814	O	|	|	|	2.09
26.917	0.00	0.28	0.813	O	|	|	|	2.08
27.000	0.00	0.28	0.811	O	|	|	|	2.08
27.083	0.00	0.28	0.809	O	|	|	|	2.07
27.167	0.00	0.27	0.807	O	|	|	|	2.07
27.250	0.00	0.27	0.805	O	|	|	|	2.07
27.333	0.00	0.27	0.803	O	|	|	|	2.06
27.417	0.00	0.27	0.801	O	|	|	|	2.06
27.500	0.00	0.27	0.799	O	|	|	|	2.06
27.583	0.00	0.27	0.797	O	|	|	|	2.05
27.667	0.00	0.27	0.796	O	|	|	|	2.05
27.750	0.00	0.27	0.794	O	|	|	|	2.05
27.833	0.00	0.27	0.792	O	|	|	|	2.04

27.917	0.00	0.27	0.790	O	|	|	|	|	2.04
28.000	0.00	0.27	0.788	O	|	|	|	|	2.03
28.083	0.00	0.27	0.786	O	|	|	|	|	2.03
28.167	0.00	0.27	0.784	O	|	|	|	|	2.03
28.250	0.00	0.27	0.783	O	|	|	|	|	2.02
28.333	0.00	0.27	0.781	O	|	|	|	|	2.02
28.417	0.00	0.27	0.779	O	|	|	|	|	2.02
28.500	0.00	0.27	0.777	O	|	|	|	|	2.01
28.583	0.00	0.27	0.775	O	|	|	|	|	2.01
28.667	0.00	0.27	0.773	O	|	|	|	|	2.01
28.750	0.00	0.26	0.772	O	|	|	|	|	2.00
28.833	0.00	0.26	0.770	O	|	|	|	|	2.00
28.917	0.00	0.26	0.768	O	|	|	|	|	2.00
29.000	0.00	0.26	0.766	O	|	|	|	|	1.99
29.083	0.00	0.26	0.764	O	|	|	|	|	1.99
29.167	0.00	0.26	0.763	O	|	|	|	|	1.99
29.250	0.00	0.26	0.761	O	|	|	|	|	1.98
29.333	0.00	0.26	0.759	O	|	|	|	|	1.98
29.417	0.00	0.26	0.757	O	|	|	|	|	1.97
29.500	0.00	0.26	0.755	O	|	|	|	|	1.97
29.583	0.00	0.26	0.754	O	|	|	|	|	1.97
29.667	0.00	0.26	0.752	O	|	|	|	|	1.96
29.750	0.00	0.26	0.750	O	|	|	|	|	1.96
29.833	0.00	0.26	0.748	O	|	|	|	|	1.96
29.917	0.00	0.26	0.747	O	|	|	|	|	1.95
30.000	0.00	0.25	0.745	O	|	|	|	|	1.95
30.083	0.00	0.25	0.743	O	|	|	|	|	1.95
30.167	0.00	0.25	0.741	O	|	|	|	|	1.94
30.250	0.00	0.25	0.740	O	|	|	|	|	

1.94

30.333	0.00	0.25	0.738	O	|	|	|	|	1.94
30.417	0.00	0.25	0.736	O	|	|	|	|	1.93
30.500	0.00	0.25	0.734	O	|	|	|	|	1.93
30.583	0.00	0.25	0.733	O	|	|	|	|	1.93
30.667	0.00	0.25	0.731	O	|	|	|	|	1.92
30.750	0.00	0.25	0.729	O	|	|	|	|	1.92
30.833	0.00	0.25	0.727	O	|	|	|	|	1.92
30.917	0.00	0.25	0.726	O	|	|	|	|	1.91
31.000	0.00	0.25	0.724	O	|	|	|	|	1.91
31.083	0.00	0.25	0.722	O	|	|	|	|	1.91
31.167	0.00	0.25	0.721	O	|	|	|	|	1.90
31.250	0.00	0.25	0.719	O	|	|	|	|	1.90
31.333	0.00	0.24	0.717	O	|	|	|	|	1.90
31.417	0.00	0.24	0.716	O	|	|	|	|	1.89
31.500	0.00	0.24	0.714	O	|	|	|	|	1.89
31.583	0.00	0.24	0.712	O	|	|	|	|	1.89
31.667	0.00	0.24	0.711	O	|	|	|	|	1.88
31.750	0.00	0.24	0.709	O	|	|	|	|	1.88
31.833	0.00	0.24	0.707	O	|	|	|	|	1.88
31.917	0.00	0.24	0.706	O	|	|	|	|	1.87
32.000	0.00	0.24	0.704	O	|	|	|	|	1.87
32.083	0.00	0.24	0.702	O	|	|	|	|	1.87
32.167	0.00	0.24	0.701	O	|	|	|	|	1.86
32.250	0.00	0.24	0.699	O	|	|	|	|	1.86
32.333	0.00	0.24	0.697	O	|	|	|	|	1.86
32.417	0.00	0.24	0.696	O	|	|	|	|	1.85
32.500	0.00	0.24	0.694	O	|	|	|	|	1.85
32.583	0.00	0.24	0.692	O	|	|	|	|	1.85

32.667	0.00	0.24	0.691	O	|	|	|	|	1.84
32.750	0.00	0.23	0.689	O	|	|	|	|	1.84
32.833	0.00	0.23	0.688	O	|	|	|	|	1.84
32.917	0.00	0.23	0.686	O	|	|	|	|	1.83
33.000	0.00	0.23	0.684	O	|	|	|	|	1.83
33.083	0.00	0.23	0.683	O	|	|	|	|	1.83
33.167	0.00	0.23	0.681	O	|	|	|	|	1.83
33.250	0.00	0.23	0.680	O	|	|	|	|	1.82
33.333	0.00	0.23	0.678	O	|	|	|	|	1.82
33.417	0.00	0.23	0.676	O	|	|	|	|	1.82
33.500	0.00	0.23	0.675	O	|	|	|	|	1.81
33.583	0.00	0.23	0.673	O	|	|	|	|	1.81
33.667	0.00	0.23	0.672	O	|	|	|	|	1.81
33.750	0.00	0.23	0.670	O	|	|	|	|	1.80
33.833	0.00	0.23	0.668	O	|	|	|	|	1.80
33.917	0.00	0.23	0.667	O	|	|	|	|	1.80
34.000	0.00	0.23	0.665	O	|	|	|	|	1.79
34.083	0.00	0.23	0.664	O	|	|	|	|	1.79
34.167	0.00	0.22	0.662	O	|	|	|	|	1.79
34.250	0.00	0.22	0.661	O	|	|	|	|	1.78
34.333	0.00	0.22	0.659	O	|	|	|	|	1.78
34.417	0.00	0.22	0.658	O	|	|	|	|	1.78
34.500	0.00	0.22	0.656	O	|	|	|	|	1.78
34.583	0.00	0.22	0.655	O	|	|	|	|	1.77
34.667	0.00	0.22	0.653	O	|	|	|	|	1.77
34.750	0.00	0.22	0.652	O	|	|	|	|	1.77
34.833	0.00	0.22	0.650	O	|	|	|	|	1.76
34.917	0.00	0.22	0.648	O	|	|	|	|	1.76
35.000	0.00	0.22	0.647	O	|	|	|	|	

1.76

35.083	0.00	0.22	0.645	O	|	|	|	|	1.75
35.167	0.00	0.22	0.644	O	|	|	|	|	1.75
35.250	0.00	0.22	0.642	O	|	|	|	|	1.75
35.333	0.00	0.22	0.641	O	|	|	|	|	1.75
35.417	0.00	0.22	0.639	O	|	|	|	|	1.74
35.500	0.00	0.21	0.638	O	|	|	|	|	1.74
35.583	0.00	0.21	0.637	O	|	|	|	|	1.74
35.667	0.00	0.21	0.635	O	|	|	|	|	1.73
35.750	0.00	0.21	0.634	O	|	|	|	|	1.73
35.833	0.00	0.21	0.632	O	|	|	|	|	1.73
35.917	0.00	0.21	0.631	O	|	|	|	|	1.72
36.000	0.00	0.21	0.629	O	|	|	|	|	1.72
36.083	0.00	0.21	0.628	O	|	|	|	|	1.72
36.167	0.00	0.21	0.626	O	|	|	|	|	1.72
36.250	0.00	0.21	0.625	O	|	|	|	|	1.71
36.333	0.00	0.21	0.624	O	|	|	|	|	1.71
36.417	0.00	0.20	0.622	O	|	|	|	|	1.71
36.500	0.00	0.20	0.621	O	|	|	|	|	1.70
36.583	0.00	0.20	0.619	O	|	|	|	|	1.70
36.667	0.00	0.20	0.618	O	|	|	|	|	1.70
36.750	0.00	0.20	0.617	O	|	|	|	|	1.70
36.833	0.00	0.20	0.615	O	|	|	|	|	1.69
36.917	0.00	0.20	0.614	O	|	|	|	|	1.69
37.000	0.00	0.20	0.612	O	|	|	|	|	1.69
37.083	0.00	0.20	0.611	O	|	|	|	|	1.69
37.167	0.00	0.20	0.610	O	|	|	|	|	1.68
37.250	0.00	0.20	0.608	O	|	|	|	|	1.68
37.333	0.00	0.19	0.607	O	|	|	|	|	1.68

37.417	0.00	0.19	0.606	O	|	|	|	|	1.67
37.500	0.00	0.19	0.604	O	|	|	|	|	1.67
37.583	0.00	0.19	0.603	O	|	|	|	|	1.67
37.667	0.00	0.19	0.602	O	|	|	|	|	1.67
37.750	0.00	0.19	0.600	O	|	|	|	|	1.66
37.833	0.00	0.19	0.599	O	|	|	|	|	1.66
37.917	0.00	0.19	0.598	O	|	|	|	|	1.66
38.000	0.00	0.19	0.596	O	|	|	|	|	1.66
38.083	0.00	0.19	0.595	O	|	|	|	|	1.65
38.167	0.00	0.19	0.594	O	|	|	|	|	1.65
38.250	0.00	0.19	0.593	O	|	|	|	|	1.65
38.333	0.00	0.18	0.591	O	|	|	|	|	1.65
38.417	0.00	0.18	0.590	O	|	|	|	|	1.64
38.500	0.00	0.18	0.589	O	|	|	|	|	1.64
38.583	0.00	0.18	0.588	O	|	|	|	|	1.64
38.667	0.00	0.18	0.586	O	|	|	|	|	1.63
38.750	0.00	0.18	0.585	O	|	|	|	|	1.63
38.833	0.00	0.18	0.584	O	|	|	|	|	1.63
38.917	0.00	0.18	0.583	O	|	|	|	|	1.63
39.000	0.00	0.18	0.581	O	|	|	|	|	1.62
39.083	0.00	0.18	0.580	O	|	|	|	|	1.62
39.167	0.00	0.18	0.579	O	|	|	|	|	1.62
39.250	0.00	0.18	0.578	O	|	|	|	|	1.62
39.333	0.00	0.17	0.577	O	|	|	|	|	1.61
39.417	0.00	0.17	0.575	O	|	|	|	|	1.61
39.500	0.00	0.17	0.574	O	|	|	|	|	1.61
39.583	0.00	0.17	0.573	O	|	|	|	|	1.61
39.667	0.00	0.17	0.572	O	|	|	|	|	1.61
39.750	0.00	0.17	0.571	O	|	|	|	|	

1.60

39.833	0.00	0.17	0.569	O	|	|	|	|	1.60
39.917	0.00	0.17	0.568	O	|	|	|	|	1.60
40.000	0.00	0.17	0.567	O	|	|	|	|	1.60
40.083	0.00	0.17	0.566	O	|	|	|	|	1.59
40.167	0.00	0.17	0.565	O	|	|	|	|	1.59
40.250	0.00	0.17	0.564	O	|	|	|	|	1.59
40.333	0.00	0.17	0.562	O	|	|	|	|	1.59
40.417	0.00	0.16	0.561	O	|	|	|	|	1.58
40.500	0.00	0.16	0.560	O	|	|	|	|	1.58
40.583	0.00	0.16	0.559	O	|	|	|	|	1.58
40.667	0.00	0.16	0.558	O	|	|	|	|	1.58
40.750	0.00	0.16	0.557	O	|	|	|	|	1.57
40.833	0.00	0.16	0.556	O	|	|	|	|	1.57
40.917	0.00	0.16	0.555	O	|	|	|	|	1.57
41.000	0.00	0.16	0.553	O	|	|	|	|	1.57
41.083	0.00	0.16	0.552	O	|	|	|	|	1.57
41.167	0.00	0.16	0.551	O	|	|	|	|	1.56
41.250	0.00	0.16	0.550	O	|	|	|	|	1.56
41.333	0.00	0.16	0.549	O	|	|	|	|	1.56
41.417	0.00	0.16	0.548	O	|	|	|	|	1.56
41.500	0.00	0.16	0.547	O	|	|	|	|	1.55
41.583	0.00	0.15	0.546	O	|	|	|	|	1.55
41.667	0.00	0.15	0.545	O	|	|	|	|	1.55
41.750	0.00	0.15	0.544	O	|	|	|	|	1.55
41.833	0.00	0.15	0.543	O	|	|	|	|	1.55
41.917	0.00	0.15	0.542	O	|	|	|	|	1.54
42.000	0.00	0.15	0.541	O	|	|	|	|	1.54
42.083	0.00	0.15	0.540	O	|	|	|	|	1.54

42.167	0.00	0.15	0.539	O	|	|	|	|	1.54
42.250	0.00	0.15	0.538	O	|	|	|	|	1.54
42.333	0.00	0.15	0.536	O	|	|	|	|	1.53
42.417	0.00	0.15	0.535	O	|	|	|	|	1.53
42.500	0.00	0.15	0.534	O	|	|	|	|	1.53
42.583	0.00	0.15	0.533	O	|	|	|	|	1.53
42.667	0.00	0.15	0.532	O	|	|	|	|	1.53
42.750	0.00	0.15	0.531	O	|	|	|	|	1.52
42.833	0.00	0.14	0.530	O	|	|	|	|	1.52
42.917	0.00	0.14	0.529	O	|	|	|	|	1.52
43.000	0.00	0.14	0.528	O	|	|	|	|	1.52
43.083	0.00	0.14	0.527	O	|	|	|	|	1.52
43.167	0.00	0.14	0.526	O	|	|	|	|	1.51
43.250	0.00	0.14	0.525	O	|	|	|	|	1.51
43.333	0.00	0.14	0.525	O	|	|	|	|	1.51
43.417	0.00	0.14	0.524	O	|	|	|	|	1.51
43.500	0.00	0.14	0.523	O	|	|	|	|	1.51
43.583	0.00	0.14	0.522	O	|	|	|	|	1.50
43.667	0.00	0.14	0.521	O	|	|	|	|	1.50
43.750	0.00	0.14	0.520	O	|	|	|	|	1.50
43.833	0.00	0.14	0.519	O	|	|	|	|	1.50
43.917	0.00	0.14	0.518	O	|	|	|	|	1.50
44.000	0.00	0.14	0.517	O	|	|	|	|	1.49
44.083	0.00	0.14	0.516	O	|	|	|	|	1.49
44.167	0.00	0.14	0.515	O	|	|	|	|	1.49
44.250	0.00	0.14	0.514	O	|	|	|	|	1.49
44.333	0.00	0.14	0.513	O	|	|	|	|	1.49
44.417	0.00	0.14	0.512	O	|	|	|	|	1.48
44.500	0.00	0.13	0.511	O	|	|	|	|	

1.48

44.583	0.00	0.13	0.510	O	|	|	|	1.48
44.667	0.00	0.13	0.509	O	|	|	|	1.48
44.750	0.00	0.13	0.508	O	|	|	|	1.48
44.833	0.00	0.13	0.508	O	|	|	|	1.47
44.917	0.00	0.13	0.507	O	|	|	|	1.47
45.000	0.00	0.13	0.506	O	|	|	|	1.47
45.083	0.00	0.13	0.505	O	|	|	|	1.47
45.167	0.00	0.13	0.504	O	|	|	|	1.47
45.250	0.00	0.13	0.503	O	|	|	|	1.46
45.333	0.00	0.13	0.502	O	|	|	|	1.46
45.417	0.00	0.13	0.501	O	|	|	|	1.46
45.500	0.00	0.13	0.500	O	|	|	|	1.46
45.583	0.00	0.13	0.499	O	|	|	|	1.46
45.667	0.00	0.13	0.498	O	|	|	|	1.45
45.750	0.00	0.13	0.498	O	|	|	|	1.45
45.833	0.00	0.13	0.497	O	|	|	|	1.45
45.917	0.00	0.13	0.496	O	|	|	|	1.45
46.000	0.00	0.13	0.495	O	|	|	|	1.45
46.083	0.00	0.13	0.494	O	|	|	|	1.44
46.167	0.00	0.13	0.493	O	|	|	|	1.44
46.250	0.00	0.13	0.492	O	|	|	|	1.44
46.333	0.00	0.13	0.491	O	|	|	|	1.44
46.417	0.00	0.13	0.490	O	|	|	|	1.44
46.500	0.00	0.13	0.490	O	|	|	|	1.44
46.583	0.00	0.13	0.489	O	|	|	|	1.43
46.667	0.00	0.13	0.488	O	|	|	|	1.43
46.750	0.00	0.13	0.487	O	|	|	|	1.43
46.833	0.00	0.13	0.486	O	|	|	|	1.43

46.917	0.00	0.13	0.485	O	|	|	|	|	1.43
47.000	0.00	0.13	0.484	O	|	|	|	|	1.42
47.083	0.00	0.13	0.484	O	|	|	|	|	1.42
47.167	0.00	0.12	0.483	O	|	|	|	|	1.42
47.250	0.00	0.12	0.482	O	|	|	|	|	1.42
47.333	0.00	0.12	0.481	O	|	|	|	|	1.42
47.417	0.00	0.12	0.480	O	|	|	|	|	1.41
47.500	0.00	0.12	0.479	O	|	|	|	|	1.41
47.583	0.00	0.12	0.478	O	|	|	|	|	1.41
47.667	0.00	0.12	0.478	O	|	|	|	|	1.41
47.750	0.00	0.12	0.477	O	|	|	|	|	1.41
47.833	0.00	0.12	0.476	O	|	|	|	|	1.41
47.917	0.00	0.12	0.475	O	|	|	|	|	1.40
48.000	0.00	0.12	0.474	O	|	|	|	|	1.40
48.083	0.00	0.12	0.473	O	|	|	|	|	1.40
48.167	0.00	0.12	0.472	O	|	|	|	|	1.40
48.250	0.00	0.12	0.472	O	|	|	|	|	1.40
48.333	0.00	0.12	0.471	O	|	|	|	|	1.39
48.417	0.00	0.12	0.470	O	|	|	|	|	1.39
48.500	0.00	0.12	0.469	O	|	|	|	|	1.39
48.583	0.00	0.12	0.468	O	|	|	|	|	1.39
48.667	0.00	0.12	0.467	O	|	|	|	|	1.39
48.750	0.00	0.12	0.467	O	|	|	|	|	1.39
48.833	0.00	0.12	0.466	O	|	|	|	|	1.38
48.917	0.00	0.12	0.465	O	|	|	|	|	1.38
49.000	0.00	0.12	0.464	O	|	|	|	|	1.38
49.083	0.00	0.12	0.463	O	|	|	|	|	1.38
49.167	0.00	0.12	0.463	O	|	|	|	|	1.38
49.250	0.00	0.12	0.462	O	|	|	|	|	

1.38

49.333	0.00	0.12	0.461	O	|	|	|	|	1.37
49.417	0.00	0.12	0.460	O	|	|	|	|	1.37
49.500	0.00	0.12	0.459	O	|	|	|	|	1.37
49.583	0.00	0.12	0.459	O	|	|	|	|	1.37
49.667	0.00	0.12	0.458	O	|	|	|	|	1.37
49.750	0.00	0.12	0.457	O	|	|	|	|	1.37
49.833	0.00	0.12	0.456	O	|	|	|	|	1.36
49.917	0.00	0.12	0.455	O	|	|	|	|	1.36
50.000	0.00	0.12	0.455	O	|	|	|	|	1.36
50.083	0.00	0.11	0.454	O	|	|	|	|	1.36
50.167	0.00	0.11	0.453	O	|	|	|	|	1.36
50.250	0.00	0.11	0.452	O	|	|	|	|	1.36
50.333	0.00	0.11	0.451	O	|	|	|	|	1.35
50.417	0.00	0.11	0.451	O	|	|	|	|	1.35
50.500	0.00	0.11	0.450	O	|	|	|	|	1.35
50.583	0.00	0.11	0.449	O	|	|	|	|	1.35
50.667	0.00	0.11	0.448	O	|	|	|	|	1.35
50.750	0.00	0.11	0.448	O	|	|	|	|	1.35
50.833	0.00	0.11	0.447	O	|	|	|	|	1.34
50.917	0.00	0.11	0.446	O	|	|	|	|	1.34
51.000	0.00	0.11	0.445	O	|	|	|	|	1.34
51.083	0.00	0.11	0.444	O	|	|	|	|	1.34
51.167	0.00	0.11	0.444	O	|	|	|	|	1.34
51.250	0.00	0.11	0.443	O	|	|	|	|	1.34
51.333	0.00	0.11	0.442	O	|	|	|	|	1.33
51.417	0.00	0.11	0.441	O	|	|	|	|	1.33
51.500	0.00	0.11	0.441	O	|	|	|	|	1.33
51.583	0.00	0.11	0.440	O	|	|	|	|	1.33

51.667	0.00	0.11	0.439	O	|	|	|	|	1.33
51.750	0.00	0.11	0.438	O	|	|	|	|	1.33
51.833	0.00	0.11	0.438	O	|	|	|	|	1.32
51.917	0.00	0.11	0.437	O	|	|	|	|	1.32
52.000	0.00	0.11	0.436	O	|	|	|	|	1.32
52.083	0.00	0.11	0.435	O	|	|	|	|	1.32
52.167	0.00	0.11	0.435	O	|	|	|	|	1.32
52.250	0.00	0.11	0.434	O	|	|	|	|	1.32
52.333	0.00	0.11	0.433	O	|	|	|	|	1.31
52.417	0.00	0.11	0.432	O	|	|	|	|	1.31
52.500	0.00	0.11	0.432	O	|	|	|	|	1.31
52.583	0.00	0.11	0.431	O	|	|	|	|	1.31
52.667	0.00	0.11	0.430	O	|	|	|	|	1.31
52.750	0.00	0.11	0.429	O	|	|	|	|	1.31
52.833	0.00	0.11	0.429	O	|	|	|	|	1.30
52.917	0.00	0.11	0.428	O	|	|	|	|	1.30
53.000	0.00	0.11	0.427	O	|	|	|	|	1.30
53.083	0.00	0.11	0.427	O	|	|	|	|	1.30
53.167	0.00	0.10	0.426	O	|	|	|	|	1.30
53.250	0.00	0.10	0.425	O	|	|	|	|	1.30
53.333	0.00	0.10	0.424	O	|	|	|	|	1.30
53.417	0.00	0.10	0.424	O	|	|	|	|	1.29
53.500	0.00	0.10	0.423	O	|	|	|	|	1.29
53.583	0.00	0.10	0.422	O	|	|	|	|	1.29
53.667	0.00	0.10	0.421	O	|	|	|	|	1.29
53.750	0.00	0.10	0.421	O	|	|	|	|	1.29
53.833	0.00	0.10	0.420	O	|	|	|	|	1.29
53.917	0.00	0.10	0.419	O	|	|	|	|	1.28
54.000	0.00	0.10	0.419	O	|	|	|	|	

1.28

54.083	0.00	0.10	0.418	O	|	|	|	1.28
54.167	0.00	0.10	0.417	O	|	|	|	1.28
54.250	0.00	0.10	0.417	O	|	|	|	1.28
54.333	0.00	0.10	0.416	O	|	|	|	1.28
54.417	0.00	0.10	0.415	O	|	|	|	1.28
54.500	0.00	0.10	0.414	O	|	|	|	1.27
54.583	0.00	0.10	0.414	O	|	|	|	1.27
54.667	0.00	0.10	0.413	O	|	|	|	1.27
54.750	0.00	0.10	0.412	O	|	|	|	1.27
54.833	0.00	0.10	0.412	O	|	|	|	1.27
54.917	0.00	0.10	0.411	O	|	|	|	1.27
55.000	0.00	0.10	0.410	O	|	|	|	1.27
55.083	0.00	0.10	0.410	O	|	|	|	1.26
55.167	0.00	0.10	0.409	O	|	|	|	1.26
55.250	0.00	0.10	0.408	O	|	|	|	1.26
55.333	0.00	0.10	0.408	O	|	|	|	1.26
55.417	0.00	0.10	0.407	O	|	|	|	1.26
55.500	0.00	0.10	0.406	O	|	|	|	1.26
55.583	0.00	0.10	0.406	O	|	|	|	1.26
55.667	0.00	0.10	0.405	O	|	|	|	1.25
55.750	0.00	0.10	0.404	O	|	|	|	1.25
55.833	0.00	0.10	0.404	O	|	|	|	1.25
55.917	0.00	0.10	0.403	O	|	|	|	1.25
56.000	0.00	0.10	0.402	O	|	|	|	1.25
56.083	0.00	0.10	0.402	O	|	|	|	1.25
56.167	0.00	0.10	0.401	O	|	|	|	1.25
56.250	0.00	0.09	0.400	O	|	|	|	1.24
56.333	0.00	0.09	0.400	O	|	|	|	1.24

56.417	0.00	0.09	0.399	O	|	|	|	|	1.24
56.500	0.00	0.09	0.398	O	|	|	|	|	1.24
56.583	0.00	0.09	0.398	O	|	|	|	|	1.24
56.667	0.00	0.09	0.397	O	|	|	|	|	1.24
56.750	0.00	0.09	0.396	O	|	|	|	|	1.23
56.833	0.00	0.09	0.396	O	|	|	|	|	1.23
56.917	0.00	0.09	0.395	O	|	|	|	|	1.23
57.000	0.00	0.09	0.395	O	|	|	|	|	1.23
57.083	0.00	0.09	0.394	O	|	|	|	|	1.23
57.167	0.00	0.09	0.393	O	|	|	|	|	1.23
57.250	0.00	0.09	0.393	O	|	|	|	|	1.23
57.333	0.00	0.09	0.392	O	|	|	|	|	1.22
57.417	0.00	0.09	0.391	O	|	|	|	|	1.22
57.500	0.00	0.09	0.391	O	|	|	|	|	1.22
57.583	0.00	0.09	0.390	O	|	|	|	|	1.22
57.667	0.00	0.09	0.390	O	|	|	|	|	1.22
57.750	0.00	0.08	0.389	O	|	|	|	|	1.22
57.833	0.00	0.08	0.389	O	|	|	|	|	1.22
57.917	0.00	0.08	0.388	O	|	|	|	|	1.22
58.000	0.00	0.08	0.387	O	|	|	|	|	1.21
58.083	0.00	0.08	0.387	O	|	|	|	|	1.21
58.167	0.00	0.08	0.386	O	|	|	|	|	1.21
58.250	0.00	0.08	0.386	O	|	|	|	|	1.21
58.333	0.00	0.08	0.385	O	|	|	|	|	1.21
58.417	0.00	0.08	0.385	O	|	|	|	|	1.21
58.500	0.00	0.08	0.384	O	|	|	|	|	1.21
58.583	0.00	0.08	0.383	O	|	|	|	|	1.21
58.667	0.00	0.08	0.383	O	|	|	|	|	1.20
58.750	0.00	0.08	0.382	O	|	|	|	|	

1.20

58.833	0.00	0.08	0.382	O	|	|	|	1.20
58.917	0.00	0.08	0.381	O	|	|	|	1.20
59.000	0.00	0.08	0.381	O	|	|	|	1.20
59.083	0.00	0.08	0.380	O	|	|	|	1.20
59.167	0.00	0.08	0.380	O	|	|	|	1.20
59.250	0.00	0.08	0.379	O	|	|	|	1.20
59.333	0.00	0.08	0.379	O	|	|	|	1.19
59.417	0.00	0.08	0.378	O	|	|	|	1.19
59.500	0.00	0.07	0.378	O	|	|	|	1.19
59.583	0.00	0.07	0.377	O	|	|	|	1.19
59.667	0.00	0.07	0.377	O	|	|	|	1.19
59.750	0.00	0.07	0.376	O	|	|	|	1.19
59.833	0.00	0.07	0.376	O	|	|	|	1.19
59.917	0.00	0.07	0.375	O	|	|	|	1.19
60.000	0.00	0.07	0.375	O	|	|	|	1.18
60.083	0.00	0.07	0.374	O	|	|	|	1.18
60.167	0.00	0.07	0.374	O	|	|	|	1.18
60.250	0.00	0.07	0.373	O	|	|	|	1.18
60.333	0.00	0.07	0.373	O	|	|	|	1.18
60.417	0.00	0.07	0.372	O	|	|	|	1.18
60.500	0.00	0.07	0.372	O	|	|	|	1.18
60.583	0.00	0.07	0.371	O	|	|	|	1.18
60.667	0.00	0.07	0.371	O	|	|	|	1.18
60.750	0.00	0.07	0.370	O	|	|	|	1.17
60.833	0.00	0.07	0.370	O	|	|	|	1.17
60.917	0.00	0.07	0.369	O	|	|	|	1.17
61.000	0.00	0.07	0.369	O	|	|	|	1.17
61.083	0.00	0.07	0.368	O	|	|	|	1.17

61.167	0.00	0.07	0.368	O	|	|	|	|	1.17
61.250	0.00	0.07	0.367	O	|	|	|	|	1.17
61.333	0.00	0.07	0.367	O	|	|	|	|	1.17
61.417	0.00	0.06	0.367	O	|	|	|	|	1.17
61.500	0.00	0.06	0.366	O	|	|	|	|	1.17
61.583	0.00	0.06	0.366	O	|	|	|	|	1.16
61.667	0.00	0.06	0.365	O	|	|	|	|	1.16
61.750	0.00	0.06	0.365	O	|	|	|	|	1.16
61.833	0.00	0.06	0.364	O	|	|	|	|	1.16
61.917	0.00	0.06	0.364	O	|	|	|	|	1.16
62.000	0.00	0.06	0.364	O	|	|	|	|	1.16
62.083	0.00	0.06	0.363	O	|	|	|	|	1.16
62.167	0.00	0.06	0.363	O	|	|	|	|	1.16
62.250	0.00	0.06	0.362	O	|	|	|	|	1.16
62.333	0.00	0.06	0.362	O	|	|	|	|	1.16
62.417	0.00	0.06	0.361	O	|	|	|	|	1.15
62.500	0.00	0.06	0.361	O	|	|	|	|	1.15
62.583	0.00	0.06	0.361	O	|	|	|	|	1.15
62.667	0.00	0.06	0.360	O	|	|	|	|	1.15
62.750	0.00	0.06	0.360	O	|	|	|	|	1.15
62.833	0.00	0.06	0.359	O	|	|	|	|	1.15
62.917	0.00	0.06	0.359	O	|	|	|	|	1.15
63.000	0.00	0.06	0.359	O	|	|	|	|	1.15
63.083	0.00	0.06	0.358	O	|	|	|	|	1.15
63.167	0.00	0.06	0.358	O	|	|	|	|	1.15
63.250	0.00	0.06	0.357	O	|	|	|	|	1.15
63.333	0.00	0.06	0.357	O	|	|	|	|	1.14
63.417	0.00	0.06	0.357	O	|	|	|	|	1.14
63.500	0.00	0.06	0.356	O	|	|	|	|	

1.14

63.583	0.00	0.06	0.356	O	|	|	|	1.14
63.667	0.00	0.06	0.355	O	|	|	|	1.14
63.750	0.00	0.05	0.355	O	|	|	|	1.14
63.833	0.00	0.05	0.355	O	|	|	|	1.14
63.917	0.00	0.05	0.354	O	|	|	|	1.14
64.000	0.00	0.05	0.354	O	|	|	|	1.14
64.083	0.00	0.05	0.354	O	|	|	|	1.14
64.167	0.00	0.05	0.353	O	|	|	|	1.14
64.250	0.00	0.05	0.353	O	|	|	|	1.13
64.333	0.00	0.05	0.352	O	|	|	|	1.13
64.417	0.00	0.05	0.352	O	|	|	|	1.13
64.500	0.00	0.05	0.352	O	|	|	|	1.13
64.583	0.00	0.05	0.351	O	|	|	|	1.13
64.667	0.00	0.05	0.351	O	|	|	|	1.13
64.750	0.00	0.05	0.351	O	|	|	|	1.13
64.833	0.00	0.05	0.350	O	|	|	|	1.13
64.917	0.00	0.05	0.350	O	|	|	|	1.13
65.000	0.00	0.05	0.350	O	|	|	|	1.13
65.083	0.00	0.05	0.349	O	|	|	|	1.13
65.167	0.00	0.05	0.349	O	|	|	|	1.13
65.250	0.00	0.05	0.349	O	|	|	|	1.13
65.333	0.00	0.05	0.348	O	|	|	|	1.12
65.417	0.00	0.05	0.348	O	|	|	|	1.12
65.500	0.00	0.05	0.348	O	|	|	|	1.12
65.583	0.00	0.05	0.347	O	|	|	|	1.12
65.667	0.00	0.05	0.347	O	|	|	|	1.12
65.750	0.00	0.05	0.347	O	|	|	|	1.12
65.833	0.00	0.05	0.346	O	|	|	|	1.12

65.917	0.00	0.05	0.346	O	|	|	|	|	1.12
66.000	0.00	0.05	0.346	O	|	|	|	|	1.12
66.083	0.00	0.05	0.345	O	|	|	|	|	1.12
66.167	0.00	0.05	0.345	O	|	|	|	|	1.12
66.250	0.00	0.05	0.345	O	|	|	|	|	1.12
66.333	0.00	0.05	0.344	O	|	|	|	|	1.12
66.417	0.00	0.05	0.344	O	|	|	|	|	1.11
66.500	0.00	0.04	0.344	O	|	|	|	|	1.11
66.583	0.00	0.04	0.343	O	|	|	|	|	1.11
66.667	0.00	0.04	0.343	O	|	|	|	|	1.11
66.750	0.00	0.04	0.343	O	|	|	|	|	1.11
66.833	0.00	0.04	0.343	O	|	|	|	|	1.11
66.917	0.00	0.04	0.342	O	|	|	|	|	1.11
67.000	0.00	0.04	0.342	O	|	|	|	|	1.11
67.083	0.00	0.04	0.342	O	|	|	|	|	1.11
67.167	0.00	0.04	0.341	O	|	|	|	|	1.11
67.250	0.00	0.04	0.341	O	|	|	|	|	1.11
67.333	0.00	0.04	0.341	O	|	|	|	|	1.11
67.417	0.00	0.04	0.340	O	|	|	|	|	1.11
67.500	0.00	0.04	0.340	O	|	|	|	|	1.11
67.583	0.00	0.04	0.340	O	|	|	|	|	1.11
67.667	0.00	0.04	0.340	O	|	|	|	|	1.10
67.750	0.00	0.04	0.339	O	|	|	|	|	1.10
67.833	0.00	0.04	0.339	O	|	|	|	|	1.10
67.917	0.00	0.04	0.339	O	|	|	|	|	1.10
68.000	0.00	0.04	0.339	O	|	|	|	|	1.10
68.083	0.00	0.04	0.338	O	|	|	|	|	1.10
68.167	0.00	0.04	0.338	O	|	|	|	|	1.10
68.250	0.00	0.04	0.338	O	|	|	|	|	

1.10

68.333	0.00	0.04	0.337	O	|	|	|	|	1.10
68.417	0.00	0.04	0.337	O	|	|	|	|	1.10
68.500	0.00	0.04	0.337	O	|	|	|	|	1.10
68.583	0.00	0.04	0.337	O	|	|	|	|	1.10
68.667	0.00	0.04	0.336	O	|	|	|	|	1.10
68.750	0.00	0.04	0.336	O	|	|	|	|	1.10
68.833	0.00	0.04	0.336	O	|	|	|	|	1.10
68.917	0.00	0.04	0.336	O	|	|	|	|	1.10
69.000	0.00	0.04	0.335	O	|	|	|	|	1.09
69.083	0.00	0.04	0.335	O	|	|	|	|	1.09
69.167	0.00	0.04	0.335	O	|	|	|	|	1.09
69.250	0.00	0.04	0.335	O	|	|	|	|	1.09
69.333	0.00	0.04	0.334	O	|	|	|	|	1.09
69.417	0.00	0.04	0.334	O	|	|	|	|	1.09
69.500	0.00	0.04	0.334	O	|	|	|	|	1.09
69.583	0.00	0.04	0.334	O	|	|	|	|	1.09
69.667	0.00	0.04	0.333	O	|	|	|	|	1.09
69.750	0.00	0.04	0.333	O	|	|	|	|	1.09
69.833	0.00	0.04	0.333	O	|	|	|	|	1.09
69.917	0.00	0.03	0.333	O	|	|	|	|	1.09
70.000	0.00	0.03	0.332	O	|	|	|	|	1.09
70.083	0.00	0.03	0.332	O	|	|	|	|	1.09
70.167	0.00	0.03	0.332	O	|	|	|	|	1.09
70.250	0.00	0.03	0.332	O	|	|	|	|	1.09
70.333	0.00	0.03	0.331	O	|	|	|	|	1.09
70.417	0.00	0.03	0.331	O	|	|	|	|	1.09
70.500	0.00	0.03	0.331	O	|	|	|	|	1.08
70.583	0.00	0.03	0.331	O	|	|	|	|	1.08

70.667	0.00	0.03	0.330	O	|	|	|	|	1.08
70.750	0.00	0.03	0.330	O	|	|	|	|	1.08
70.833	0.00	0.03	0.330	O	|	|	|	|	1.08
70.917	0.00	0.03	0.330	O	|	|	|	|	1.08
71.000	0.00	0.03	0.330	O	|	|	|	|	1.08
71.083	0.00	0.03	0.329	O	|	|	|	|	1.08
71.167	0.00	0.03	0.329	O	|	|	|	|	1.08
71.250	0.00	0.03	0.329	O	|	|	|	|	1.08
71.333	0.00	0.03	0.329	O	|	|	|	|	1.08
71.417	0.00	0.03	0.328	O	|	|	|	|	1.08
71.500	0.00	0.03	0.328	O	|	|	|	|	1.08
71.583	0.00	0.03	0.328	O	|	|	|	|	1.08
71.667	0.00	0.03	0.328	O	|	|	|	|	1.08
71.750	0.00	0.03	0.328	O	|	|	|	|	1.08
71.833	0.00	0.03	0.327	O	|	|	|	|	1.08
71.917	0.00	0.03	0.327	O	|	|	|	|	1.08
72.000	0.00	0.03	0.327	O	|	|	|	|	1.08
72.083	0.00	0.03	0.327	O	|	|	|	|	1.08
72.167	0.00	0.03	0.327	O	|	|	|	|	1.07
72.250	0.00	0.03	0.326	O	|	|	|	|	1.07
72.333	0.00	0.03	0.326	O	|	|	|	|	1.07
72.417	0.00	0.03	0.326	O	|	|	|	|	1.07
72.500	0.00	0.03	0.326	O	|	|	|	|	1.07
72.583	0.00	0.03	0.326	O	|	|	|	|	1.07
72.667	0.00	0.03	0.325	O	|	|	|	|	1.07
72.750	0.00	0.03	0.325	O	|	|	|	|	1.07
72.833	0.00	0.03	0.325	O	|	|	|	|	1.07
72.917	0.00	0.03	0.325	O	|	|	|	|	1.07
73.000	0.00	0.03	0.325	O	|	|	|	|	

1.07

73.083	0.00	0.03	0.324	O	|	|	|	|	1.07
73.167	0.00	0.03	0.324	O	|	|	|	|	1.07
73.250	0.00	0.03	0.324	O	|	|	|	|	1.07
73.333	0.00	0.03	0.324	O	|	|	|	|	1.07
73.417	0.00	0.03	0.324	O	|	|	|	|	1.07
73.500	0.00	0.03	0.323	O	|	|	|	|	1.07
73.583	0.00	0.03	0.323	O	|	|	|	|	1.07
73.667	0.00	0.03	0.323	O	|	|	|	|	1.07
73.750	0.00	0.03	0.323	O	|	|	|	|	1.07
73.833	0.00	0.03	0.323	O	|	|	|	|	1.07
73.917	0.00	0.03	0.323	O	|	|	|	|	1.07
74.000	0.00	0.03	0.322	O	|	|	|	|	1.07
74.083	0.00	0.03	0.322	O	|	|	|	|	1.06
74.167	0.00	0.03	0.322	O	|	|	|	|	1.06
74.250	0.00	0.03	0.322	O	|	|	|	|	1.06
74.333	0.00	0.03	0.322	O	|	|	|	|	1.06
74.417	0.00	0.03	0.321	O	|	|	|	|	1.06
74.500	0.00	0.03	0.321	O	|	|	|	|	1.06
74.583	0.00	0.02	0.321	O	|	|	|	|	1.06
74.667	0.00	0.02	0.321	O	|	|	|	|	1.06
74.750	0.00	0.02	0.321	O	|	|	|	|	1.06
74.833	0.00	0.02	0.321	O	|	|	|	|	1.06
74.917	0.00	0.02	0.320	O	|	|	|	|	1.06
75.000	0.00	0.02	0.320	O	|	|	|	|	1.06
75.083	0.00	0.02	0.320	O	|	|	|	|	1.06
75.167	0.00	0.02	0.320	O	|	|	|	|	1.06
75.250	0.00	0.02	0.320	O	|	|	|	|	1.06
75.333	0.00	0.02	0.320	O	|	|	|	|	1.06

75.417	0.00	0.02	0.319	O	|	|	|	|	1.06
75.500	0.00	0.02	0.319	O	|	|	|	|	1.06
75.583	0.00	0.02	0.319	O	|	|	|	|	1.06
75.667	0.00	0.02	0.319	O	|	|	|	|	1.06
75.750	0.00	0.02	0.319	O	|	|	|	|	1.06
75.833	0.00	0.02	0.319	O	|	|	|	|	1.06
75.917	0.00	0.02	0.319	O	|	|	|	|	1.06
76.000	0.00	0.02	0.318	O	|	|	|	|	1.06
76.083	0.00	0.02	0.318	O	|	|	|	|	1.06
76.167	0.00	0.02	0.318	O	|	|	|	|	1.06
76.250	0.00	0.02	0.318	O	|	|	|	|	1.05
76.333	0.00	0.02	0.318	O	|	|	|	|	1.05
76.417	0.00	0.02	0.318	O	|	|	|	|	1.05
76.500	0.00	0.02	0.317	O	|	|	|	|	1.05
76.583	0.00	0.02	0.317	O	|	|	|	|	1.05
76.667	0.00	0.02	0.317	O	|	|	|	|	1.05
76.750	0.00	0.02	0.317	O	|	|	|	|	1.05
76.833	0.00	0.02	0.317	O	|	|	|	|	1.05
76.917	0.00	0.02	0.317	O	|	|	|	|	1.05
77.000	0.00	0.02	0.317	O	|	|	|	|	1.05
77.083	0.00	0.02	0.316	O	|	|	|	|	1.05
77.167	0.00	0.02	0.316	O	|	|	|	|	1.05
77.250	0.00	0.02	0.316	O	|	|	|	|	1.05
77.333	0.00	0.02	0.316	O	|	|	|	|	1.05
77.417	0.00	0.02	0.316	O	|	|	|	|	1.05
77.500	0.00	0.02	0.316	O	|	|	|	|	1.05
77.583	0.00	0.02	0.316	O	|	|	|	|	1.05
77.667	0.00	0.02	0.315	O	|	|	|	|	1.05
77.750	0.00	0.02	0.315	O	|	|	|	|	

1.05

77.833	0.00	0.02	0.315	O	|	|	|	|	1.05
77.917	0.00	0.02	0.315	O	|	|	|	|	1.05
78.000	0.00	0.02	0.315	O	|	|	|	|	1.05
78.083	0.00	0.02	0.315	O	|	|	|	|	1.05
78.167	0.00	0.02	0.315	O	|	|	|	|	1.05
78.250	0.00	0.02	0.315	O	|	|	|	|	1.05
78.333	0.00	0.02	0.314	O	|	|	|	|	1.05
78.417	0.00	0.02	0.314	O	|	|	|	|	1.05
78.500	0.00	0.02	0.314	O	|	|	|	|	1.05
78.583	0.00	0.02	0.314	O	|	|	|	|	1.05
78.667	0.00	0.02	0.314	O	|	|	|	|	1.05
78.750	0.00	0.02	0.314	O	|	|	|	|	1.05
78.833	0.00	0.02	0.314	O	|	|	|	|	1.04
78.917	0.00	0.02	0.313	O	|	|	|	|	1.04
79.000	0.00	0.02	0.313	O	|	|	|	|	1.04
79.083	0.00	0.02	0.313	O	|	|	|	|	1.04
79.167	0.00	0.02	0.313	O	|	|	|	|	1.04
79.250	0.00	0.02	0.313	O	|	|	|	|	1.04
79.333	0.00	0.02	0.313	O	|	|	|	|	1.04
79.417	0.00	0.02	0.313	O	|	|	|	|	1.04
79.500	0.00	0.02	0.313	O	|	|	|	|	1.04
79.583	0.00	0.02	0.313	O	|	|	|	|	1.04
79.667	0.00	0.02	0.312	O	|	|	|	|	1.04
79.750	0.00	0.02	0.312	O	|	|	|	|	1.04
79.833	0.00	0.02	0.312	O	|	|	|	|	1.04
79.917	0.00	0.02	0.312	O	|	|	|	|	1.04
80.000	0.00	0.02	0.312	O	|	|	|	|	1.04
80.083	0.00	0.02	0.312	O	|	|	|	|	1.04

80.167	0.00	0.02	0.312	O	|	|	|	|	1.04
80.250	0.00	0.02	0.312	O	|	|	|	|	1.04
80.333	0.00	0.02	0.311	O	|	|	|	|	1.04
80.417	0.00	0.02	0.311	O	|	|	|	|	1.04
80.500	0.00	0.02	0.311	O	|	|	|	|	1.04
80.583	0.00	0.02	0.311	O	|	|	|	|	1.04
80.667	0.00	0.02	0.311	O	|	|	|	|	1.04
80.750	0.00	0.02	0.311	O	|	|	|	|	1.04
80.833	0.00	0.02	0.311	O	|	|	|	|	1.04
80.917	0.00	0.02	0.311	O	|	|	|	|	1.04
81.000	0.00	0.02	0.311	O	|	|	|	|	1.04
81.083	0.00	0.02	0.310	O	|	|	|	|	1.04
81.167	0.00	0.02	0.310	O	|	|	|	|	1.04
81.250	0.00	0.02	0.310	O	|	|	|	|	1.04
81.333	0.00	0.02	0.310	O	|	|	|	|	1.04
81.417	0.00	0.02	0.310	O	|	|	|	|	1.04
81.500	0.00	0.02	0.310	O	|	|	|	|	1.04
81.583	0.00	0.01	0.310	O	|	|	|	|	1.04
81.667	0.00	0.01	0.310	O	|	|	|	|	1.04
81.750	0.00	0.01	0.310	O	|	|	|	|	1.04
81.833	0.00	0.01	0.310	O	|	|	|	|	1.04
81.917	0.00	0.01	0.309	O	|	|	|	|	1.04
82.000	0.00	0.01	0.309	O	|	|	|	|	1.04
82.083	0.00	0.01	0.309	O	|	|	|	|	1.03
82.167	0.00	0.01	0.309	O	|	|	|	|	1.03
82.250	0.00	0.01	0.309	O	|	|	|	|	1.03
82.333	0.00	0.01	0.309	O	|	|	|	|	1.03
82.417	0.00	0.01	0.309	O	|	|	|	|	1.03
82.500	0.00	0.01	0.309	O	|	|	|	|	

1.03

82.583	0.00	0.01	0.309	O	|	|	|	|	1.03
82.667	0.00	0.01	0.309	O	|	|	|	|	1.03
82.750	0.00	0.01	0.308	O	|	|	|	|	1.03
82.833	0.00	0.01	0.308	O	|	|	|	|	1.03
82.917	0.00	0.01	0.308	O	|	|	|	|	1.03
83.000	0.00	0.01	0.308	O	|	|	|	|	1.03
83.083	0.00	0.01	0.308	O	|	|	|	|	1.03
83.167	0.00	0.01	0.308	O	|	|	|	|	1.03
83.250	0.00	0.01	0.308	O	|	|	|	|	1.03
83.333	0.00	0.01	0.308	O	|	|	|	|	1.03
83.417	0.00	0.01	0.308	O	|	|	|	|	1.03
83.500	0.00	0.01	0.308	O	|	|	|	|	1.03
83.583	0.00	0.01	0.308	O	|	|	|	|	1.03
83.667	0.00	0.01	0.307	O	|	|	|	|	1.03
83.750	0.00	0.01	0.307	O	|	|	|	|	1.03
83.833	0.00	0.01	0.307	O	|	|	|	|	1.03
83.917	0.00	0.01	0.307	O	|	|	|	|	1.03
84.000	0.00	0.01	0.307	O	|	|	|	|	1.03
84.083	0.00	0.01	0.307	O	|	|	|	|	1.03
84.167	0.00	0.01	0.307	O	|	|	|	|	1.03
84.250	0.00	0.01	0.307	O	|	|	|	|	1.03
84.333	0.00	0.01	0.307	O	|	|	|	|	1.03
84.417	0.00	0.01	0.307	O	|	|	|	|	1.03
84.500	0.00	0.01	0.307	O	|	|	|	|	1.03
84.583	0.00	0.01	0.307	O	|	|	|	|	1.03
84.667	0.00	0.01	0.306	O	|	|	|	|	1.03
84.750	0.00	0.01	0.306	O	|	|	|	|	1.03
84.833	0.00	0.01	0.306	O	|	|	|	|	1.03

84.917	0.00	0.01	0.306	O	|	|	|	|	1.03
85.000	0.00	0.01	0.306	O	|	|	|	|	1.03
85.083	0.00	0.01	0.306	O	|	|	|	|	1.03
85.167	0.00	0.01	0.306	O	|	|	|	|	1.03
85.250	0.00	0.01	0.306	O	|	|	|	|	1.03
85.333	0.00	0.01	0.306	O	|	|	|	|	1.03
85.417	0.00	0.01	0.306	O	|	|	|	|	1.03
85.500	0.00	0.01	0.306	O	|	|	|	|	1.03
85.583	0.00	0.01	0.306	O	|	|	|	|	1.03
85.667	0.00	0.01	0.305	O	|	|	|	|	1.03
85.750	0.00	0.01	0.305	O	|	|	|	|	1.03
85.833	0.00	0.01	0.305	O	|	|	|	|	1.03
85.917	0.00	0.01	0.305	O	|	|	|	|	1.03
86.000	0.00	0.01	0.305	O	|	|	|	|	1.03
86.083	0.00	0.01	0.305	O	|	|	|	|	1.03
86.167	0.00	0.01	0.305	O	|	|	|	|	1.03
86.250	0.00	0.01	0.305	O	|	|	|	|	1.03
86.333	0.00	0.01	0.305	O	|	|	|	|	1.02
86.417	0.00	0.01	0.305	O	|	|	|	|	1.02
86.500	0.00	0.01	0.305	O	|	|	|	|	1.02
86.583	0.00	0.01	0.305	O	|	|	|	|	1.02
86.667	0.00	0.01	0.305	O	|	|	|	|	1.02
86.750	0.00	0.01	0.305	O	|	|	|	|	1.02
86.833	0.00	0.01	0.304	O	|	|	|	|	1.02
86.917	0.00	0.01	0.304	O	|	|	|	|	1.02
87.000	0.00	0.01	0.304	O	|	|	|	|	1.02
87.083	0.00	0.01	0.304	O	|	|	|	|	1.02
87.167	0.00	0.01	0.304	O	|	|	|	|	1.02
87.250	0.00	0.01	0.304	O	|	|	|	|	

1.02

87.333	0.00	0.01	0.304	O	|	|	|	|	1.02
87.417	0.00	0.01	0.304	O	|	|	|	|	1.02
87.500	0.00	0.01	0.304	O	|	|	|	|	1.02
87.583	0.00	0.01	0.304	O	|	|	|	|	1.02
87.667	0.00	0.01	0.304	O	|	|	|	|	1.02
87.750	0.00	0.01	0.304	O	|	|	|	|	1.02
87.833	0.00	0.01	0.304	O	|	|	|	|	1.02
87.917	0.00	0.01	0.304	O	|	|	|	|	1.02
88.000	0.00	0.01	0.304	O	|	|	|	|	1.02
88.083	0.00	0.01	0.303	O	|	|	|	|	1.02
88.167	0.00	0.01	0.303	O	|	|	|	|	1.02
88.250	0.00	0.01	0.303	O	|	|	|	|	1.02
88.333	0.00	0.01	0.303	O	|	|	|	|	1.02
88.417	0.00	0.01	0.303	O	|	|	|	|	1.02
88.500	0.00	0.01	0.303	O	|	|	|	|	1.02
88.583	0.00	0.01	0.303	O	|	|	|	|	1.02
88.667	0.00	0.01	0.303	O	|	|	|	|	1.02
88.750	0.00	0.01	0.303	O	|	|	|	|	1.02
88.833	0.00	0.01	0.303	O	|	|	|	|	1.02
88.917	0.00	0.01	0.303	O	|	|	|	|	1.02
89.000	0.00	0.01	0.303	O	|	|	|	|	1.02
89.083	0.00	0.01	0.303	O	|	|	|	|	1.02
89.167	0.00	0.01	0.303	O	|	|	|	|	1.02
89.250	0.00	0.01	0.303	O	|	|	|	|	1.02
89.333	0.00	0.01	0.303	O	|	|	|	|	1.02
89.417	0.00	0.01	0.302	O	|	|	|	|	1.02
89.500	0.00	0.01	0.302	O	|	|	|	|	1.02
89.583	0.00	0.01	0.302	O	|	|	|	|	1.02

89.667	0.00	0.01	0.302	O	|	|	|	|	1.02
89.750	0.00	0.01	0.302	O	|	|	|	|	1.02
89.833	0.00	0.01	0.302	O	|	|	|	|	1.02
89.917	0.00	0.01	0.302	O	|	|	|	|	1.02
90.000	0.00	0.01	0.302	O	|	|	|	|	1.02
90.083	0.00	0.01	0.302	O	|	|	|	|	1.02
90.167	0.00	0.01	0.302	O	|	|	|	|	1.02
90.250	0.00	0.01	0.302	O	|	|	|	|	1.02
90.333	0.00	0.01	0.302	O	|	|	|	|	1.02
90.417	0.00	0.01	0.302	O	|	|	|	|	1.02
90.500	0.00	0.01	0.302	O	|	|	|	|	1.02
90.583	0.00	0.01	0.302	O	|	|	|	|	1.02
90.667	0.00	0.01	0.302	O	|	|	|	|	1.02
90.750	0.00	0.01	0.302	O	|	|	|	|	1.02
90.833	0.00	0.01	0.302	O	|	|	|	|	1.02
90.917	0.00	0.01	0.301	O	|	|	|	|	1.02
91.000	0.00	0.01	0.301	O	|	|	|	|	1.02
91.083	0.00	0.01	0.301	O	|	|	|	|	1.02
91.167	0.00	0.01	0.301	O	|	|	|	|	1.02
91.250	0.00	0.01	0.301	O	|	|	|	|	1.02
91.333	0.00	0.01	0.301	O	|	|	|	|	1.02
91.417	0.00	0.01	0.301	O	|	|	|	|	1.02
91.500	0.00	0.01	0.301	O	|	|	|	|	1.02
91.583	0.00	0.01	0.301	O	|	|	|	|	1.02
91.667	0.00	0.01	0.301	O	|	|	|	|	1.02
91.750	0.00	0.01	0.301	O	|	|	|	|	1.02
91.833	0.00	0.01	0.301	O	|	|	|	|	1.02
91.917	0.00	0.01	0.301	O	|	|	|	|	1.02
92.000	0.00	0.01	0.301	O	|	|	|	|	

1.02

92.083	0.00	0.01	0.301	O	|	|	|	|	1.02
92.167	0.00	0.01	0.301	O	|	|	|	|	1.02
92.250	0.00	0.01	0.301	O	|	|	|	|	1.02
92.333	0.00	0.01	0.301	O	|	|	|	|	1.02
92.417	0.00	0.01	0.301	O	|	|	|	|	1.02
92.500	0.00	0.01	0.301	O	|	|	|	|	1.01
92.583	0.00	0.01	0.300	O	|	|	|	|	1.01
92.667	0.00	0.01	0.300	O	|	|	|	|	1.01
92.750	0.00	0.01	0.300	O	|	|	|	|	1.01
92.833	0.00	0.01	0.300	O	|	|	|	|	1.01
92.917	0.00	0.01	0.300	O	|	|	|	|	1.01
93.000	0.00	0.01	0.300	O	|	|	|	|	1.01
93.083	0.00	0.01	0.300	O	|	|	|	|	1.01
93.167	0.00	0.01	0.300	O	|	|	|	|	1.01
93.250	0.00	0.01	0.300	O	|	|	|	|	1.01
93.333	0.00	0.01	0.300	O	|	|	|	|	1.01
93.417	0.00	0.01	0.300	O	|	|	|	|	1.01
93.500	0.00	0.01	0.300	O	|	|	|	|	1.01
93.583	0.00	0.01	0.300	O	|	|	|	|	1.01
93.667	0.00	0.01	0.300	O	|	|	|	|	1.01
93.750	0.00	0.01	0.300	O	|	|	|	|	1.01
93.833	0.00	0.01	0.300	O	|	|	|	|	1.01
93.917	0.00	0.01	0.300	O	|	|	|	|	1.01
94.000	0.00	0.01	0.300	O	|	|	|	|	1.01
94.083	0.00	0.01	0.300	O	|	|	|	|	1.01
94.167	0.00	0.01	0.300	O	|	|	|	|	1.01
94.250	0.00	0.01	0.300	O	|	|	|	|	1.01
94.333	0.00	0.01	0.300	O	|	|	|	|	1.01

94.417	0.00	0.01	0.300	O	|	|	|	|	1.01
94.500	0.00	0.01	0.299	O	|	|	|	|	1.01
94.583	0.00	0.01	0.299	O	|	|	|	|	1.01
94.667	0.00	0.01	0.299	O	|	|	|	|	1.01
94.750	0.00	0.01	0.299	O	|	|	|	|	1.01
94.833	0.00	0.01	0.299	O	|	|	|	|	1.01
94.917	0.00	0.01	0.299	O	|	|	|	|	1.01
95.000	0.00	0.01	0.299	O	|	|	|	|	1.01
95.083	0.00	0.01	0.299	O	|	|	|	|	1.01
95.167	0.00	0.01	0.299	O	|	|	|	|	1.01
95.250	0.00	0.01	0.299	O	|	|	|	|	1.01
95.333	0.00	0.01	0.299	O	|	|	|	|	1.01
95.417	0.00	0.01	0.299	O	|	|	|	|	1.01
95.500	0.00	0.01	0.299	O	|	|	|	|	1.01
95.583	0.00	0.01	0.299	O	|	|	|	|	1.01
95.667	0.00	0.01	0.299	O	|	|	|	|	1.01
95.750	0.00	0.01	0.299	O	|	|	|	|	1.01
95.833	0.00	0.01	0.299	O	|	|	|	|	1.01
95.917	0.00	0.01	0.299	O	|	|	|	|	1.01
96.000	0.00	0.01	0.299	O	|	|	|	|	1.01
96.083	0.00	0.01	0.299	O	|	|	|	|	1.01
96.167	0.00	0.01	0.299	O	|	|	|	|	1.01
96.250	0.00	0.01	0.299	O	|	|	|	|	1.01
96.333	0.00	0.01	0.299	O	|	|	|	|	1.01
96.417	0.00	0.01	0.299	O	|	|	|	|	1.01
96.500	0.00	0.01	0.299	O	|	|	|	|	1.01
96.583	0.00	0.01	0.299	O	|	|	|	|	1.01
96.667	0.00	0.00	0.299	O	|	|	|	|	1.01
96.750	0.00	0.00	0.298	O	|	|	|	|	

1.01

96.833	0.00	0.00	0.298	O	|	|	|	1.01
96.917	0.00	0.00	0.298	O	|	|	|	1.01
97.000	0.00	0.00	0.298	O	|	|	|	1.01
97.083	0.00	0.00	0.298	O	|	|	|	1.01
97.167	0.00	0.00	0.298	O	|	|	|	1.01
97.250	0.00	0.00	0.298	O	|	|	|	1.01
97.333	0.00	0.00	0.298	O	|	|	|	1.01
97.417	0.00	0.00	0.298	O	|	|	|	1.01
97.500	0.00	0.00	0.298	O	|	|	|	1.01
97.583	0.00	0.00	0.298	O	|	|	|	1.01
97.667	0.00	0.00	0.298	O	|	|	|	1.01
97.750	0.00	0.00	0.298	O	|	|	|	1.01
97.833	0.00	0.00	0.298	O	|	|	|	1.01
97.917	0.00	0.00	0.298	O	|	|	|	1.01
98.000	0.00	0.00	0.298	O	|	|	|	1.01
98.083	0.00	0.00	0.298	O	|	|	|	1.01
98.167	0.00	0.00	0.298	O	|	|	|	1.01
98.250	0.00	0.00	0.298	O	|	|	|	1.01
98.333	0.00	0.00	0.298	O	|	|	|	1.01
98.417	0.00	0.00	0.298	O	|	|	|	1.01
98.500	0.00	0.00	0.298	O	|	|	|	1.01
98.583	0.00	0.00	0.298	O	|	|	|	1.01
98.667	0.00	0.00	0.298	O	|	|	|	1.01
98.750	0.00	0.00	0.298	O	|	|	|	1.01
98.833	0.00	0.00	0.298	O	|	|	|	1.01
98.917	0.00	0.00	0.298	O	|	|	|	1.01
99.000	0.00	0.00	0.298	O	|	|	|	1.01
99.083	0.00	0.00	0.298	O	|	|	|	1.01

99.167	0.00	0.00	0.298	O	|	|	|	|	1.01
99.250	0.00	0.00	0.298	O	|	|	|	|	1.01
99.333	0.00	0.00	0.298	O	|	|	|	|	1.01
99.417	0.00	0.00	0.298	O	|	|	|	|	1.01
99.500	0.00	0.00	0.297	O	|	|	|	|	1.01
99.583	0.00	0.00	0.297	O	|	|	|	|	1.01
99.667	0.00	0.00	0.297	O	|	|	|	|	1.01
99.750	0.00	0.00	0.297	O	|	|	|	|	1.01
99.833	0.00	0.00	0.297	O	|	|	|	|	1.01
99.917	0.00	0.00	0.297	O	|	|	|	|	1.01
100.000	0.00	0.00	0.297	O	|	|	|	|	1.01
100.083	0.00	0.00	0.297	O	|	|	|	|	1.01
100.167	0.00	0.00	0.297	O	|	|	|	|	1.01
100.250	0.00	0.00	0.297	O	|	|	|	|	1.01
100.333	0.00	0.00	0.297	O	|	|	|	|	1.01
100.417	0.00	0.00	0.297	O	|	|	|	|	1.01
100.500	0.00	0.00	0.297	O	|	|	|	|	1.01
100.583	0.00	0.00	0.297	O	|	|	|	|	1.01
100.667	0.00	0.00	0.297	O	|	|	|	|	1.01
100.750	0.00	0.00	0.297	O	|	|	|	|	1.01
100.833	0.00	0.00	0.297	O	|	|	|	|	1.01
100.917	0.00	0.00	0.297	O	|	|	|	|	1.01
101.000	0.00	0.00	0.297	O	|	|	|	|	1.01
101.083	0.00	0.00	0.297	O	|	|	|	|	1.01
101.167	0.00	0.00	0.297	O	|	|	|	|	1.01
101.250	0.00	0.00	0.297	O	|	|	|	|	1.01
101.333	0.00	0.00	0.297	O	|	|	|	|	1.01
101.417	0.00	0.00	0.297	O	|	|	|	|	1.01
101.500	0.00	0.00	0.297	O	|	|	|	|	

1.01

101.583	0.00	0.00	0.297	O	|	|	|	|	1.01
101.667	0.00	0.00	0.297	O	|	|	|	|	1.01
101.750	0.00	0.00	0.297	O	|	|	|	|	1.01
101.833	0.00	0.00	0.297	O	|	|	|	|	1.01
101.917	0.00	0.00	0.297	O	|	|	|	|	1.01
102.000	0.00	0.00	0.297	O	|	|	|	|	1.01
102.083	0.00	0.00	0.297	O	|	|	|	|	1.01
102.167	0.00	0.00	0.297	O	|	|	|	|	1.01
102.250	0.00	0.00	0.297	O	|	|	|	|	1.01
102.333	0.00	0.00	0.297	O	|	|	|	|	1.01
102.417	0.00	0.00	0.297	O	|	|	|	|	1.01
102.500	0.00	0.00	0.297	O	|	|	|	|	1.01
102.583	0.00	0.00	0.297	O	|	|	|	|	1.01
102.667	0.00	0.00	0.297	O	|	|	|	|	1.01
102.750	0.00	0.00	0.297	O	|	|	|	|	1.01
102.833	0.00	0.00	0.296	O	|	|	|	|	1.01
102.917	0.00	0.00	0.296	O	|	|	|	|	1.01
103.000	0.00	0.00	0.296	O	|	|	|	|	1.01
103.083	0.00	0.00	0.296	O	|	|	|	|	1.01
103.167	0.00	0.00	0.296	O	|	|	|	|	1.01
103.250	0.00	0.00	0.296	O	|	|	|	|	1.01
103.333	0.00	0.00	0.296	O	|	|	|	|	1.01
103.417	0.00	0.00	0.296	O	|	|	|	|	1.01
103.500	0.00	0.00	0.296	O	|	|	|	|	1.01
103.583	0.00	0.00	0.296	O	|	|	|	|	1.01
103.667	0.00	0.00	0.296	O	|	|	|	|	1.01
103.750	0.00	0.00	0.296	O	|	|	|	|	1.01
103.833	0.00	0.00	0.296	O	|	|	|	|	1.01

103.917	0.00	0.00	0.296	O	|	|	|	|	1.01
104.000	0.00	0.00	0.296	O	|	|	|	|	1.01
104.083	0.00	0.00	0.296	O	|	|	|	|	1.00
104.167	0.00	0.00	0.296	O	|	|	|	|	1.00
104.250	0.00	0.00	0.296	O	|	|	|	|	1.00
104.333	0.00	0.00	0.296	O	|	|	|	|	1.00
104.417	0.00	0.00	0.296	O	|	|	|	|	1.00
104.500	0.00	0.00	0.296	O	|	|	|	|	1.00
104.583	0.00	0.00	0.296	O	|	|	|	|	1.00
104.667	0.00	0.00	0.296	O	|	|	|	|	1.00
104.750	0.00	0.00	0.296	O	|	|	|	|	1.00
104.833	0.00	0.00	0.296	O	|	|	|	|	1.00
104.917	0.00	0.00	0.296	O	|	|	|	|	1.00
105.000	0.00	0.00	0.296	O	|	|	|	|	1.00
105.083	0.00	0.00	0.296	O	|	|	|	|	1.00
105.167	0.00	0.00	0.296	O	|	|	|	|	1.00
105.250	0.00	0.00	0.296	O	|	|	|	|	1.00
105.333	0.00	0.00	0.296	O	|	|	|	|	1.00
105.417	0.00	0.00	0.296	O	|	|	|	|	1.00
105.500	0.00	0.00	0.296	O	|	|	|	|	1.00
105.583	0.00	0.00	0.296	O	|	|	|	|	1.00
105.667	0.00	0.00	0.296	O	|	|	|	|	1.00
105.750	0.00	0.00	0.296	O	|	|	|	|	1.00
105.833	0.00	0.00	0.296	O	|	|	|	|	1.00
105.917	0.00	0.00	0.296	O	|	|	|	|	1.00
106.000	0.00	0.00	0.296	O	|	|	|	|	1.00
106.083	0.00	0.00	0.296	O	|	|	|	|	1.00
106.167	0.00	0.00	0.296	O	|	|	|	|	1.00
106.250	0.00	0.00	0.296	O	|	|	|	|	

1.00

106.333	0.00	0.00	0.296	O					1.00
106.417	0.00	0.00	0.296	O					1.00
106.500	0.00	0.00	0.296	O					1.00
106.583	0.00	0.00	0.296	O					1.00
106.667	0.00	0.00	0.296	O					1.00
106.750	0.00	0.00	0.296	O					1.00
106.833	0.00	0.00	0.296	O					1.00
106.917	0.00	0.00	0.296	O					1.00
107.000	0.00	0.00	0.296	O					1.00
107.083	0.00	0.00	0.296	O					1.00
107.167	0.00	0.00	0.296	O					1.00
107.250	0.00	0.00	0.295	O					1.00
107.333	0.00	0.00	0.295	O					1.00
107.417	0.00	0.00	0.295	O					1.00
107.500	0.00	0.00	0.295	O					1.00
107.583	0.00	0.00	0.295	O					1.00
107.667	0.00	0.00	0.295	O					1.00
107.750	0.00	0.00	0.295	O					1.00
107.833	0.00	0.00	0.295	O					1.00
107.917	0.00	0.00	0.295	O					1.00
108.000	0.00	0.00	0.295	O					1.00
108.083	0.00	0.00	0.295	O					1.00
108.167	0.00	0.00	0.295	O					1.00
108.250	0.00	0.00	0.295	O					1.00
108.333	0.00	0.00	0.295	O					1.00
108.417	0.00	0.00	0.295	O					1.00
108.500	0.00	0.00	0.295	O					1.00
108.583	0.00	0.00	0.295	O					1.00

108.667	0.00	0.00	0.295	O	|	|	|	|	1.00
108.750	0.00	0.00	0.295	O	|	|	|	|	1.00
108.833	0.00	0.00	0.295	O	|	|	|	|	1.00
108.917	0.00	0.00	0.295	O	|	|	|	|	1.00
109.000	0.00	0.00	0.295	O	|	|	|	|	1.00
109.083	0.00	0.00	0.295	O	|	|	|	|	1.00
109.167	0.00	0.00	0.295	O	|	|	|	|	1.00
109.250	0.00	0.00	0.295	O	|	|	|	|	1.00
109.333	0.00	0.00	0.295	O	|	|	|	|	1.00
109.417	0.00	0.00	0.295	O	|	|	|	|	1.00
109.500	0.00	0.00	0.295	O	|	|	|	|	1.00
109.583	0.00	0.00	0.295	O	|	|	|	|	1.00
109.667	0.00	0.00	0.295	O	|	|	|	|	1.00
109.750	0.00	0.00	0.295	O	|	|	|	|	1.00
109.833	0.00	0.00	0.295	O	|	|	|	|	1.00
109.917	0.00	0.00	0.295	O	|	|	|	|	1.00
110.000	0.00	0.00	0.295	O	|	|	|	|	1.00
110.083	0.00	0.00	0.295	O	|	|	|	|	1.00
110.167	0.00	0.00	0.295	O	|	|	|	|	1.00
110.250	0.00	0.00	0.295	O	|	|	|	|	1.00
110.333	0.00	0.00	0.295	O	|	|	|	|	1.00
110.417	0.00	0.00	0.295	O	|	|	|	|	1.00
110.500	0.00	0.00	0.295	O	|	|	|	|	1.00
110.583	0.00	0.00	0.295	O	|	|	|	|	1.00
110.667	0.00	0.00	0.295	O	|	|	|	|	1.00
110.750	0.00	0.00	0.295	O	|	|	|	|	1.00
110.833	0.00	0.00	0.295	O	|	|	|	|	1.00
110.917	0.00	0.00	0.295	O	|	|	|	|	1.00
111.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

111.083	0.00	0.00	0.295	O	|	|	|	1.00
111.167	0.00	0.00	0.295	O	|	|	|	1.00
111.250	0.00	0.00	0.295	O	|	|	|	1.00
111.333	0.00	0.00	0.295	O	|	|	|	1.00
111.417	0.00	0.00	0.295	O	|	|	|	1.00
111.500	0.00	0.00	0.295	O	|	|	|	1.00
111.583	0.00	0.00	0.295	O	|	|	|	1.00
111.667	0.00	0.00	0.295	O	|	|	|	1.00
111.750	0.00	0.00	0.295	O	|	|	|	1.00
111.833	0.00	0.00	0.295	O	|	|	|	1.00
111.917	0.00	0.00	0.295	O	|	|	|	1.00
112.000	0.00	0.00	0.295	O	|	|	|	1.00
112.083	0.00	0.00	0.295	O	|	|	|	1.00
112.167	0.00	0.00	0.295	O	|	|	|	1.00
112.250	0.00	0.00	0.295	O	|	|	|	1.00
112.333	0.00	0.00	0.295	O	|	|	|	1.00
112.417	0.00	0.00	0.295	O	|	|	|	1.00
112.500	0.00	0.00	0.295	O	|	|	|	1.00
112.583	0.00	0.00	0.295	O	|	|	|	1.00
112.667	0.00	0.00	0.295	O	|	|	|	1.00
112.750	0.00	0.00	0.295	O	|	|	|	1.00
112.833	0.00	0.00	0.295	O	|	|	|	1.00
112.917	0.00	0.00	0.295	O	|	|	|	1.00
113.000	0.00	0.00	0.295	O	|	|	|	1.00
113.083	0.00	0.00	0.295	O	|	|	|	1.00
113.167	0.00	0.00	0.295	O	|	|	|	1.00
113.250	0.00	0.00	0.295	O	|	|	|	1.00
113.333	0.00	0.00	0.295	O	|	|	|	1.00

113.417	0.00	0.00	0.295	O	|	|	|	|	1.00
113.500	0.00	0.00	0.295	O	|	|	|	|	1.00
113.583	0.00	0.00	0.295	O	|	|	|	|	1.00
113.667	0.00	0.00	0.295	O	|	|	|	|	1.00
113.750	0.00	0.00	0.294	O	|	|	|	|	1.00
113.833	0.00	0.00	0.294	O	|	|	|	|	1.00
113.917	0.00	0.00	0.294	O	|	|	|	|	1.00
114.000	0.00	0.00	0.294	O	|	|	|	|	1.00
114.083	0.00	0.00	0.294	O	|	|	|	|	1.00
114.167	0.00	0.00	0.294	O	|	|	|	|	1.00
114.250	0.00	0.00	0.294	O	|	|	|	|	1.00
114.333	0.00	0.00	0.294	O	|	|	|	|	1.00
114.417	0.00	0.00	0.294	O	|	|	|	|	1.00
114.500	0.00	0.00	0.294	O	|	|	|	|	1.00
114.583	0.00	0.00	0.294	O	|	|	|	|	1.00
114.667	0.00	0.00	0.294	O	|	|	|	|	1.00
114.750	0.00	0.00	0.294	O	|	|	|	|	1.00
114.833	0.00	0.00	0.294	O	|	|	|	|	1.00
114.917	0.00	0.00	0.294	O	|	|	|	|	1.00
115.000	0.00	0.00	0.294	O	|	|	|	|	1.00
115.083	0.00	0.00	0.294	O	|	|	|	|	1.00
115.167	0.00	0.00	0.294	O	|	|	|	|	1.00
115.250	0.00	0.00	0.294	O	|	|	|	|	1.00
115.333	0.00	0.00	0.294	O	|	|	|	|	1.00
115.417	0.00	0.00	0.294	O	|	|	|	|	1.00
115.500	0.00	0.00	0.294	O	|	|	|	|	1.00
115.583	0.00	0.00	0.294	O	|	|	|	|	1.00
115.667	0.00	0.00	0.294	O	|	|	|	|	1.00
115.750	0.00	0.00	0.294	O	|	|	|	|	

1.00

115.833	0.00	0.00	0.294	O	|	|	|	1.00
115.917	0.00	0.00	0.294	O	|	|	|	1.00
116.000	0.00	0.00	0.294	O	|	|	|	1.00
116.083	0.00	0.00	0.294	O	|	|	|	1.00
116.167	0.00	0.00	0.294	O	|	|	|	1.00
116.250	0.00	0.00	0.294	O	|	|	|	1.00
116.333	0.00	0.00	0.294	O	|	|	|	1.00
116.417	0.00	0.00	0.294	O	|	|	|	1.00
116.500	0.00	0.00	0.294	O	|	|	|	1.00
116.583	0.00	0.00	0.294	O	|	|	|	1.00
116.667	0.00	0.00	0.294	O	|	|	|	1.00
116.750	0.00	0.00	0.294	O	|	|	|	1.00
116.833	0.00	0.00	0.294	O	|	|	|	1.00
116.917	0.00	0.00	0.294	O	|	|	|	1.00
117.000	0.00	0.00	0.294	O	|	|	|	1.00
117.083	0.00	0.00	0.294	O	|	|	|	1.00
117.167	0.00	0.00	0.294	O	|	|	|	1.00
117.250	0.00	0.00	0.294	O	|	|	|	1.00
117.333	0.00	0.00	0.294	O	|	|	|	1.00
117.417	0.00	0.00	0.294	O	|	|	|	1.00
117.500	0.00	0.00	0.294	O	|	|	|	1.00
117.583	0.00	0.00	0.294	O	|	|	|	1.00
117.667	0.00	0.00	0.294	O	|	|	|	1.00
117.750	0.00	0.00	0.294	O	|	|	|	1.00
117.833	0.00	0.00	0.294	O	|	|	|	1.00
117.917	0.00	0.00	0.294	O	|	|	|	1.00
118.000	0.00	0.00	0.294	O	|	|	|	1.00
118.083	0.00	0.00	0.294	O	|	|	|	1.00

118.167	0.00	0.00	0.294	O	|	|	|	| 1.00
118.250	0.00	0.00	0.294	O	|	|	|	| 1.00
118.333	0.00	0.00	0.294	O	|	|	|	| 1.00
118.417	0.00	0.00	0.294	O	|	|	|	| 1.00
118.500	0.00	0.00	0.294	O	|	|	|	| 1.00
118.583	0.00	0.00	0.294	O	|	|	|	| 1.00
118.667	0.00	0.00	0.294	O	|	|	|	| 1.00
118.750	0.00	0.00	0.294	O	|	|	|	| 1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1425
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.419 (CFS)
Total volume = 1.187 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 24 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP24100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.892 (CFS)
Total volume = 2.960 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.2	2.45	3.67	4.89 (Ft.)	Depth
0.083	0.16	0.00	0.001	OI	|	|	|	|	0.00
0.167	0.27	0.00	0.002	OI	|	|	|	|	0.01
0.250	0.29	0.00	0.004	OI	|	|	|	|	0.01
0.333	0.37	0.00	0.006	O I	|	|	|	|	0.02
0.417	0.42	0.00	0.009	O I	|	|	|	|	0.03
0.500	0.43	0.00	0.012	O I	|	|	|	|	0.04
0.583	0.43	0.00	0.015	O I	|	|	|	|	0.05
0.667	0.43	0.00	0.018	O I	|	|	|	|	0.06
0.750	0.43	0.00	0.021	O I	|	|	|	|	0.07
0.833	0.51	0.00	0.024	O I	|	|	|	|	0.08
0.917	0.56	0.00	0.028	O I	|	|	|	|	0.09
1.000	0.57	0.00	0.032	O I	|	|	|	|	0.11
1.083	0.49	0.00	0.035	O I	|	|	|	|	0.12
1.167	0.44	0.00	0.038	O I	|	|	|	|	0.13
1.250	0.43	0.00	0.041	O I	|	|	|	|	0.14
1.333	0.43	0.00	0.044	O I	|	|	|	|	0.15
1.417	0.43	0.00	0.047	O I	|	|	|	|	0.16
1.500	0.43	0.00	0.050	O I	|	|	|	|	0.17
1.583	0.43	0.00	0.053	O I	|	|	|	|	0.18
1.667	0.43	0.00	0.056	O I	|	|	|	|	0.19
1.750	0.43	0.00	0.059	O I	|	|	|	|	0.20
1.833	0.51	0.00	0.062	O I	|	|	|	|	0.21
1.917	0.56	0.00	0.066	O I	|	|	|	|	0.22

2.000	0.57	0.00	0.070	O	I	|	|	|	0.24
2.083	0.57	0.00	0.074	O	I	|	|	|	0.25
2.167	0.57	0.00	0.078	O	I	|	|	|	0.27
2.250	0.57	0.00	0.082	O	I	|	|	|	0.28
2.333	0.57	0.00	0.086	O	I	|	|	|	0.29
2.417	0.57	0.00	0.090	O	I	|	|	|	0.31
2.500	0.57	0.00	0.094	O	I	|	|	|	0.32
2.583	0.65	0.00	0.098	O	I	|	|	|	0.33
2.667	0.71	0.00	0.103	O	I	|	|	|	0.35
2.750	0.72	0.00	0.108	O	I	|	|	|	0.37
2.833	0.72	0.00	0.112	O	I	|	|	|	0.38
2.917	0.72	0.00	0.117	O	I	|	|	|	0.40
3.000	0.72	0.00	0.122	O	I	|	|	|	0.42
3.083	0.72	0.00	0.127	O	I	|	|	|	0.43
3.167	0.72	0.00	0.132	O	I	|	|	|	0.45
3.250	0.72	0.00	0.137	O	I	|	|	|	0.47
3.333	0.72	0.00	0.142	O	I	|	|	|	0.48
3.417	0.72	0.00	0.147	O	I	|	|	|	0.50
3.500	0.72	0.00	0.152	O	I	|	|	|	0.52
3.583	0.72	0.00	0.157	O	I	|	|	|	0.53
3.667	0.72	0.00	0.162	O	I	|	|	|	0.55
3.750	0.72	0.00	0.167	O	I	|	|	|	0.57
3.833	0.80	0.00	0.172	O	I	|	|	|	0.58
3.917	0.85	0.00	0.178	O	I	|	|	|	0.60
4.000	0.86	0.00	0.183	O	I	|	|	|	0.62
4.083	0.86	0.00	0.189	O	I	|	|	|	0.64
4.167	0.86	0.00	0.195	O	I	|	|	|	0.66
4.250	0.86	0.00	0.201	O	I	|	|	|	0.68
4.333	0.94	0.00	0.207	O	I	|	|	|	0.71

4.417	0.99	0.00	0.214	O	I |	|	|	|	0.73
4.500	1.00	0.00	0.221	O	I |	|	|	|	0.75
4.583	1.00	0.00	0.228	O	I |	|	|	|	0.77
4.667	1.00	0.00	0.235	O	I |	|	|	|	0.80
4.750	1.00	0.00	0.242	O	I |	|	|	|	0.82
4.833	1.08	0.00	0.249	O	I|	|	|	|	0.85
4.917	1.14	0.00	0.256	O	I|	|	|	|	0.87
5.000	1.15	0.00	0.264	O	I|	|	|	|	0.90
5.083	0.98	0.00	0.272	O	I |	|	|	|	0.92
5.167	0.88	0.00	0.278	O	I |	|	|	|	0.95
5.250	0.86	0.00	0.284	O	I |	|	|	|	0.97
5.333	0.94	0.00	0.290	O	I |	|	|	|	0.99
5.417	0.99	0.00	0.297	O	I |	|	|	|	1.01
5.500	1.00	0.01	0.304	O	I |	|	|	|	1.02
5.583	1.08	0.02	0.311	O	I|	|	|	|	1.04
5.667	1.14	0.02	0.318	O	I|	|	|	|	1.06
5.750	1.15	0.03	0.326	O	I|	|	|	|	1.07
5.833	1.15	0.04	0.334	O	I|	|	|	|	1.09
5.917	1.15	0.04	0.341	O	I|	|	|	|	1.11
6.000	1.15	0.05	0.349	O	I|	|	|	|	1.13
6.083	1.23	0.06	0.357	O	I	|	|	|	1.14
6.167	1.28	0.06	0.365	O	I	|	|	|	1.16
6.250	1.29	0.07	0.373	O	I	|	|	|	1.18
6.333	1.29	0.08	0.382	O	I	|	|	|	1.20
6.417	1.29	0.09	0.390	O	I	|	|	|	1.22
6.500	1.29	0.09	0.398	O	I	|	|	|	1.24
6.583	1.37	0.10	0.407	O	I	|	|	|	1.26
6.667	1.42	0.10	0.416	O	|I	|	|	|	1.28
6.750	1.43	0.10	0.425	O	|I	|	|	|	1.30
6.833	1.43	0.11	0.434	O	|I	|	|	|	1.32
6.917	1.43	0.11	0.443	O	|I	|	|	|	1.34
7.000	1.43	0.11	0.452	O	|I	|	|	|	1.35
7.083	1.43	0.12	0.461	O	|I	|	|	|	1.37

7.167	1.43	0.12	0.470	O	I			1.39
7.250	1.43	0.12	0.479	O	I			1.41
7.333	1.51	0.13	0.488	O	I			1.43
7.417	1.57	0.13	0.498	O	I			1.45
7.500	1.58	0.13	0.508	O	I			1.47
7.583	1.66	0.14	0.518	O	I			1.50
7.667	1.71	0.14	0.529	O	I			1.52
7.750	1.72	0.15	0.540	O	I			1.54
7.833	1.80	0.16	0.551	O	I			1.56
7.917	1.85	0.17	0.562	O	I			1.59
8.000	1.86	0.17	0.574	O	I			1.61
8.083	2.02	0.18	0.586	O	I			1.63
8.167	2.13	0.19	0.599	O	I			1.66
8.250	2.15	0.20	0.612	O	I			1.69
8.333	2.15	0.21	0.626	O	I			1.72
8.417	2.15	0.22	0.639	O	I			1.74
8.500	2.15	0.22	0.652	O	I			1.77
8.583	2.23	0.23	0.666	O	I			1.80
8.667	2.28	0.23	0.680	O	I			1.82
8.750	2.29	0.24	0.694	O	I			1.85
8.833	2.37	0.24	0.709	O	I			1.88
8.917	2.43	0.25	0.723	O	I			1.91
9.000	2.43	0.25	0.738	O	I			1.94
9.083	2.60	0.26	0.754	O	I			1.97
9.167	2.70	0.26	0.770	O	I			2.00
9.250	2.72	0.27	0.787	O	I			2.03
9.333	2.80	0.27	0.804	O	I			2.07
9.417	2.86	0.28	0.822	O	I			2.10
9.500	2.86	0.28	0.840	O	I			2.13
9.583	2.95	0.29	0.858	O	I			2.17
9.667	3.00	0.30	0.876	O	I			2.20
9.750	3.01	0.30	0.895	O	I			2.24
9.833	3.09	0.31	0.914	O	I			2.28
9.917	3.14	0.31	0.933	O	I			2.31
10.000	3.15	0.32	0.953	O	I			2.35
10.083	2.58	0.32	0.970	O	I			2.38
10.167	2.21	0.32	0.984	O	I			2.41

10.250	2.15	0.33	0.997	O		I		2.44
10.333	2.15	0.33	1.010	O		I		2.46
10.417	2.15	0.33	1.022	O		I		2.48
10.500	2.15	0.34	1.035	O		I		2.51
10.583	2.55	0.34	1.049	O		I		2.53
10.667	2.82	0.34	1.065	O		I		2.56
10.750	2.86	0.35	1.082	O		I		2.60
10.833	2.86	0.35	1.099	O		I		2.63
10.917	2.86	0.36	1.117	O		I		2.66
11.000	2.86	0.36	1.134	O		I		2.69
11.083	2.78	0.36	1.151	O		I		2.73
11.167	2.73	0.37	1.167	O		I		2.76
11.250	2.72	0.37	1.183	O		I		2.79
11.333	2.72	0.37	1.200	O		I		2.82
11.417	2.72	0.38	1.216	O		I		2.85
11.500	2.72	0.38	1.232	O		I		2.88
11.583	2.56	0.39	1.247	O		I		2.91
11.667	2.45	0.39	1.262	O		I		2.94
11.750	2.43	0.39	1.276	O		I		2.97
11.833	2.52	0.39	1.291	O		I		3.00
11.917	2.57	0.40	1.305	O		I		3.03
12.000	2.58	0.40	1.320	O		I		3.06
12.083	3.15	0.40	1.337	O		I		3.09
12.167	3.52	0.41	1.357	O		I		3.13
12.250	3.58	0.41	1.379	O		I		3.17
12.333	3.66	0.42	1.401	O		I		3.21
12.417	3.72	0.42	1.424	O		I		3.26
12.500	3.72	0.43	1.446	O		I		3.31
12.583	3.89	0.43	1.470	O		I		3.35
12.667	3.99	0.44	1.494	O		I		3.40
12.750	4.01	0.44	1.518	O		I		3.45
12.833	4.09	0.46	1.543	O		I		3.50
12.917	4.14	0.69	1.567	O		I		3.55
13.000	4.15	0.91	1.591	O		I		3.60
13.083	4.56	1.12	1.614	O		I		3.65
13.167	4.83	1.35	1.637	O		I		3.70
13.250	4.88	1.58	1.661	O		I		3.75
13.333	4.88	1.97	1.682	O		I		3.80
13.417	4.89	2.32	1.701	O		I		3.85
13.500	4.89	2.62	1.718	O		I		3.88
13.583	3.99	2.83	1.729	O		I		3.91
13.667	3.39	2.94	1.735	O	I			3.92
13.750	3.29	2.98	1.738	O	I			3.93
13.833	3.29	3.02	1.740	O	I			3.93
13.917	3.29	3.05	1.741	O	I			3.94
14.000	3.29	3.08	1.743	O	I			3.94
14.083	3.62	3.13	1.745	O	I			3.95
14.167	3.83	3.20	1.749	O	I			

3.96

14.250	3.87	3.27	1.754	|	|	|	O |I	|	3.97
14.333	3.79	3.34	1.757	|	|	|	O I	|	3.97
14.417	3.73	3.39	1.760	|	|	|	O I	|	3.98
14.500	3.72	3.43	1.762	|	|	|	O I	|	3.98
14.583	3.72	3.46	1.764	|	|	|	O I	|	3.99
14.667	3.72	3.49	1.766	|	|	|	O I	|	3.99
14.750	3.72	3.52	1.767	|	|	|	OI	|	4.00
14.833	3.64	3.54	1.768	|	|	|	O|	|	4.00
14.917	3.59	3.55	1.769	|	|	|	O|	|	4.00
15.000	3.58	3.55	1.769	|	|	|	O|	|	4.00
15.083	3.50	3.55	1.769	|	|	|	IO|	|	4.00
15.167	3.45	3.54	1.768	|	|	|	IO|	|	4.00
15.250	3.44	3.53	1.768	|	|	|	IO|	|	4.00
15.333	3.36	3.51	1.767	|	|	|	IO |	|	4.00
15.417	3.30	3.49	1.766	|	|	|	IO |	|	3.99
15.500	3.29	3.47	1.764	|	|	|	IO |	|	3.99
15.583	2.97	3.43	1.762	|	|	| I O |	|	3.98
15.667	2.76	3.36	1.759	|	|	| I O |	|	3.98
15.750	2.72	3.29	1.755	|	|	|I O |	|	3.97
15.833	2.72	3.22	1.751	|	|	|I O |	|	3.96
15.917	2.72	3.16	1.748	|	|	|I O |	|	3.95
16.000	2.72	3.11	1.745	|	|	|I O |	|	3.94
16.083	1.51	2.99	1.738	|	|I	| O |	|	3.93
16.167	0.71	2.77	1.726	| I |	|	| O |	|	3.90
16.250	0.57	2.52	1.712	| I |	|	O |	|	3.87
16.333	0.57	2.29	1.700	| I |	| O |	|	|	3.84
16.417	0.57	2.09	1.688	| I |	| O |	|	|	3.82
16.500	0.57	1.91	1.679	| I |	| O |	|	|	3.79
16.583	0.49	1.75	1.670	| I |	| O |	|	|	3.77
16.667	0.44	1.60	1.661	| I |	| O |	|	|	3.76
16.750	0.43	1.50	1.654	| I |	|O |	|	|	3.74
16.833	0.43	1.43	1.647	| I |	|O |	|	|	3.72
16.917	0.43	1.37	1.640	| I |	O |	|	|	3.71
17.000	0.43	1.31	1.634	| I |	O |	|	|	3.70
17.083	0.59	1.26	1.628	| I |	O |	|	|	3.68
17.167	0.70	1.22	1.624	| I O|	|	|	|	3.68

17.250	0.72	1.19	1.621	| I O|	|	|	|	3.67
17.333	0.72	1.16	1.618	| I O|	|	|	|	3.66
17.417	0.72	1.13	1.615	| I O|	|	|	|	3.66
17.500	0.72	1.11	1.612	| I O|	|	|	|	3.65
17.583	0.72	1.08	1.609	| I O|	|	|	|	3.64
17.667	0.72	1.06	1.607	| I O |	|	|	|	3.64
17.750	0.72	1.04	1.604	| I O |	|	|	|	3.63
17.833	0.64	1.01	1.602	| I O |	|	|	|	3.63
17.917	0.58	0.99	1.599	| I O |	|	|	|	3.62
18.000	0.57	0.96	1.597	| I O |	|	|	|	3.62
18.083	0.57	0.94	1.594	| I O |	|	|	|	3.61
18.167	0.57	0.91	1.592	| I O |	|	|	|	3.61
18.250	0.57	0.89	1.589	| I O |	|	|	|	3.60
18.333	0.57	0.87	1.587	| I O |	|	|	|	3.60
18.417	0.57	0.85	1.585	| I O |	|	|	|	3.59
18.500	0.57	0.84	1.583	| I O |	|	|	|	3.59
18.583	0.49	0.82	1.581	| I O |	|	|	|	3.58
18.667	0.44	0.80	1.579	| I O |	|	|	|	3.58
18.750	0.43	0.77	1.577	| I O |	|	|	|	3.57
18.833	0.35	0.75	1.574	| I O |	|	|	|	3.57
18.917	0.30	0.72	1.571	|I O |	|	|	|	3.56
19.000	0.29	0.69	1.568	|I O |	|	|	|	3.56
19.083	0.37	0.67	1.566	| I O |	|	|	|	3.55
19.167	0.42	0.65	1.564	| I O |	|	|	|	3.55
19.250	0.43	0.64	1.562	| I O |	|	|	|	3.54
19.333	0.51	0.63	1.561	| IO |	|	|	|	3.54
19.417	0.56	0.62	1.561	| IO |	|	|	|	3.54
19.500	0.57	0.62	1.560	| IO |	|	|	|	3.54
19.583	0.49	0.61	1.560	| IO |	|	|	|	3.54
19.667	0.44	0.60	1.559	| IO |	|	|	|	3.54
19.750	0.43	0.59	1.558	| IO |	|	|	|	3.53
19.833	0.35	0.58	1.556	| IO |	|	|	|	3.53
19.917	0.30	0.56	1.555	|I O |	|	|	|	3.53
20.000	0.29	0.55	1.553	|I O |	|	|	|	3.52
20.083	0.37	0.53	1.551	| IO |	|	|	|	3.52
20.167	0.42	0.52	1.550	| IO |	|	|	|	3.52
20.250	0.43	0.52	1.550	| IO |	|	|	|	3.52
20.333	0.43	0.51	1.549	| IO |	|	|	|	3.52
20.417	0.43	0.51	1.549	| IO |	|	|	|	3.51
20.500	0.43	0.50	1.548	| IO |	|	|	|	3.51
20.583	0.43	0.50	1.548	| IO |	|	|	|	3.51
20.667	0.43	0.49	1.547	| IO |	|	|	|	3.51
20.750	0.43	0.49	1.547	| IO |	|	|	|	3.51
20.833	0.35	0.48	1.546	| IO |	|	|	|	3.51
20.917	0.30	0.47	1.545	|I O |	|	|	|	3.51
21.000	0.29	0.46	1.544	|I O |	|	|	|	3.50

21.083	0.37	0.45	1.543	O				3.50
21.167	0.42	0.45	1.542	O				3.50
21.250	0.43	0.45	1.542	O				3.50
21.333	0.35	0.45	1.542	O				3.50
21.417	0.30	0.45	1.541	IO				3.50
21.500	0.29	0.45	1.540	IO				3.50
21.583	0.37	0.45	1.539	O				3.49
21.667	0.42	0.45	1.539	O				3.49
21.750	0.43	0.45	1.539	O				3.49
21.833	0.35	0.45	1.538	O				3.49
21.917	0.30	0.45	1.537	IO				3.49
22.000	0.29	0.44	1.536	IO				3.49
22.083	0.37	0.44	1.535	O				3.49
22.167	0.42	0.44	1.535	O				3.49
22.250	0.43	0.44	1.535	O				3.49
22.333	0.35	0.44	1.535	O				3.48
22.417	0.30	0.44	1.534	IO				3.48
22.500	0.29	0.44	1.533	IO				3.48
22.583	0.29	0.44	1.532	IO				3.48
22.667	0.29	0.44	1.531	IO				3.48
22.750	0.29	0.44	1.529	IO				3.47
22.833	0.29	0.44	1.528	IO				3.47
22.917	0.29	0.44	1.527	IO				3.47
23.000	0.29	0.44	1.526	IO				3.47
23.083	0.29	0.44	1.525	IO				3.47
23.167	0.29	0.44	1.524	IO				3.46
23.250	0.29	0.44	1.523	IO				3.46
23.333	0.29	0.44	1.522	IO				3.46
23.417	0.29	0.44	1.521	IO				3.46
23.500	0.29	0.44	1.520	IO				3.45
23.583	0.29	0.44	1.519	IO				3.45
23.667	0.29	0.44	1.518	IO				3.45
23.750	0.29	0.44	1.517	IO				3.45
23.833	0.29	0.44	1.516	IO				3.45
23.917	0.29	0.44	1.514	IO				

3.44

24.000	0.29	0.44	1.513	IO				3.44
24.083	0.12	0.44	1.512	I O				3.44
24.167	0.02	0.44	1.509	I O				3.43
24.250	0.00	0.44	1.506	I O				3.43
24.333	0.00	0.44	1.503	I O				3.42
24.417	0.00	0.44	1.500	I O				3.42
24.500	0.00	0.44	1.497	I O				3.41
24.583	0.00	0.44	1.494	I O				3.40
24.667	0.00	0.44	1.491	I O				3.40
24.750	0.00	0.44	1.488	I O				3.39
24.833	0.00	0.43	1.485	I O				3.38
24.917	0.00	0.43	1.482	I O				3.38
25.000	0.00	0.43	1.479	I O				3.37
25.083	0.00	0.43	1.476	I O				3.37
25.167	0.00	0.43	1.473	I O				3.36
25.250	0.00	0.43	1.470	I O				3.35
25.333	0.00	0.43	1.467	I O				3.35
25.417	0.00	0.43	1.464	I O				3.34
25.500	0.00	0.43	1.461	I O				3.34
25.583	0.00	0.43	1.458	I O				3.33
25.667	0.00	0.43	1.456	I O				3.32
25.750	0.00	0.43	1.453	I O				3.32
25.833	0.00	0.43	1.450	I O				3.31
25.917	0.00	0.43	1.447	I O				3.31
26.000	0.00	0.43	1.444	I O				3.30
26.083	0.00	0.43	1.441	I O				3.29
26.167	0.00	0.42	1.438	I O				3.29
26.250	0.00	0.42	1.435	I O				3.28
26.333	0.00	0.42	1.432	I O				3.28
26.417	0.00	0.42	1.429	I O				3.27
26.500	0.00	0.42	1.426	I O				3.26
26.583	0.00	0.42	1.423	I O				3.26
26.667	0.00	0.42	1.420	I O				3.25
26.750	0.00	0.42	1.418	I O				3.25
26.833	0.00	0.42	1.415	I O				3.24
26.917	0.00	0.42	1.412	I O				3.24
27.000	0.00	0.42	1.409	I O				3.23
27.083	0.00	0.42	1.406	I O				3.22
27.167	0.00	0.42	1.403	I O				3.22
27.250	0.00	0.42	1.400	I O				3.21
27.333	0.00	0.42	1.397	I O				3.21
27.417	0.00	0.42	1.394	I O				3.20
27.500	0.00	0.42	1.392	I O				3.20
27.583	0.00	0.41	1.389	I O				3.19
27.667	0.00	0.41	1.386	I O				3.18
27.750	0.00	0.41	1.383	I O				3.18
27.833	0.00	0.41	1.380	I O				3.17
27.917	0.00	0.41	1.377	I O				3.17
28.000	0.00	0.41	1.375	I O				3.16
28.083	0.00	0.41	1.372	I O				3.16
28.167	0.00	0.41	1.369	I O				3.15
28.250	0.00	0.41	1.366	I O				3.15
28.333	0.00	0.41	1.363	I O				3.14
28.417	0.00	0.41	1.360	I O				3.13
28.500	0.00	0.41	1.358	I O				3.13

28.583	0.00	0.41	1.355	I	O	|	|	|	3.12
28.667	0.00	0.41	1.352	I	O	|	|	|	3.12
28.750	0.00	0.41	1.349	I	O	|	|	|	3.11
28.833	0.00	0.41	1.346	I	O	|	|	|	3.11
28.917	0.00	0.41	1.344	I	O	|	|	|	3.10
29.000	0.00	0.40	1.341	I	O	|	|	|	3.10
29.083	0.00	0.40	1.338	I	O	|	|	|	3.09
29.167	0.00	0.40	1.335	I	O	|	|	|	3.09
29.250	0.00	0.40	1.332	I	O	|	|	|	3.08
29.333	0.00	0.40	1.330	I	O	|	|	|	3.07
29.417	0.00	0.40	1.327	I	O	|	|	|	3.07
29.500	0.00	0.40	1.324	I	O	|	|	|	3.06
29.583	0.00	0.40	1.321	I	O	|	|	|	3.06
29.667	0.00	0.40	1.319	I	O	|	|	|	3.05
29.750	0.00	0.40	1.316	I	O	|	|	|	3.05
29.833	0.00	0.40	1.313	I	O	|	|	|	3.04
29.917	0.00	0.40	1.310	I	O	|	|	|	3.04
30.000	0.00	0.40	1.308	I	O	|	|	|	3.03
30.083	0.00	0.40	1.305	I	O	|	|	|	3.03
30.167	0.00	0.40	1.302	I	O	|	|	|	3.02
30.250	0.00	0.40	1.299	I	O	|	|	|	3.01
30.333	0.00	0.40	1.297	I	O	|	|	|	3.01
30.417	0.00	0.40	1.294	I	O	|	|	|	3.00
30.500	0.00	0.39	1.291	I	O	|	|	|	3.00
30.583	0.00	0.39	1.288	I	O	|	|	|	2.99
30.667	0.00	0.39	1.286	I	O	|	|	|	2.99
30.750	0.00	0.39	1.283	I	O	|	|	|	2.98
30.833	0.00	0.39	1.280	I	O	|	|	|	2.98
30.917	0.00	0.39	1.278	I	O	|	|	|	2.97
31.000	0.00	0.39	1.275	I	O	|	|	|	2.97
31.083	0.00	0.39	1.272	I	O	|	|	|	2.96
31.167	0.00	0.39	1.270	I	O	|	|	|	2.96
31.250	0.00	0.39	1.267	I	O	|	|	|	2.95
31.333	0.00	0.39	1.264	I	O	|	|	|	2.95
31.417	0.00	0.39	1.262	I	O	|	|	|	2.94
31.500	0.00	0.39	1.259	I	O	|	|	|	2.94
31.583	0.00	0.39	1.256	I	O	|	|	|	2.93
31.667	0.00	0.39	1.254	I	O	|	|	|	2.93
31.750	0.00	0.39	1.251	I	O	|	|	|	2.92
31.833	0.00	0.39	1.248	I	O	|	|	|	2.92
31.917	0.00	0.38	1.246	I	O	|	|	|	2.91
32.000	0.00	0.38	1.243	I	O	|	|	|	2.90
32.083	0.00	0.38	1.240	I	O	|	|	|	2.90
32.167	0.00	0.38	1.238	I	O	|	|	|	2.89
32.250	0.00	0.38	1.235	I	O	|	|	|	2.89
32.333	0.00	0.38	1.232	I	O	|	|	|	2.88
32.417	0.00	0.38	1.230	I	O	|	|	|	2.88
32.500	0.00	0.38	1.227	I	O	|	|	|	2.87
32.583	0.00	0.38	1.224	I	O	|	|	|	2.87
32.667	0.00	0.38	1.222	I	O	|	|	|	2.86
32.750	0.00	0.38	1.219	I	O	|	|	|	2.86
32.833	0.00	0.38	1.217	I	O	|	|	|	2.85
32.917	0.00	0.38	1.214	I	O	|	|	|	2.85
33.000	0.00	0.38	1.211	I	O	|	|	|	2.84
33.083	0.00	0.38	1.209	I	O	|	|	|	2.84
33.167	0.00	0.38	1.206	I	O	|	|	|	2.83
33.250	0.00	0.38	1.204	I	O	|	|	|	2.83

33.333	0.00	0.38	1.201	I	O	|	|	|	| 2.82
33.417	0.00	0.37	1.198	I	O	|	|	|	| 2.82
33.500	0.00	0.37	1.196	I	O	|	|	|	| 2.81
33.583	0.00	0.37	1.193	I	O	|	|	|	| 2.81
33.667	0.00	0.37	1.191	I	O	|	|	|	| 2.80
33.750	0.00	0.37	1.188	I	O	|	|	|	| 2.80
33.833	0.00	0.37	1.186	I	O	|	|	|	| 2.79
33.917	0.00	0.37	1.183	I	O	|	|	|	| 2.79
34.000	0.00	0.37	1.181	I	O	|	|	|	| 2.78
34.083	0.00	0.37	1.178	I	O	|	|	|	| 2.78
34.167	0.00	0.37	1.175	I	O	|	|	|	| 2.77
34.250	0.00	0.37	1.173	I	O	|	|	|	| 2.77
34.333	0.00	0.37	1.170	I	O	|	|	|	| 2.76
34.417	0.00	0.37	1.168	I	O	|	|	|	| 2.76
34.500	0.00	0.37	1.165	I	O	|	|	|	| 2.75
34.583	0.00	0.37	1.163	I	O	|	|	|	| 2.75
34.667	0.00	0.37	1.160	I	O	|	|	|	| 2.74
34.750	0.00	0.37	1.158	I	O	|	|	|	| 2.74
34.833	0.00	0.37	1.155	I	O	|	|	|	| 2.74
34.917	0.00	0.36	1.153	I	O	|	|	|	| 2.73
35.000	0.00	0.36	1.150	I	O	|	|	|	| 2.73
35.083	0.00	0.36	1.148	I	O	|	|	|	| 2.72
35.167	0.00	0.36	1.145	I	O	|	|	|	| 2.72
35.250	0.00	0.36	1.143	I	O	|	|	|	| 2.71
35.333	0.00	0.36	1.140	I	O	|	|	|	| 2.71
35.417	0.00	0.36	1.138	I	O	|	|	|	| 2.70
35.500	0.00	0.36	1.135	I	O	|	|	|	| 2.70
35.583	0.00	0.36	1.133	I	O	|	|	|	| 2.69
35.667	0.00	0.36	1.130	I	O	|	|	|	| 2.69
35.750	0.00	0.36	1.128	I	O	|	|	|	| 2.68
35.833	0.00	0.36	1.125	I	O	|	|	|	| 2.68
35.917	0.00	0.36	1.123	I	O	|	|	|	| 2.67
36.000	0.00	0.36	1.120	I	O	|	|	|	| 2.67
36.083	0.00	0.36	1.118	I	O	|	|	|	| 2.66
36.167	0.00	0.36	1.115	I	O	|	|	|	| 2.66
36.250	0.00	0.36	1.113	I	O	|	|	|	| 2.66
36.333	0.00	0.35	1.111	I	O	|	|	|	| 2.65
36.417	0.00	0.35	1.108	I	O	|	|	|	| 2.65
36.500	0.00	0.35	1.106	I	O	|	|	|	| 2.64
36.583	0.00	0.35	1.103	I	O	|	|	|	| 2.64
36.667	0.00	0.35	1.101	I	O	|	|	|	| 2.63
36.750	0.00	0.35	1.098	I	O	|	|	|	| 2.63
36.833	0.00	0.35	1.096	I	O	|	|	|	| 2.62
36.917	0.00	0.35	1.094	I	O	|	|	|	| 2.62
37.000	0.00	0.35	1.091	I	O	|	|	|	| 2.61
37.083	0.00	0.35	1.089	I	O	|	|	|	| 2.61
37.167	0.00	0.35	1.086	I	O	|	|	|	| 2.60
37.250	0.00	0.35	1.084	I	O	|	|	|	| 2.60
37.333	0.00	0.35	1.082	I	O	|	|	|	| 2.60
37.417	0.00	0.35	1.079	I	O	|	|	|	| 2.59
37.500	0.00	0.35	1.077	I	O	|	|	|	| 2.59
37.583	0.00	0.35	1.074	I	O	|	|	|	| 2.58
37.667	0.00	0.35	1.072	I	O	|	|	|	| 2.58
37.750	0.00	0.35	1.070	I	O	|	|	|	| 2.57
37.833	0.00	0.34	1.067	I	O	|	|	|	| 2.57
37.917	0.00	0.34	1.065	I	O	|	|	|	| 2.56
38.000	0.00	0.34	1.062	I	O	|	|	|	| 2.56

38.083	0.00	0.34	1.060	I	O	|	|	|	2.56
38.167	0.00	0.34	1.058	I	O	|	|	|	2.55
38.250	0.00	0.34	1.055	I	O	|	|	|	2.55
38.333	0.00	0.34	1.053	I	O	|	|	|	2.54
38.417	0.00	0.34	1.051	I	O	|	|	|	2.54
38.500	0.00	0.34	1.048	I	O	|	|	|	2.53
38.583	0.00	0.34	1.046	I	O	|	|	|	2.53
38.667	0.00	0.34	1.044	I	O	|	|	|	2.52
38.750	0.00	0.34	1.041	I	O	|	|	|	2.52
38.833	0.00	0.34	1.039	I	O	|	|	|	2.52
38.917	0.00	0.34	1.037	I	O	|	|	|	2.51
39.000	0.00	0.34	1.034	I	O	|	|	|	2.51
39.083	0.00	0.34	1.032	I	O	|	|	|	2.50
39.167	0.00	0.34	1.030	I	O	|	|	|	2.50
39.250	0.00	0.34	1.027	I	O	|	|	|	2.49
39.333	0.00	0.33	1.025	I	O	|	|	|	2.49
39.417	0.00	0.33	1.023	I	O	|	|	|	2.48
39.500	0.00	0.33	1.021	I	O	|	|	|	2.48
39.583	0.00	0.33	1.018	I	O	|	|	|	2.48
39.667	0.00	0.33	1.016	I	O	|	|	|	2.47
39.750	0.00	0.33	1.014	I	O	|	|	|	2.47
39.833	0.00	0.33	1.011	I	O	|	|	|	2.46
39.917	0.00	0.33	1.009	I	O	|	|	|	2.46
40.000	0.00	0.33	1.007	I	O	|	|	|	2.45
40.083	0.00	0.33	1.005	I	O	|	|	|	2.45
40.167	0.00	0.33	1.002	I	O	|	|	|	2.45
40.250	0.00	0.33	1.000	I	O	|	|	|	2.44
40.333	0.00	0.33	0.998	I	O	|	|	|	2.44
40.417	0.00	0.33	0.996	I	O	|	|	|	2.43
40.500	0.00	0.33	0.993	I	O	|	|	|	2.43
40.583	0.00	0.33	0.991	I	O	|	|	|	2.42
40.667	0.00	0.33	0.989	I	O	|	|	|	2.42
40.750	0.00	0.32	0.987	I	O	|	|	|	2.42
40.833	0.00	0.32	0.984	I	O	|	|	|	2.41
40.917	0.00	0.32	0.982	I	O	|	|	|	2.41
41.000	0.00	0.32	0.980	I	O	|	|	|	2.40
41.083	0.00	0.32	0.978	I	O	|	|	|	2.40
41.167	0.00	0.32	0.975	I	O	|	|	|	2.39
41.250	0.00	0.32	0.973	I	O	|	|	|	2.39
41.333	0.00	0.32	0.971	I	O	|	|	|	2.39
41.417	0.00	0.32	0.969	I	O	|	|	|	2.38
41.500	0.00	0.32	0.967	I	O	|	|	|	2.38
41.583	0.00	0.32	0.964	I	O	|	|	|	2.37
41.667	0.00	0.32	0.962	I	O	|	|	|	2.37
41.750	0.00	0.32	0.960	I	O	|	|	|	2.36
41.833	0.00	0.32	0.958	I	O	|	|	|	2.36
41.917	0.00	0.32	0.956	I	O	|	|	|	2.36
42.000	0.00	0.32	0.953	I	O	|	|	|	2.35
42.083	0.00	0.32	0.951	I	O	|	|	|	2.35
42.167	0.00	0.31	0.949	I	O	|	|	|	2.34
42.250	0.00	0.31	0.947	I	O	|	|	|	2.34
42.333	0.00	0.31	0.945	I	O	|	|	|	2.34
42.417	0.00	0.31	0.943	I	O	|	|	|	2.33
42.500	0.00	0.31	0.940	I	O	|	|	|	2.33
42.583	0.00	0.31	0.938	I	O	|	|	|	2.32
42.667	0.00	0.31	0.936	I	O	|	|	|	2.32
42.750	0.00	0.31	0.934	I	O	|	|	|	2.31

42.833	0.00	0.31	0.932	I O	|	|	|	2.31
42.917	0.00	0.31	0.930	I O	|	|	|	2.31
43.000	0.00	0.31	0.928	I O	|	|	|	2.30
43.083	0.00	0.31	0.926	I O	|	|	|	2.30
43.167	0.00	0.31	0.923	I O	|	|	|	2.29
43.250	0.00	0.31	0.921	I O	|	|	|	2.29
43.333	0.00	0.31	0.919	I O	|	|	|	2.29
43.417	0.00	0.31	0.917	I O	|	|	|	2.28
43.500	0.00	0.31	0.915	I O	|	|	|	2.28
43.583	0.00	0.31	0.913	IO	|	|	|	2.27
43.667	0.00	0.30	0.911	IO	|	|	|	2.27
43.750	0.00	0.30	0.909	IO	|	|	|	2.27
43.833	0.00	0.30	0.907	IO	|	|	|	2.26
43.917	0.00	0.30	0.904	IO	|	|	|	2.26
44.000	0.00	0.30	0.902	IO	|	|	|	2.25
44.083	0.00	0.30	0.900	IO	|	|	|	2.25
44.167	0.00	0.30	0.898	IO	|	|	|	2.25
44.250	0.00	0.30	0.896	IO	|	|	|	2.24
44.333	0.00	0.30	0.894	IO	|	|	|	2.24
44.417	0.00	0.30	0.892	IO	|	|	|	2.23
44.500	0.00	0.30	0.890	IO	|	|	|	2.23
44.583	0.00	0.30	0.888	IO	|	|	|	2.23
44.667	0.00	0.30	0.886	IO	|	|	|	2.22
44.750	0.00	0.30	0.884	IO	|	|	|	2.22
44.833	0.00	0.30	0.882	IO	|	|	|	2.21
44.917	0.00	0.30	0.880	IO	|	|	|	2.21
45.000	0.00	0.30	0.878	IO	|	|	|	2.21
45.083	0.00	0.29	0.876	IO	|	|	|	2.20
45.167	0.00	0.29	0.874	IO	|	|	|	2.20
45.250	0.00	0.29	0.872	IO	|	|	|	2.20
45.333	0.00	0.29	0.870	IO	|	|	|	2.19
45.417	0.00	0.29	0.868	IO	|	|	|	2.19
45.500	0.00	0.29	0.866	IO	|	|	|	2.18

45.583	0.00	0.29	0.864	IO	|	|	|	| 2.18
45.667	0.00	0.29	0.862	IO	|	|	|	| 2.18
45.750	0.00	0.29	0.860	IO	|	|	|	| 2.17
45.833	0.00	0.29	0.858	IO	|	|	|	| 2.17
45.917	0.00	0.29	0.856	IO	|	|	|	| 2.16
46.000	0.00	0.29	0.854	IO	|	|	|	| 2.16
46.083	0.00	0.29	0.852	IO	|	|	|	| 2.16
46.167	0.00	0.29	0.850	IO	|	|	|	| 2.15
46.250	0.00	0.29	0.848	IO	|	|	|	| 2.15
46.333	0.00	0.29	0.846	IO	|	|	|	| 2.15
46.417	0.00	0.29	0.844	IO	|	|	|	| 2.14
46.500	0.00	0.28	0.842	IO	|	|	|	| 2.14
46.583	0.00	0.28	0.840	IO	|	|	|	| 2.13
46.667	0.00	0.28	0.838	IO	|	|	|	| 2.13
46.750	0.00	0.28	0.836	IO	|	|	|	| 2.13
46.833	0.00	0.28	0.834	IO	|	|	|	| 2.12
46.917	0.00	0.28	0.832	IO	|	|	|	| 2.12
47.000	0.00	0.28	0.830	IO	|	|	|	| 2.12
47.083	0.00	0.28	0.828	IO	|	|	|	| 2.11
47.167	0.00	0.28	0.826	IO	|	|	|	| 2.11
47.250	0.00	0.28	0.824	IO	|	|	|	| 2.10
47.333	0.00	0.28	0.822	IO	|	|	|	| 2.10
47.417	0.00	0.28	0.820	IO	|	|	|	| 2.10
47.500	0.00	0.28	0.818	IO	|	|	|	| 2.09
47.583	0.00	0.28	0.816	IO	|	|	|	| 2.09
47.667	0.00	0.28	0.815	IO	|	|	|	| 2.09
47.750	0.00	0.28	0.813	IO	|	|	|	| 2.08
47.833	0.00	0.28	0.811	IO	|	|	|	| 2.08
47.917	0.00	0.28	0.809	IO	|	|	|	|

2.07

48.000	0.00	0.27	0.807	IO				2.07
48.083	0.00	0.27	0.805	IO				2.07
48.167	0.00	0.27	0.803	IO				2.06
48.250	0.00	0.27	0.801	IO				2.06
48.333	0.00	0.27	0.799	IO				2.06
48.417	0.00	0.27	0.798	IO				2.05
48.500	0.00	0.27	0.796	IO				2.05
48.583	0.00	0.27	0.794	IO				2.05
48.667	0.00	0.27	0.792	IO				2.04
48.750	0.00	0.27	0.790	IO				2.04
48.833	0.00	0.27	0.788	IO				2.04
48.917	0.00	0.27	0.786	IO				2.03
49.000	0.00	0.27	0.785	IO				2.03
49.083	0.00	0.27	0.783	IO				2.02
49.167	0.00	0.27	0.781	IO				2.02
49.250	0.00	0.27	0.779	IO				2.02
49.333	0.00	0.27	0.777	IO				2.01
49.417	0.00	0.27	0.775	IO				2.01
49.500	0.00	0.27	0.774	IO				2.01
49.583	0.00	0.26	0.772	IO				2.00
49.667	0.00	0.26	0.770	IO				2.00
49.750	0.00	0.26	0.768	IO				2.00
49.833	0.00	0.26	0.766	IO				1.99
49.917	0.00	0.26	0.764	IO				1.99
50.000	0.00	0.26	0.763	IO				1.99
50.083	0.00	0.26	0.761	IO				1.98
50.167	0.00	0.26	0.759	IO				1.98
50.250	0.00	0.26	0.757	IO				1.97

50.333	0.00	0.26	0.755	IO				1.97
50.417	0.00	0.26	0.754	IO				1.97
50.500	0.00	0.26	0.752	IO				1.96
50.583	0.00	0.26	0.750	IO				1.96
50.667	0.00	0.26	0.748	IO				1.96
50.750	0.00	0.26	0.747	IO				1.95
50.833	0.00	0.25	0.745	IO				1.95
50.917	0.00	0.25	0.743	IO				1.95
51.000	0.00	0.25	0.741	IO				1.94
51.083	0.00	0.25	0.740	IO				1.94
51.167	0.00	0.25	0.738	IO				1.94
51.250	0.00	0.25	0.736	IO				1.93
51.333	0.00	0.25	0.734	IO				1.93
51.417	0.00	0.25	0.733	IO				1.93
51.500	0.00	0.25	0.731	IO				1.92
51.583	0.00	0.25	0.729	IO				1.92
51.667	0.00	0.25	0.728	IO				1.92
51.750	0.00	0.25	0.726	IO				1.91
51.833	0.00	0.25	0.724	IO				1.91
51.917	0.00	0.25	0.722	IO				1.91
52.000	0.00	0.25	0.721	IO				1.90
52.083	0.00	0.25	0.719	IO				1.90
52.167	0.00	0.24	0.717	IO				1.90
52.250	0.00	0.24	0.716	IO				1.89
52.333	0.00	0.24	0.714	IO				1.89
52.417	0.00	0.24	0.712	IO				1.89
52.500	0.00	0.24	0.711	IO				1.88
52.583	0.00	0.24	0.709	IO				1.88
52.667	0.00	0.24	0.707	IO				

1.88

52.750	0.00	0.24	0.706	IO	|	|	|	1.87
52.833	0.00	0.24	0.704	IO	|	|	|	1.87
52.917	0.00	0.24	0.702	IO	|	|	|	1.87
53.000	0.00	0.24	0.701	IO	|	|	|	1.86
53.083	0.00	0.24	0.699	IO	|	|	|	1.86
53.167	0.00	0.24	0.697	IO	|	|	|	1.86
53.250	0.00	0.24	0.696	IO	|	|	|	1.85
53.333	0.00	0.24	0.694	IO	|	|	|	1.85
53.417	0.00	0.24	0.693	IO	|	|	|	1.85
53.500	0.00	0.24	0.691	IO	|	|	|	1.84
53.583	0.00	0.23	0.689	IO	|	|	|	1.84
53.667	0.00	0.23	0.688	IO	|	|	|	1.84
53.750	0.00	0.23	0.686	IO	|	|	|	1.83
53.833	0.00	0.23	0.684	IO	|	|	|	1.83
53.917	0.00	0.23	0.683	IO	|	|	|	1.83
54.000	0.00	0.23	0.681	IO	|	|	|	1.83
54.083	0.00	0.23	0.680	IO	|	|	|	1.82
54.167	0.00	0.23	0.678	IO	|	|	|	1.82
54.250	0.00	0.23	0.676	IO	|	|	|	1.82
54.333	0.00	0.23	0.675	IO	|	|	|	1.81
54.417	0.00	0.23	0.673	IO	|	|	|	1.81
54.500	0.00	0.23	0.672	IO	|	|	|	1.81
54.583	0.00	0.23	0.670	IO	|	|	|	1.80
54.667	0.00	0.23	0.669	IO	|	|	|	1.80
54.750	0.00	0.23	0.667	IO	|	|	|	1.80
54.833	0.00	0.23	0.665	IO	|	|	|	1.79
54.917	0.00	0.23	0.664	IO	|	|	|	1.79
55.000	0.00	0.23	0.662	IO	|	|	|	1.79

55.083	0.00	0.22	0.661	IO	|	|	|	1.79
55.167	0.00	0.22	0.659	IO	|	|	|	1.78
55.250	0.00	0.22	0.658	IO	|	|	|	1.78
55.333	0.00	0.22	0.656	IO	|	|	|	1.78
55.417	0.00	0.22	0.655	IO	|	|	|	1.77
55.500	0.00	0.22	0.653	IO	|	|	|	1.77
55.583	0.00	0.22	0.652	IO	|	|	|	1.77
55.667	0.00	0.22	0.650	IO	|	|	|	1.76
55.750	0.00	0.22	0.649	IO	|	|	|	1.76
55.833	0.00	0.22	0.647	IO	|	|	|	1.76
55.917	0.00	0.22	0.646	IO	|	|	|	1.75
56.000	0.00	0.22	0.644	IO	|	|	|	1.75
56.083	0.00	0.22	0.643	IO	|	|	|	1.75
56.167	0.00	0.22	0.641	IO	|	|	|	1.75
56.250	0.00	0.22	0.640	IO	|	|	|	1.74
56.333	0.00	0.21	0.638	IO	|	|	|	1.74
56.417	0.00	0.21	0.637	IO	|	|	|	1.74
56.500	0.00	0.21	0.635	IO	|	|	|	1.73
56.583	0.00	0.21	0.634	IO	|	|	|	1.73
56.667	0.00	0.21	0.632	IO	|	|	|	1.73
56.750	0.00	0.21	0.631	IO	|	|	|	1.73
56.833	0.00	0.21	0.629	IO	|	|	|	1.72
56.917	0.00	0.21	0.628	IO	|	|	|	1.72
57.000	0.00	0.21	0.626	IO	|	|	|	1.72
57.083	0.00	0.21	0.625	IO	|	|	|	1.71
57.167	0.00	0.21	0.624	IO	|	|	|	1.71
57.250	0.00	0.20	0.622	IO	|	|	|	1.71
57.333	0.00	0.20	0.621	IO	|	|	|	1.70
57.417	0.00	0.20	0.619	IO	|	|	|	

1.70

57.500	0.00	0.20	0.618	IO				1.70
57.583	0.00	0.20	0.617	IO				1.70
57.667	0.00	0.20	0.615	IO				1.69
57.750	0.00	0.20	0.614	IO				1.69
57.833	0.00	0.20	0.612	IO				1.69
57.917	0.00	0.20	0.611	IO				1.69
58.000	0.00	0.20	0.610	IO				1.68
58.083	0.00	0.20	0.608	IO				1.68
58.167	0.00	0.19	0.607	IO				1.68
58.250	0.00	0.19	0.606	IO				1.67
58.333	0.00	0.19	0.604	IO				1.67
58.417	0.00	0.19	0.603	IO				1.67
58.500	0.00	0.19	0.602	IO				1.67
58.583	0.00	0.19	0.600	IO				1.66
58.667	0.00	0.19	0.599	IO				1.66
58.750	0.00	0.19	0.598	IO				1.66
58.833	0.00	0.19	0.597	IO				1.66
58.917	0.00	0.19	0.595	IO				1.65
59.000	0.00	0.19	0.594	IO				1.65
59.083	0.00	0.19	0.593	IO				1.65
59.167	0.00	0.18	0.591	IO				1.65
59.250	0.00	0.18	0.590	IO				1.64
59.333	0.00	0.18	0.589	IO				1.64
59.417	0.00	0.18	0.588	IO				1.64
59.500	0.00	0.18	0.586	IO				1.63
59.583	0.00	0.18	0.585	IO				1.63
59.667	0.00	0.18	0.584	IO				1.63
59.750	0.00	0.18	0.583	IO				1.63

59.833	0.00	0.18	0.581	IO	|	|	|	| 1.62
59.917	0.00	0.18	0.580	IO	|	|	|	| 1.62
60.000	0.00	0.18	0.579	IO	|	|	|	| 1.62
60.083	0.00	0.18	0.578	IO	|	|	|	| 1.62
60.167	0.00	0.17	0.577	IO	|	|	|	| 1.61
60.250	0.00	0.17	0.575	IO	|	|	|	| 1.61
60.333	0.00	0.17	0.574	IO	|	|	|	| 1.61
60.417	0.00	0.17	0.573	IO	|	|	|	| 1.61
60.500	0.00	0.17	0.572	IO	|	|	|	| 1.61
60.583	0.00	0.17	0.571	IO	|	|	|	| 1.60
60.667	0.00	0.17	0.569	IO	|	|	|	| 1.60
60.750	0.00	0.17	0.568	IO	|	|	|	| 1.60
60.833	0.00	0.17	0.567	IO	|	|	|	| 1.60
60.917	0.00	0.17	0.566	IO	|	|	|	| 1.59
61.000	0.00	0.17	0.565	IO	|	|	|	| 1.59
61.083	0.00	0.17	0.564	IO	|	|	|	| 1.59
61.167	0.00	0.17	0.563	IO	|	|	|	| 1.59
61.250	0.00	0.16	0.561	IO	|	|	|	| 1.58
61.333	0.00	0.16	0.560	IO	|	|	|	| 1.58
61.417	0.00	0.16	0.559	IO	|	|	|	| 1.58
61.500	0.00	0.16	0.558	IO	|	|	|	| 1.58
61.583	0.00	0.16	0.557	IO	|	|	|	| 1.57
61.667	0.00	0.16	0.556	IO	|	|	|	| 1.57
61.750	0.00	0.16	0.555	IO	|	|	|	| 1.57
61.833	0.00	0.16	0.554	IO	|	|	|	| 1.57
61.917	0.00	0.16	0.552	IO	|	|	|	| 1.57
62.000	0.00	0.16	0.551	IO	|	|	|	| 1.56
62.083	0.00	0.16	0.550	IO	|	|	|	| 1.56
62.167	0.00	0.16	0.549	IO	|	|	|	|

1.56

62.250	0.00	0.16	0.548	IO	|	|	|	|	1.56
62.333	0.00	0.16	0.547	IO	|	|	|	|	1.55
62.417	0.00	0.15	0.546	IO	|	|	|	|	1.55
62.500	0.00	0.15	0.545	IO	|	|	|	|	1.55
62.583	0.00	0.15	0.544	IO	|	|	|	|	1.55
62.667	0.00	0.15	0.543	O	|	|	|	|	1.55
62.750	0.00	0.15	0.542	O	|	|	|	|	1.54
62.833	0.00	0.15	0.541	O	|	|	|	|	1.54
62.917	0.00	0.15	0.540	O	|	|	|	|	1.54
63.000	0.00	0.15	0.539	O	|	|	|	|	1.54
63.083	0.00	0.15	0.538	O	|	|	|	|	1.54
63.167	0.00	0.15	0.537	O	|	|	|	|	1.53
63.250	0.00	0.15	0.536	O	|	|	|	|	1.53
63.333	0.00	0.15	0.535	O	|	|	|	|	1.53
63.417	0.00	0.15	0.533	O	|	|	|	|	1.53
63.500	0.00	0.15	0.532	O	|	|	|	|	1.53
63.583	0.00	0.15	0.531	O	|	|	|	|	1.52
63.667	0.00	0.14	0.530	O	|	|	|	|	1.52
63.750	0.00	0.14	0.529	O	|	|	|	|	1.52
63.833	0.00	0.14	0.528	O	|	|	|	|	1.52
63.917	0.00	0.14	0.528	O	|	|	|	|	1.52
64.000	0.00	0.14	0.527	O	|	|	|	|	1.51
64.083	0.00	0.14	0.526	O	|	|	|	|	1.51
64.167	0.00	0.14	0.525	O	|	|	|	|	1.51
64.250	0.00	0.14	0.524	O	|	|	|	|	1.51
64.333	0.00	0.14	0.523	O	|	|	|	|	1.51
64.417	0.00	0.14	0.522	O	|	|	|	|	1.50
64.500	0.00	0.14	0.521	O	|	|	|	|	1.50

64.583	0.00	0.14	0.520	O	|	|	|	|	1.50
64.667	0.00	0.14	0.519	O	|	|	|	|	1.50
64.750	0.00	0.14	0.518	O	|	|	|	|	1.50
64.833	0.00	0.14	0.517	O	|	|	|	|	1.49
64.917	0.00	0.14	0.516	O	|	|	|	|	1.49
65.000	0.00	0.14	0.515	O	|	|	|	|	1.49
65.083	0.00	0.14	0.514	O	|	|	|	|	1.49
65.167	0.00	0.14	0.513	O	|	|	|	|	1.49
65.250	0.00	0.14	0.512	O	|	|	|	|	1.48
65.333	0.00	0.13	0.511	O	|	|	|	|	1.48
65.417	0.00	0.13	0.510	O	|	|	|	|	1.48
65.500	0.00	0.13	0.509	O	|	|	|	|	1.48
65.583	0.00	0.13	0.509	O	|	|	|	|	1.48
65.667	0.00	0.13	0.508	O	|	|	|	|	1.47
65.750	0.00	0.13	0.507	O	|	|	|	|	1.47
65.833	0.00	0.13	0.506	O	|	|	|	|	1.47
65.917	0.00	0.13	0.505	O	|	|	|	|	1.47
66.000	0.00	0.13	0.504	O	|	|	|	|	1.47
66.083	0.00	0.13	0.503	O	|	|	|	|	1.46
66.167	0.00	0.13	0.502	O	|	|	|	|	1.46
66.250	0.00	0.13	0.501	O	|	|	|	|	1.46
66.333	0.00	0.13	0.500	O	|	|	|	|	1.46
66.417	0.00	0.13	0.499	O	|	|	|	|	1.46
66.500	0.00	0.13	0.499	O	|	|	|	|	1.45
66.583	0.00	0.13	0.498	O	|	|	|	|	1.45
66.667	0.00	0.13	0.497	O	|	|	|	|	1.45
66.750	0.00	0.13	0.496	O	|	|	|	|	1.45
66.833	0.00	0.13	0.495	O	|	|	|	|	1.45
66.917	0.00	0.13	0.494	O	|	|	|	|	

1.44

67.000	0.00	0.13	0.493	O	|	|	|	|	1.44
67.083	0.00	0.13	0.492	O	|	|	|	|	1.44
67.167	0.00	0.13	0.491	O	|	|	|	|	1.44
67.250	0.00	0.13	0.491	O	|	|	|	|	1.44
67.333	0.00	0.13	0.490	O	|	|	|	|	1.44
67.417	0.00	0.13	0.489	O	|	|	|	|	1.43
67.500	0.00	0.13	0.488	O	|	|	|	|	1.43
67.583	0.00	0.13	0.487	O	|	|	|	|	1.43
67.667	0.00	0.13	0.486	O	|	|	|	|	1.43
67.750	0.00	0.13	0.485	O	|	|	|	|	1.43
67.833	0.00	0.13	0.484	O	|	|	|	|	1.42
67.917	0.00	0.13	0.484	O	|	|	|	|	1.42
68.000	0.00	0.12	0.483	O	|	|	|	|	1.42
68.083	0.00	0.12	0.482	O	|	|	|	|	1.42
68.167	0.00	0.12	0.481	O	|	|	|	|	1.42
68.250	0.00	0.12	0.480	O	|	|	|	|	1.41
68.333	0.00	0.12	0.479	O	|	|	|	|	1.41
68.417	0.00	0.12	0.478	O	|	|	|	|	1.41
68.500	0.00	0.12	0.478	O	|	|	|	|	1.41
68.583	0.00	0.12	0.477	O	|	|	|	|	1.41
68.667	0.00	0.12	0.476	O	|	|	|	|	1.41
68.750	0.00	0.12	0.475	O	|	|	|	|	1.40
68.833	0.00	0.12	0.474	O	|	|	|	|	1.40
68.917	0.00	0.12	0.473	O	|	|	|	|	1.40
69.000	0.00	0.12	0.473	O	|	|	|	|	1.40
69.083	0.00	0.12	0.472	O	|	|	|	|	1.40
69.167	0.00	0.12	0.471	O	|	|	|	|	1.39
69.250	0.00	0.12	0.470	O	|	|	|	|	1.39

69.333	0.00	0.12	0.469	O	|	|	|	|	1.39
69.417	0.00	0.12	0.468	O	|	|	|	|	1.39
69.500	0.00	0.12	0.468	O	|	|	|	|	1.39
69.583	0.00	0.12	0.467	O	|	|	|	|	1.39
69.667	0.00	0.12	0.466	O	|	|	|	|	1.38
69.750	0.00	0.12	0.465	O	|	|	|	|	1.38
69.833	0.00	0.12	0.464	O	|	|	|	|	1.38
69.917	0.00	0.12	0.463	O	|	|	|	|	1.38
70.000	0.00	0.12	0.463	O	|	|	|	|	1.38
70.083	0.00	0.12	0.462	O	|	|	|	|	1.38
70.167	0.00	0.12	0.461	O	|	|	|	|	1.37
70.250	0.00	0.12	0.460	O	|	|	|	|	1.37
70.333	0.00	0.12	0.459	O	|	|	|	|	1.37
70.417	0.00	0.12	0.459	O	|	|	|	|	1.37
70.500	0.00	0.12	0.458	O	|	|	|	|	1.37
70.583	0.00	0.12	0.457	O	|	|	|	|	1.37
70.667	0.00	0.12	0.456	O	|	|	|	|	1.36
70.750	0.00	0.12	0.455	O	|	|	|	|	1.36
70.833	0.00	0.12	0.455	O	|	|	|	|	1.36
70.917	0.00	0.11	0.454	O	|	|	|	|	1.36
71.000	0.00	0.11	0.453	O	|	|	|	|	1.36
71.083	0.00	0.11	0.452	O	|	|	|	|	1.36
71.167	0.00	0.11	0.451	O	|	|	|	|	1.35
71.250	0.00	0.11	0.451	O	|	|	|	|	1.35
71.333	0.00	0.11	0.450	O	|	|	|	|	1.35
71.417	0.00	0.11	0.449	O	|	|	|	|	1.35
71.500	0.00	0.11	0.448	O	|	|	|	|	1.35
71.583	0.00	0.11	0.448	O	|	|	|	|	1.35
71.667	0.00	0.11	0.447	O	|	|	|	|	

1.34

71.750	0.00	0.11	0.446	O	|	|	|	1.34
71.833	0.00	0.11	0.445	O	|	|	|	1.34
71.917	0.00	0.11	0.444	O	|	|	|	1.34
72.000	0.00	0.11	0.444	O	|	|	|	1.34
72.083	0.00	0.11	0.443	O	|	|	|	1.34
72.167	0.00	0.11	0.442	O	|	|	|	1.33
72.250	0.00	0.11	0.441	O	|	|	|	1.33
72.333	0.00	0.11	0.441	O	|	|	|	1.33
72.417	0.00	0.11	0.440	O	|	|	|	1.33
72.500	0.00	0.11	0.439	O	|	|	|	1.33
72.583	0.00	0.11	0.438	O	|	|	|	1.33
72.667	0.00	0.11	0.438	O	|	|	|	1.32
72.750	0.00	0.11	0.437	O	|	|	|	1.32
72.833	0.00	0.11	0.436	O	|	|	|	1.32
72.917	0.00	0.11	0.435	O	|	|	|	1.32
73.000	0.00	0.11	0.435	O	|	|	|	1.32
73.083	0.00	0.11	0.434	O	|	|	|	1.32
73.167	0.00	0.11	0.433	O	|	|	|	1.31
73.250	0.00	0.11	0.432	O	|	|	|	1.31
73.333	0.00	0.11	0.432	O	|	|	|	1.31
73.417	0.00	0.11	0.431	O	|	|	|	1.31
73.500	0.00	0.11	0.430	O	|	|	|	1.31
73.583	0.00	0.11	0.429	O	|	|	|	1.31
73.667	0.00	0.11	0.429	O	|	|	|	1.30
73.750	0.00	0.11	0.428	O	|	|	|	1.30
73.833	0.00	0.11	0.427	O	|	|	|	1.30
73.917	0.00	0.11	0.427	O	|	|	|	1.30
74.000	0.00	0.11	0.426	O	|	|	|	1.30

74.083	0.00	0.10	0.425	O	|	|	|	|	1.30
74.167	0.00	0.10	0.424	O	|	|	|	|	1.30
74.250	0.00	0.10	0.424	O	|	|	|	|	1.29
74.333	0.00	0.10	0.423	O	|	|	|	|	1.29
74.417	0.00	0.10	0.422	O	|	|	|	|	1.29
74.500	0.00	0.10	0.422	O	|	|	|	|	1.29
74.583	0.00	0.10	0.421	O	|	|	|	|	1.29
74.667	0.00	0.10	0.420	O	|	|	|	|	1.29
74.750	0.00	0.10	0.419	O	|	|	|	|	1.29
74.833	0.00	0.10	0.419	O	|	|	|	|	1.28
74.917	0.00	0.10	0.418	O	|	|	|	|	1.28
75.000	0.00	0.10	0.417	O	|	|	|	|	1.28
75.083	0.00	0.10	0.417	O	|	|	|	|	1.28
75.167	0.00	0.10	0.416	O	|	|	|	|	1.28
75.250	0.00	0.10	0.415	O	|	|	|	|	1.28
75.333	0.00	0.10	0.414	O	|	|	|	|	1.27
75.417	0.00	0.10	0.414	O	|	|	|	|	1.27
75.500	0.00	0.10	0.413	O	|	|	|	|	1.27
75.583	0.00	0.10	0.412	O	|	|	|	|	1.27
75.667	0.00	0.10	0.412	O	|	|	|	|	1.27
75.750	0.00	0.10	0.411	O	|	|	|	|	1.27
75.833	0.00	0.10	0.410	O	|	|	|	|	1.27
75.917	0.00	0.10	0.410	O	|	|	|	|	1.26
76.000	0.00	0.10	0.409	O	|	|	|	|	1.26
76.083	0.00	0.10	0.408	O	|	|	|	|	1.26
76.167	0.00	0.10	0.408	O	|	|	|	|	1.26
76.250	0.00	0.10	0.407	O	|	|	|	|	1.26
76.333	0.00	0.10	0.406	O	|	|	|	|	1.26
76.417	0.00	0.10	0.406	O	|	|	|	|	

1.26

76.500	0.00	0.10	0.405	O	|	|	|	1.25
76.583	0.00	0.10	0.404	O	|	|	|	1.25
76.667	0.00	0.10	0.404	O	|	|	|	1.25
76.750	0.00	0.10	0.403	O	|	|	|	1.25
76.833	0.00	0.10	0.402	O	|	|	|	1.25
76.917	0.00	0.10	0.402	O	|	|	|	1.25
77.000	0.00	0.10	0.401	O	|	|	|	1.25
77.083	0.00	0.09	0.400	O	|	|	|	1.24
77.167	0.00	0.09	0.400	O	|	|	|	1.24
77.250	0.00	0.09	0.399	O	|	|	|	1.24
77.333	0.00	0.09	0.398	O	|	|	|	1.24
77.417	0.00	0.09	0.398	O	|	|	|	1.24
77.500	0.00	0.09	0.397	O	|	|	|	1.24
77.583	0.00	0.09	0.396	O	|	|	|	1.23
77.667	0.00	0.09	0.396	O	|	|	|	1.23
77.750	0.00	0.09	0.395	O	|	|	|	1.23
77.833	0.00	0.09	0.395	O	|	|	|	1.23
77.917	0.00	0.09	0.394	O	|	|	|	1.23
78.000	0.00	0.09	0.393	O	|	|	|	1.23
78.083	0.00	0.09	0.393	O	|	|	|	1.23
78.167	0.00	0.09	0.392	O	|	|	|	1.23
78.250	0.00	0.09	0.392	O	|	|	|	1.22
78.333	0.00	0.09	0.391	O	|	|	|	1.22
78.417	0.00	0.09	0.390	O	|	|	|	1.22
78.500	0.00	0.09	0.390	O	|	|	|	1.22
78.583	0.00	0.08	0.389	O	|	|	|	1.22
78.667	0.00	0.08	0.389	O	|	|	|	1.22
78.750	0.00	0.08	0.388	O	|	|	|	1.22

78.833	0.00	0.08	0.387	O	|	|	|	|	1.21
78.917	0.00	0.08	0.387	O	|	|	|	|	1.21
79.000	0.00	0.08	0.386	O	|	|	|	|	1.21
79.083	0.00	0.08	0.386	O	|	|	|	|	1.21
79.167	0.00	0.08	0.385	O	|	|	|	|	1.21
79.250	0.00	0.08	0.385	O	|	|	|	|	1.21
79.333	0.00	0.08	0.384	O	|	|	|	|	1.21
79.417	0.00	0.08	0.383	O	|	|	|	|	1.21
79.500	0.00	0.08	0.383	O	|	|	|	|	1.20
79.583	0.00	0.08	0.382	O	|	|	|	|	1.20
79.667	0.00	0.08	0.382	O	|	|	|	|	1.20
79.750	0.00	0.08	0.381	O	|	|	|	|	1.20
79.833	0.00	0.08	0.381	O	|	|	|	|	1.20
79.917	0.00	0.08	0.380	O	|	|	|	|	1.20
80.000	0.00	0.08	0.380	O	|	|	|	|	1.20
80.083	0.00	0.08	0.379	O	|	|	|	|	1.20
80.167	0.00	0.08	0.379	O	|	|	|	|	1.19
80.250	0.00	0.08	0.378	O	|	|	|	|	1.19
80.333	0.00	0.07	0.378	O	|	|	|	|	1.19
80.417	0.00	0.07	0.377	O	|	|	|	|	1.19
80.500	0.00	0.07	0.377	O	|	|	|	|	1.19
80.583	0.00	0.07	0.376	O	|	|	|	|	1.19
80.667	0.00	0.07	0.376	O	|	|	|	|	1.19
80.750	0.00	0.07	0.375	O	|	|	|	|	1.19
80.833	0.00	0.07	0.375	O	|	|	|	|	1.18
80.917	0.00	0.07	0.374	O	|	|	|	|	1.18
81.000	0.00	0.07	0.374	O	|	|	|	|	1.18
81.083	0.00	0.07	0.373	O	|	|	|	|	1.18
81.167	0.00	0.07	0.373	O	|	|	|	|	

1.18

81.250	0.00	0.07	0.372	O	|	|	|	1.18
81.333	0.00	0.07	0.372	O	|	|	|	1.18
81.417	0.00	0.07	0.371	O	|	|	|	1.18
81.500	0.00	0.07	0.371	O	|	|	|	1.18
81.583	0.00	0.07	0.370	O	|	|	|	1.17
81.667	0.00	0.07	0.370	O	|	|	|	1.17
81.750	0.00	0.07	0.369	O	|	|	|	1.17
81.833	0.00	0.07	0.369	O	|	|	|	1.17
81.917	0.00	0.07	0.368	O	|	|	|	1.17
82.000	0.00	0.07	0.368	O	|	|	|	1.17
82.083	0.00	0.07	0.367	O	|	|	|	1.17
82.167	0.00	0.07	0.367	O	|	|	|	1.17
82.250	0.00	0.06	0.367	O	|	|	|	1.17
82.333	0.00	0.06	0.366	O	|	|	|	1.17
82.417	0.00	0.06	0.366	O	|	|	|	1.16
82.500	0.00	0.06	0.365	O	|	|	|	1.16
82.583	0.00	0.06	0.365	O	|	|	|	1.16
82.667	0.00	0.06	0.364	O	|	|	|	1.16
82.750	0.00	0.06	0.364	O	|	|	|	1.16
82.833	0.00	0.06	0.364	O	|	|	|	1.16
82.917	0.00	0.06	0.363	O	|	|	|	1.16
83.000	0.00	0.06	0.363	O	|	|	|	1.16
83.083	0.00	0.06	0.362	O	|	|	|	1.16
83.167	0.00	0.06	0.362	O	|	|	|	1.16
83.250	0.00	0.06	0.361	O	|	|	|	1.15
83.333	0.00	0.06	0.361	O	|	|	|	1.15
83.417	0.00	0.06	0.361	O	|	|	|	1.15
83.500	0.00	0.06	0.360	O	|	|	|	1.15

83.583	0.00	0.06	0.360	O	|	|	|	|	1.15
83.667	0.00	0.06	0.359	O	|	|	|	|	1.15
83.750	0.00	0.06	0.359	O	|	|	|	|	1.15
83.833	0.00	0.06	0.359	O	|	|	|	|	1.15
83.917	0.00	0.06	0.358	O	|	|	|	|	1.15
84.000	0.00	0.06	0.358	O	|	|	|	|	1.15
84.083	0.00	0.06	0.357	O	|	|	|	|	1.15
84.167	0.00	0.06	0.357	O	|	|	|	|	1.14
84.250	0.00	0.06	0.357	O	|	|	|	|	1.14
84.333	0.00	0.06	0.356	O	|	|	|	|	1.14
84.417	0.00	0.06	0.356	O	|	|	|	|	1.14
84.500	0.00	0.06	0.355	O	|	|	|	|	1.14
84.583	0.00	0.05	0.355	O	|	|	|	|	1.14
84.667	0.00	0.05	0.355	O	|	|	|	|	1.14
84.750	0.00	0.05	0.354	O	|	|	|	|	1.14
84.833	0.00	0.05	0.354	O	|	|	|	|	1.14
84.917	0.00	0.05	0.354	O	|	|	|	|	1.14
85.000	0.00	0.05	0.353	O	|	|	|	|	1.14
85.083	0.00	0.05	0.353	O	|	|	|	|	1.13
85.167	0.00	0.05	0.352	O	|	|	|	|	1.13
85.250	0.00	0.05	0.352	O	|	|	|	|	1.13
85.333	0.00	0.05	0.352	O	|	|	|	|	1.13
85.417	0.00	0.05	0.351	O	|	|	|	|	1.13
85.500	0.00	0.05	0.351	O	|	|	|	|	1.13
85.583	0.00	0.05	0.351	O	|	|	|	|	1.13
85.667	0.00	0.05	0.350	O	|	|	|	|	1.13
85.750	0.00	0.05	0.350	O	|	|	|	|	1.13
85.833	0.00	0.05	0.350	O	|	|	|	|	1.13
85.917	0.00	0.05	0.349	O	|	|	|	|	

1.13

86.000	0.00	0.05	0.349	O	|	|	|	1.13
86.083	0.00	0.05	0.349	O	|	|	|	1.13
86.167	0.00	0.05	0.348	O	|	|	|	1.12
86.250	0.00	0.05	0.348	O	|	|	|	1.12
86.333	0.00	0.05	0.348	O	|	|	|	1.12
86.417	0.00	0.05	0.347	O	|	|	|	1.12
86.500	0.00	0.05	0.347	O	|	|	|	1.12
86.583	0.00	0.05	0.347	O	|	|	|	1.12
86.667	0.00	0.05	0.346	O	|	|	|	1.12
86.750	0.00	0.05	0.346	O	|	|	|	1.12
86.833	0.00	0.05	0.346	O	|	|	|	1.12
86.917	0.00	0.05	0.345	O	|	|	|	1.12
87.000	0.00	0.05	0.345	O	|	|	|	1.12
87.083	0.00	0.05	0.345	O	|	|	|	1.12
87.167	0.00	0.05	0.344	O	|	|	|	1.12
87.250	0.00	0.05	0.344	O	|	|	|	1.11
87.333	0.00	0.04	0.344	O	|	|	|	1.11
87.417	0.00	0.04	0.343	O	|	|	|	1.11
87.500	0.00	0.04	0.343	O	|	|	|	1.11
87.583	0.00	0.04	0.343	O	|	|	|	1.11
87.667	0.00	0.04	0.343	O	|	|	|	1.11
87.750	0.00	0.04	0.342	O	|	|	|	1.11
87.833	0.00	0.04	0.342	O	|	|	|	1.11
87.917	0.00	0.04	0.342	O	|	|	|	1.11
88.000	0.00	0.04	0.341	O	|	|	|	1.11
88.083	0.00	0.04	0.341	O	|	|	|	1.11
88.167	0.00	0.04	0.341	O	|	|	|	1.11
88.250	0.00	0.04	0.341	O	|	|	|	1.11

88.333	0.00	0.04	0.340	O	|	|	|	|	1.11
88.417	0.00	0.04	0.340	O	|	|	|	|	1.11
88.500	0.00	0.04	0.340	O	|	|	|	|	1.10
88.583	0.00	0.04	0.339	O	|	|	|	|	1.10
88.667	0.00	0.04	0.339	O	|	|	|	|	1.10
88.750	0.00	0.04	0.339	O	|	|	|	|	1.10
88.833	0.00	0.04	0.339	O	|	|	|	|	1.10
88.917	0.00	0.04	0.338	O	|	|	|	|	1.10
89.000	0.00	0.04	0.338	O	|	|	|	|	1.10
89.083	0.00	0.04	0.338	O	|	|	|	|	1.10
89.167	0.00	0.04	0.337	O	|	|	|	|	1.10
89.250	0.00	0.04	0.337	O	|	|	|	|	1.10
89.333	0.00	0.04	0.337	O	|	|	|	|	1.10
89.417	0.00	0.04	0.337	O	|	|	|	|	1.10
89.500	0.00	0.04	0.336	O	|	|	|	|	1.10
89.583	0.00	0.04	0.336	O	|	|	|	|	1.10
89.667	0.00	0.04	0.336	O	|	|	|	|	1.10
89.750	0.00	0.04	0.336	O	|	|	|	|	1.10
89.833	0.00	0.04	0.335	O	|	|	|	|	1.09
89.917	0.00	0.04	0.335	O	|	|	|	|	1.09
90.000	0.00	0.04	0.335	O	|	|	|	|	1.09
90.083	0.00	0.04	0.335	O	|	|	|	|	1.09
90.167	0.00	0.04	0.334	O	|	|	|	|	1.09
90.250	0.00	0.04	0.334	O	|	|	|	|	1.09
90.333	0.00	0.04	0.334	O	|	|	|	|	1.09
90.417	0.00	0.04	0.334	O	|	|	|	|	1.09
90.500	0.00	0.04	0.333	O	|	|	|	|	1.09
90.583	0.00	0.04	0.333	O	|	|	|	|	1.09
90.667	0.00	0.04	0.333	O	|	|	|	|	

1.09

90.750	0.00	0.03	0.333	O	|	|	|	|	1.09
90.833	0.00	0.03	0.332	O	|	|	|	|	1.09
90.917	0.00	0.03	0.332	O	|	|	|	|	1.09
91.000	0.00	0.03	0.332	O	|	|	|	|	1.09
91.083	0.00	0.03	0.332	O	|	|	|	|	1.09
91.167	0.00	0.03	0.331	O	|	|	|	|	1.09
91.250	0.00	0.03	0.331	O	|	|	|	|	1.09
91.333	0.00	0.03	0.331	O	|	|	|	|	1.08
91.417	0.00	0.03	0.331	O	|	|	|	|	1.08
91.500	0.00	0.03	0.330	O	|	|	|	|	1.08
91.583	0.00	0.03	0.330	O	|	|	|	|	1.08
91.667	0.00	0.03	0.330	O	|	|	|	|	1.08
91.750	0.00	0.03	0.330	O	|	|	|	|	1.08
91.833	0.00	0.03	0.330	O	|	|	|	|	1.08
91.917	0.00	0.03	0.329	O	|	|	|	|	1.08
92.000	0.00	0.03	0.329	O	|	|	|	|	1.08
92.083	0.00	0.03	0.329	O	|	|	|	|	1.08
92.167	0.00	0.03	0.329	O	|	|	|	|	1.08
92.250	0.00	0.03	0.328	O	|	|	|	|	1.08
92.333	0.00	0.03	0.328	O	|	|	|	|	1.08
92.417	0.00	0.03	0.328	O	|	|	|	|	1.08
92.500	0.00	0.03	0.328	O	|	|	|	|	1.08
92.583	0.00	0.03	0.328	O	|	|	|	|	1.08
92.667	0.00	0.03	0.327	O	|	|	|	|	1.08
92.750	0.00	0.03	0.327	O	|	|	|	|	1.08
92.833	0.00	0.03	0.327	O	|	|	|	|	1.08
92.917	0.00	0.03	0.327	O	|	|	|	|	1.08
93.000	0.00	0.03	0.327	O	|	|	|	|	1.07

93.083	0.00	0.03	0.326	O	|	|	|	|	1.07
93.167	0.00	0.03	0.326	O	|	|	|	|	1.07
93.250	0.00	0.03	0.326	O	|	|	|	|	1.07
93.333	0.00	0.03	0.326	O	|	|	|	|	1.07
93.417	0.00	0.03	0.326	O	|	|	|	|	1.07
93.500	0.00	0.03	0.325	O	|	|	|	|	1.07
93.583	0.00	0.03	0.325	O	|	|	|	|	1.07
93.667	0.00	0.03	0.325	O	|	|	|	|	1.07
93.750	0.00	0.03	0.325	O	|	|	|	|	1.07
93.833	0.00	0.03	0.325	O	|	|	|	|	1.07
93.917	0.00	0.03	0.324	O	|	|	|	|	1.07
94.000	0.00	0.03	0.324	O	|	|	|	|	1.07
94.083	0.00	0.03	0.324	O	|	|	|	|	1.07
94.167	0.00	0.03	0.324	O	|	|	|	|	1.07
94.250	0.00	0.03	0.324	O	|	|	|	|	1.07
94.333	0.00	0.03	0.323	O	|	|	|	|	1.07
94.417	0.00	0.03	0.323	O	|	|	|	|	1.07
94.500	0.00	0.03	0.323	O	|	|	|	|	1.07
94.583	0.00	0.03	0.323	O	|	|	|	|	1.07
94.667	0.00	0.03	0.323	O	|	|	|	|	1.07
94.750	0.00	0.03	0.323	O	|	|	|	|	1.07
94.833	0.00	0.03	0.322	O	|	|	|	|	1.07
94.917	0.00	0.03	0.322	O	|	|	|	|	1.06
95.000	0.00	0.03	0.322	O	|	|	|	|	1.06
95.083	0.00	0.03	0.322	O	|	|	|	|	1.06
95.167	0.00	0.03	0.322	O	|	|	|	|	1.06
95.250	0.00	0.03	0.321	O	|	|	|	|	1.06
95.333	0.00	0.03	0.321	O	|	|	|	|	1.06
95.417	0.00	0.02	0.321	O	|	|	|	|	

1.06

95.500	0.00	0.02	0.321	O	|	|	|	|	1.06
95.583	0.00	0.02	0.321	O	|	|	|	|	1.06
95.667	0.00	0.02	0.321	O	|	|	|	|	1.06
95.750	0.00	0.02	0.320	O	|	|	|	|	1.06
95.833	0.00	0.02	0.320	O	|	|	|	|	1.06
95.917	0.00	0.02	0.320	O	|	|	|	|	1.06
96.000	0.00	0.02	0.320	O	|	|	|	|	1.06
96.083	0.00	0.02	0.320	O	|	|	|	|	1.06
96.167	0.00	0.02	0.320	O	|	|	|	|	1.06
96.250	0.00	0.02	0.319	O	|	|	|	|	1.06
96.333	0.00	0.02	0.319	O	|	|	|	|	1.06
96.417	0.00	0.02	0.319	O	|	|	|	|	1.06
96.500	0.00	0.02	0.319	O	|	|	|	|	1.06
96.583	0.00	0.02	0.319	O	|	|	|	|	1.06
96.667	0.00	0.02	0.319	O	|	|	|	|	1.06
96.750	0.00	0.02	0.319	O	|	|	|	|	1.06
96.833	0.00	0.02	0.318	O	|	|	|	|	1.06
96.917	0.00	0.02	0.318	O	|	|	|	|	1.06
97.000	0.00	0.02	0.318	O	|	|	|	|	1.06
97.083	0.00	0.02	0.318	O	|	|	|	|	1.05
97.167	0.00	0.02	0.318	O	|	|	|	|	1.05
97.250	0.00	0.02	0.318	O	|	|	|	|	1.05
97.333	0.00	0.02	0.317	O	|	|	|	|	1.05
97.417	0.00	0.02	0.317	O	|	|	|	|	1.05
97.500	0.00	0.02	0.317	O	|	|	|	|	1.05
97.583	0.00	0.02	0.317	O	|	|	|	|	1.05
97.667	0.00	0.02	0.317	O	|	|	|	|	1.05
97.750	0.00	0.02	0.317	O	|	|	|	|	1.05

97.833	0.00	0.02	0.317	O	|	|	|	|	1.05
97.917	0.00	0.02	0.316	O	|	|	|	|	1.05
98.000	0.00	0.02	0.316	O	|	|	|	|	1.05
98.083	0.00	0.02	0.316	O	|	|	|	|	1.05
98.167	0.00	0.02	0.316	O	|	|	|	|	1.05
98.250	0.00	0.02	0.316	O	|	|	|	|	1.05
98.333	0.00	0.02	0.316	O	|	|	|	|	1.05
98.417	0.00	0.02	0.316	O	|	|	|	|	1.05
98.500	0.00	0.02	0.315	O	|	|	|	|	1.05
98.583	0.00	0.02	0.315	O	|	|	|	|	1.05
98.667	0.00	0.02	0.315	O	|	|	|	|	1.05
98.750	0.00	0.02	0.315	O	|	|	|	|	1.05
98.833	0.00	0.02	0.315	O	|	|	|	|	1.05
98.917	0.00	0.02	0.315	O	|	|	|	|	1.05
99.000	0.00	0.02	0.315	O	|	|	|	|	1.05
99.083	0.00	0.02	0.315	O	|	|	|	|	1.05
99.167	0.00	0.02	0.314	O	|	|	|	|	1.05
99.250	0.00	0.02	0.314	O	|	|	|	|	1.05
99.333	0.00	0.02	0.314	O	|	|	|	|	1.05
99.417	0.00	0.02	0.314	O	|	|	|	|	1.05
99.500	0.00	0.02	0.314	O	|	|	|	|	1.05
99.583	0.00	0.02	0.314	O	|	|	|	|	1.05
99.667	0.00	0.02	0.314	O	|	|	|	|	1.04
99.750	0.00	0.02	0.313	O	|	|	|	|	1.04
99.833	0.00	0.02	0.313	O	|	|	|	|	1.04
99.917	0.00	0.02	0.313	O	|	|	|	|	1.04
100.000	0.00	0.02	0.313	O	|	|	|	|	1.04
100.083	0.00	0.02	0.313	O	|	|	|	|	1.04
100.167	0.00	0.02	0.313	O	|	|	|	|	

1.04

100.250	0.00	0.02	0.313	O	|	|	|	|	1.04
100.333	0.00	0.02	0.313	O	|	|	|	|	1.04
100.417	0.00	0.02	0.313	O	|	|	|	|	1.04
100.500	0.00	0.02	0.312	O	|	|	|	|	1.04
100.583	0.00	0.02	0.312	O	|	|	|	|	1.04
100.667	0.00	0.02	0.312	O	|	|	|	|	1.04
100.750	0.00	0.02	0.312	O	|	|	|	|	1.04
100.833	0.00	0.02	0.312	O	|	|	|	|	1.04
100.917	0.00	0.02	0.312	O	|	|	|	|	1.04
101.000	0.00	0.02	0.312	O	|	|	|	|	1.04
101.083	0.00	0.02	0.312	O	|	|	|	|	1.04
101.167	0.00	0.02	0.311	O	|	|	|	|	1.04
101.250	0.00	0.02	0.311	O	|	|	|	|	1.04
101.333	0.00	0.02	0.311	O	|	|	|	|	1.04
101.417	0.00	0.02	0.311	O	|	|	|	|	1.04
101.500	0.00	0.02	0.311	O	|	|	|	|	1.04
101.583	0.00	0.02	0.311	O	|	|	|	|	1.04
101.667	0.00	0.02	0.311	O	|	|	|	|	1.04
101.750	0.00	0.02	0.311	O	|	|	|	|	1.04
101.833	0.00	0.02	0.311	O	|	|	|	|	1.04
101.917	0.00	0.02	0.310	O	|	|	|	|	1.04
102.000	0.00	0.02	0.310	O	|	|	|	|	1.04
102.083	0.00	0.02	0.310	O	|	|	|	|	1.04
102.167	0.00	0.02	0.310	O	|	|	|	|	1.04
102.250	0.00	0.02	0.310	O	|	|	|	|	1.04
102.333	0.00	0.02	0.310	O	|	|	|	|	1.04
102.417	0.00	0.01	0.310	O	|	|	|	|	1.04
102.500	0.00	0.01	0.310	O	|	|	|	|	1.04

102.583	0.00	0.01	0.310	O	|	|	|	|	1.04
102.667	0.00	0.01	0.310	O	|	|	|	|	1.04
102.750	0.00	0.01	0.309	O	|	|	|	|	1.04
102.833	0.00	0.01	0.309	O	|	|	|	|	1.04
102.917	0.00	0.01	0.309	O	|	|	|	|	1.03
103.000	0.00	0.01	0.309	O	|	|	|	|	1.03
103.083	0.00	0.01	0.309	O	|	|	|	|	1.03
103.167	0.00	0.01	0.309	O	|	|	|	|	1.03
103.250	0.00	0.01	0.309	O	|	|	|	|	1.03
103.333	0.00	0.01	0.309	O	|	|	|	|	1.03
103.417	0.00	0.01	0.309	O	|	|	|	|	1.03
103.500	0.00	0.01	0.309	O	|	|	|	|	1.03
103.583	0.00	0.01	0.308	O	|	|	|	|	1.03
103.667	0.00	0.01	0.308	O	|	|	|	|	1.03
103.750	0.00	0.01	0.308	O	|	|	|	|	1.03
103.833	0.00	0.01	0.308	O	|	|	|	|	1.03
103.917	0.00	0.01	0.308	O	|	|	|	|	1.03
104.000	0.00	0.01	0.308	O	|	|	|	|	1.03
104.083	0.00	0.01	0.308	O	|	|	|	|	1.03
104.167	0.00	0.01	0.308	O	|	|	|	|	1.03
104.250	0.00	0.01	0.308	O	|	|	|	|	1.03
104.333	0.00	0.01	0.308	O	|	|	|	|	1.03
104.417	0.00	0.01	0.308	O	|	|	|	|	1.03
104.500	0.00	0.01	0.307	O	|	|	|	|	1.03
104.583	0.00	0.01	0.307	O	|	|	|	|	1.03
104.667	0.00	0.01	0.307	O	|	|	|	|	1.03
104.750	0.00	0.01	0.307	O	|	|	|	|	1.03
104.833	0.00	0.01	0.307	O	|	|	|	|	1.03
104.917	0.00	0.01	0.307	O	|	|	|	|	

1.03

105.000	0.00	0.01	0.307	O	|	|	|	|	1.03
105.083	0.00	0.01	0.307	O	|	|	|	|	1.03
105.167	0.00	0.01	0.307	O	|	|	|	|	1.03
105.250	0.00	0.01	0.307	O	|	|	|	|	1.03
105.333	0.00	0.01	0.307	O	|	|	|	|	1.03
105.417	0.00	0.01	0.307	O	|	|	|	|	1.03
105.500	0.00	0.01	0.306	O	|	|	|	|	1.03
105.583	0.00	0.01	0.306	O	|	|	|	|	1.03
105.667	0.00	0.01	0.306	O	|	|	|	|	1.03
105.750	0.00	0.01	0.306	O	|	|	|	|	1.03
105.833	0.00	0.01	0.306	O	|	|	|	|	1.03
105.917	0.00	0.01	0.306	O	|	|	|	|	1.03
106.000	0.00	0.01	0.306	O	|	|	|	|	1.03
106.083	0.00	0.01	0.306	O	|	|	|	|	1.03
106.167	0.00	0.01	0.306	O	|	|	|	|	1.03
106.250	0.00	0.01	0.306	O	|	|	|	|	1.03
106.333	0.00	0.01	0.306	O	|	|	|	|	1.03
106.417	0.00	0.01	0.306	O	|	|	|	|	1.03
106.500	0.00	0.01	0.305	O	|	|	|	|	1.03
106.583	0.00	0.01	0.305	O	|	|	|	|	1.03
106.667	0.00	0.01	0.305	O	|	|	|	|	1.03
106.750	0.00	0.01	0.305	O	|	|	|	|	1.03
106.833	0.00	0.01	0.305	O	|	|	|	|	1.03
106.917	0.00	0.01	0.305	O	|	|	|	|	1.03
107.000	0.00	0.01	0.305	O	|	|	|	|	1.03
107.083	0.00	0.01	0.305	O	|	|	|	|	1.03
107.167	0.00	0.01	0.305	O	|	|	|	|	1.02
107.250	0.00	0.01	0.305	O	|	|	|	|	1.02

107.333	0.00	0.01	0.305	O	|	|	|	|	1.02
107.417	0.00	0.01	0.305	O	|	|	|	|	1.02
107.500	0.00	0.01	0.305	O	|	|	|	|	1.02
107.583	0.00	0.01	0.305	O	|	|	|	|	1.02
107.667	0.00	0.01	0.304	O	|	|	|	|	1.02
107.750	0.00	0.01	0.304	O	|	|	|	|	1.02
107.833	0.00	0.01	0.304	O	|	|	|	|	1.02
107.917	0.00	0.01	0.304	O	|	|	|	|	1.02
108.000	0.00	0.01	0.304	O	|	|	|	|	1.02
108.083	0.00	0.01	0.304	O	|	|	|	|	1.02
108.167	0.00	0.01	0.304	O	|	|	|	|	1.02
108.250	0.00	0.01	0.304	O	|	|	|	|	1.02
108.333	0.00	0.01	0.304	O	|	|	|	|	1.02
108.417	0.00	0.01	0.304	O	|	|	|	|	1.02
108.500	0.00	0.01	0.304	O	|	|	|	|	1.02
108.583	0.00	0.01	0.304	O	|	|	|	|	1.02
108.667	0.00	0.01	0.304	O	|	|	|	|	1.02
108.750	0.00	0.01	0.304	O	|	|	|	|	1.02
108.833	0.00	0.01	0.304	O	|	|	|	|	1.02
108.917	0.00	0.01	0.303	O	|	|	|	|	1.02
109.000	0.00	0.01	0.303	O	|	|	|	|	1.02
109.083	0.00	0.01	0.303	O	|	|	|	|	1.02
109.167	0.00	0.01	0.303	O	|	|	|	|	1.02
109.250	0.00	0.01	0.303	O	|	|	|	|	1.02
109.333	0.00	0.01	0.303	O	|	|	|	|	1.02
109.417	0.00	0.01	0.303	O	|	|	|	|	1.02
109.500	0.00	0.01	0.303	O	|	|	|	|	1.02
109.583	0.00	0.01	0.303	O	|	|	|	|	1.02
109.667	0.00	0.01	0.303	O	|	|	|	|	

1.02

109.750	0.00	0.01	0.303	O	|	|	|	|	1.02
109.833	0.00	0.01	0.303	O	|	|	|	|	1.02
109.917	0.00	0.01	0.303	O	|	|	|	|	1.02
110.000	0.00	0.01	0.303	O	|	|	|	|	1.02
110.083	0.00	0.01	0.303	O	|	|	|	|	1.02
110.167	0.00	0.01	0.303	O	|	|	|	|	1.02
110.250	0.00	0.01	0.302	O	|	|	|	|	1.02
110.333	0.00	0.01	0.302	O	|	|	|	|	1.02
110.417	0.00	0.01	0.302	O	|	|	|	|	1.02
110.500	0.00	0.01	0.302	O	|	|	|	|	1.02
110.583	0.00	0.01	0.302	O	|	|	|	|	1.02
110.667	0.00	0.01	0.302	O	|	|	|	|	1.02
110.750	0.00	0.01	0.302	O	|	|	|	|	1.02
110.833	0.00	0.01	0.302	O	|	|	|	|	1.02
110.917	0.00	0.01	0.302	O	|	|	|	|	1.02
111.000	0.00	0.01	0.302	O	|	|	|	|	1.02
111.083	0.00	0.01	0.302	O	|	|	|	|	1.02
111.167	0.00	0.01	0.302	O	|	|	|	|	1.02
111.250	0.00	0.01	0.302	O	|	|	|	|	1.02
111.333	0.00	0.01	0.302	O	|	|	|	|	1.02
111.417	0.00	0.01	0.302	O	|	|	|	|	1.02
111.500	0.00	0.01	0.302	O	|	|	|	|	1.02
111.583	0.00	0.01	0.302	O	|	|	|	|	1.02
111.667	0.00	0.01	0.302	O	|	|	|	|	1.02
111.750	0.00	0.01	0.301	O	|	|	|	|	1.02
111.833	0.00	0.01	0.301	O	|	|	|	|	1.02
111.917	0.00	0.01	0.301	O	|	|	|	|	1.02
112.000	0.00	0.01	0.301	O	|	|	|	|	1.02

112.083	0.00	0.01	0.301	O	|	|	|	|	1.02
112.167	0.00	0.01	0.301	O	|	|	|	|	1.02
112.250	0.00	0.01	0.301	O	|	|	|	|	1.02
112.333	0.00	0.01	0.301	O	|	|	|	|	1.02
112.417	0.00	0.01	0.301	O	|	|	|	|	1.02
112.500	0.00	0.01	0.301	O	|	|	|	|	1.02
112.583	0.00	0.01	0.301	O	|	|	|	|	1.02
112.667	0.00	0.01	0.301	O	|	|	|	|	1.02
112.750	0.00	0.01	0.301	O	|	|	|	|	1.02
112.833	0.00	0.01	0.301	O	|	|	|	|	1.02
112.917	0.00	0.01	0.301	O	|	|	|	|	1.02
113.000	0.00	0.01	0.301	O	|	|	|	|	1.02
113.083	0.00	0.01	0.301	O	|	|	|	|	1.02
113.167	0.00	0.01	0.301	O	|	|	|	|	1.02
113.250	0.00	0.01	0.301	O	|	|	|	|	1.02
113.333	0.00	0.01	0.301	O	|	|	|	|	1.01
113.417	0.00	0.01	0.300	O	|	|	|	|	1.01
113.500	0.00	0.01	0.300	O	|	|	|	|	1.01
113.583	0.00	0.01	0.300	O	|	|	|	|	1.01
113.667	0.00	0.01	0.300	O	|	|	|	|	1.01
113.750	0.00	0.01	0.300	O	|	|	|	|	1.01
113.833	0.00	0.01	0.300	O	|	|	|	|	1.01
113.917	0.00	0.01	0.300	O	|	|	|	|	1.01
114.000	0.00	0.01	0.300	O	|	|	|	|	1.01
114.083	0.00	0.01	0.300	O	|	|	|	|	1.01
114.167	0.00	0.01	0.300	O	|	|	|	|	1.01
114.250	0.00	0.01	0.300	O	|	|	|	|	1.01
114.333	0.00	0.01	0.300	O	|	|	|	|	1.01
114.417	0.00	0.01	0.300	O	|	|	|	|	

1.01

114.500	0.00	0.01	0.300	O	|	|	|	|	1.01
114.583	0.00	0.01	0.300	O	|	|	|	|	1.01
114.667	0.00	0.01	0.300	O	|	|	|	|	1.01
114.750	0.00	0.01	0.300	O	|	|	|	|	1.01
114.833	0.00	0.01	0.300	O	|	|	|	|	1.01
114.917	0.00	0.01	0.300	O	|	|	|	|	1.01
115.000	0.00	0.01	0.300	O	|	|	|	|	1.01
115.083	0.00	0.01	0.300	O	|	|	|	|	1.01
115.167	0.00	0.01	0.300	O	|	|	|	|	1.01
115.250	0.00	0.01	0.300	O	|	|	|	|	1.01
115.333	0.00	0.01	0.299	O	|	|	|	|	1.01
115.417	0.00	0.01	0.299	O	|	|	|	|	1.01
115.500	0.00	0.01	0.299	O	|	|	|	|	1.01
115.583	0.00	0.01	0.299	O	|	|	|	|	1.01
115.667	0.00	0.01	0.299	O	|	|	|	|	1.01
115.750	0.00	0.01	0.299	O	|	|	|	|	1.01
115.833	0.00	0.01	0.299	O	|	|	|	|	1.01
115.917	0.00	0.01	0.299	O	|	|	|	|	1.01
116.000	0.00	0.01	0.299	O	|	|	|	|	1.01
116.083	0.00	0.01	0.299	O	|	|	|	|	1.01
116.167	0.00	0.01	0.299	O	|	|	|	|	1.01
116.250	0.00	0.01	0.299	O	|	|	|	|	1.01
116.333	0.00	0.01	0.299	O	|	|	|	|	1.01
116.417	0.00	0.01	0.299	O	|	|	|	|	1.01
116.500	0.00	0.01	0.299	O	|	|	|	|	1.01
116.583	0.00	0.01	0.299	O	|	|	|	|	1.01
116.667	0.00	0.01	0.299	O	|	|	|	|	1.01
116.750	0.00	0.01	0.299	O	|	|	|	|	1.01

116.833	0.00	0.01	0.299	O	|	|	|	|	1.01
116.917	0.00	0.01	0.299	O	|	|	|	|	1.01
117.000	0.00	0.01	0.299	O	|	|	|	|	1.01
117.083	0.00	0.01	0.299	O	|	|	|	|	1.01
117.167	0.00	0.01	0.299	O	|	|	|	|	1.01
117.250	0.00	0.01	0.299	O	|	|	|	|	1.01
117.333	0.00	0.01	0.299	O	|	|	|	|	1.01
117.417	0.00	0.01	0.299	O	|	|	|	|	1.01
117.500	0.00	0.00	0.299	O	|	|	|	|	1.01
117.583	0.00	0.00	0.298	O	|	|	|	|	1.01
117.667	0.00	0.00	0.298	O	|	|	|	|	1.01
117.750	0.00	0.00	0.298	O	|	|	|	|	1.01
117.833	0.00	0.00	0.298	O	|	|	|	|	1.01
117.917	0.00	0.00	0.298	O	|	|	|	|	1.01
118.000	0.00	0.00	0.298	O	|	|	|	|	1.01
118.083	0.00	0.00	0.298	O	|	|	|	|	1.01
118.167	0.00	0.00	0.298	O	|	|	|	|	1.01
118.250	0.00	0.00	0.298	O	|	|	|	|	1.01
118.333	0.00	0.00	0.298	O	|	|	|	|	1.01
118.417	0.00	0.00	0.298	O	|	|	|	|	1.01
118.500	0.00	0.00	0.298	O	|	|	|	|	1.01
118.583	0.00	0.00	0.298	O	|	|	|	|	1.01
118.667	0.00	0.00	0.298	O	|	|	|	|	1.01
118.750	0.00	0.00	0.298	O	|	|	|	|	1.01
118.833	0.00	0.00	0.298	O	|	|	|	|	1.01
118.917	0.00	0.00	0.298	O	|	|	|	|	1.01
119.000	0.00	0.00	0.298	O	|	|	|	|	1.01
119.083	0.00	0.00	0.298	O	|	|	|	|	1.01
119.167	0.00	0.00	0.298	O	|	|	|	|	

1.01

119.250	0.00	0.00	0.298	O	|	|	|	1.01
119.333	0.00	0.00	0.298	O	|	|	|	1.01
119.417	0.00	0.00	0.298	O	|	|	|	1.01
119.500	0.00	0.00	0.298	O	|	|	|	1.01
119.583	0.00	0.00	0.298	O	|	|	|	1.01
119.667	0.00	0.00	0.298	O	|	|	|	1.01
119.750	0.00	0.00	0.298	O	|	|	|	1.01
119.833	0.00	0.00	0.298	O	|	|	|	1.01
119.917	0.00	0.00	0.298	O	|	|	|	1.01
120.000	0.00	0.00	0.298	O	|	|	|	1.01
120.083	0.00	0.00	0.298	O	|	|	|	1.01
120.167	0.00	0.00	0.298	O	|	|	|	1.01
120.250	0.00	0.00	0.298	O	|	|	|	1.01
120.333	0.00	0.00	0.297	O	|	|	|	1.01
120.417	0.00	0.00	0.297	O	|	|	|	1.01
120.500	0.00	0.00	0.297	O	|	|	|	1.01
120.583	0.00	0.00	0.297	O	|	|	|	1.01
120.667	0.00	0.00	0.297	O	|	|	|	1.01
120.750	0.00	0.00	0.297	O	|	|	|	1.01
120.833	0.00	0.00	0.297	O	|	|	|	1.01
120.917	0.00	0.00	0.297	O	|	|	|	1.01
121.000	0.00	0.00	0.297	O	|	|	|	1.01
121.083	0.00	0.00	0.297	O	|	|	|	1.01
121.167	0.00	0.00	0.297	O	|	|	|	1.01
121.250	0.00	0.00	0.297	O	|	|	|	1.01
121.333	0.00	0.00	0.297	O	|	|	|	1.01
121.417	0.00	0.00	0.297	O	|	|	|	1.01
121.500	0.00	0.00	0.297	O	|	|	|	1.01

121.583	0.00	0.00	0.297	O	|	|	|	|	1.01
121.667	0.00	0.00	0.297	O	|	|	|	|	1.01
121.750	0.00	0.00	0.297	O	|	|	|	|	1.01
121.833	0.00	0.00	0.297	O	|	|	|	|	1.01
121.917	0.00	0.00	0.297	O	|	|	|	|	1.01
122.000	0.00	0.00	0.297	O	|	|	|	|	1.01
122.083	0.00	0.00	0.297	O	|	|	|	|	1.01
122.167	0.00	0.00	0.297	O	|	|	|	|	1.01
122.250	0.00	0.00	0.297	O	|	|	|	|	1.01
122.333	0.00	0.00	0.297	O	|	|	|	|	1.01
122.417	0.00	0.00	0.297	O	|	|	|	|	1.01
122.500	0.00	0.00	0.297	O	|	|	|	|	1.01
122.583	0.00	0.00	0.297	O	|	|	|	|	1.01
122.667	0.00	0.00	0.297	O	|	|	|	|	1.01
122.750	0.00	0.00	0.297	O	|	|	|	|	1.01
122.833	0.00	0.00	0.297	O	|	|	|	|	1.01
122.917	0.00	0.00	0.297	O	|	|	|	|	1.01
123.000	0.00	0.00	0.297	O	|	|	|	|	1.01
123.083	0.00	0.00	0.297	O	|	|	|	|	1.01
123.167	0.00	0.00	0.297	O	|	|	|	|	1.01
123.250	0.00	0.00	0.297	O	|	|	|	|	1.01
123.333	0.00	0.00	0.297	O	|	|	|	|	1.01
123.417	0.00	0.00	0.297	O	|	|	|	|	1.01
123.500	0.00	0.00	0.297	O	|	|	|	|	1.01
123.583	0.00	0.00	0.297	O	|	|	|	|	1.01
123.667	0.00	0.00	0.296	O	|	|	|	|	1.01
123.750	0.00	0.00	0.296	O	|	|	|	|	1.01
123.833	0.00	0.00	0.296	O	|	|	|	|	1.01
123.917	0.00	0.00	0.296	O	|	|	|	|	

1.01

124.000	0.00	0.00	0.296	O	|	|	|	|	1.01
124.083	0.00	0.00	0.296	O	|	|	|	|	1.01
124.167	0.00	0.00	0.296	O	|	|	|	|	1.01
124.250	0.00	0.00	0.296	O	|	|	|	|	1.01
124.333	0.00	0.00	0.296	O	|	|	|	|	1.01
124.417	0.00	0.00	0.296	O	|	|	|	|	1.01
124.500	0.00	0.00	0.296	O	|	|	|	|	1.01
124.583	0.00	0.00	0.296	O	|	|	|	|	1.01
124.667	0.00	0.00	0.296	O	|	|	|	|	1.01
124.750	0.00	0.00	0.296	O	|	|	|	|	1.01
124.833	0.00	0.00	0.296	O	|	|	|	|	1.01
124.917	0.00	0.00	0.296	O	|	|	|	|	1.00
125.000	0.00	0.00	0.296	O	|	|	|	|	1.00
125.083	0.00	0.00	0.296	O	|	|	|	|	1.00
125.167	0.00	0.00	0.296	O	|	|	|	|	1.00
125.250	0.00	0.00	0.296	O	|	|	|	|	1.00
125.333	0.00	0.00	0.296	O	|	|	|	|	1.00
125.417	0.00	0.00	0.296	O	|	|	|	|	1.00
125.500	0.00	0.00	0.296	O	|	|	|	|	1.00
125.583	0.00	0.00	0.296	O	|	|	|	|	1.00
125.667	0.00	0.00	0.296	O	|	|	|	|	1.00
125.750	0.00	0.00	0.296	O	|	|	|	|	1.00
125.833	0.00	0.00	0.296	O	|	|	|	|	1.00
125.917	0.00	0.00	0.296	O	|	|	|	|	1.00
126.000	0.00	0.00	0.296	O	|	|	|	|	1.00
126.083	0.00	0.00	0.296	O	|	|	|	|	1.00
126.167	0.00	0.00	0.296	O	|	|	|	|	1.00
126.250	0.00	0.00	0.296	O	|	|	|	|	1.00

126.333	0.00	0.00	0.296	O	|	|	|	|	1.00
126.417	0.00	0.00	0.296	O	|	|	|	|	1.00
126.500	0.00	0.00	0.296	O	|	|	|	|	1.00
126.583	0.00	0.00	0.296	O	|	|	|	|	1.00
126.667	0.00	0.00	0.296	O	|	|	|	|	1.00
126.750	0.00	0.00	0.296	O	|	|	|	|	1.00
126.833	0.00	0.00	0.296	O	|	|	|	|	1.00
126.917	0.00	0.00	0.296	O	|	|	|	|	1.00
127.000	0.00	0.00	0.296	O	|	|	|	|	1.00
127.083	0.00	0.00	0.296	O	|	|	|	|	1.00
127.167	0.00	0.00	0.296	O	|	|	|	|	1.00
127.250	0.00	0.00	0.296	O	|	|	|	|	1.00
127.333	0.00	0.00	0.296	O	|	|	|	|	1.00
127.417	0.00	0.00	0.296	O	|	|	|	|	1.00
127.500	0.00	0.00	0.296	O	|	|	|	|	1.00
127.583	0.00	0.00	0.296	O	|	|	|	|	1.00
127.667	0.00	0.00	0.296	O	|	|	|	|	1.00
127.750	0.00	0.00	0.296	O	|	|	|	|	1.00
127.833	0.00	0.00	0.296	O	|	|	|	|	1.00
127.917	0.00	0.00	0.296	O	|	|	|	|	1.00
128.000	0.00	0.00	0.296	O	|	|	|	|	1.00
128.083	0.00	0.00	0.295	O	|	|	|	|	1.00
128.167	0.00	0.00	0.295	O	|	|	|	|	1.00
128.250	0.00	0.00	0.295	O	|	|	|	|	1.00
128.333	0.00	0.00	0.295	O	|	|	|	|	1.00
128.417	0.00	0.00	0.295	O	|	|	|	|	1.00
128.500	0.00	0.00	0.295	O	|	|	|	|	1.00
128.583	0.00	0.00	0.295	O	|	|	|	|	1.00
128.667	0.00	0.00	0.295	O	|	|	|	|	

1.00

128.750	0.00	0.00	0.295	O	|	|	|	1.00
128.833	0.00	0.00	0.295	O	|	|	|	1.00
128.917	0.00	0.00	0.295	O	|	|	|	1.00
129.000	0.00	0.00	0.295	O	|	|	|	1.00
129.083	0.00	0.00	0.295	O	|	|	|	1.00
129.167	0.00	0.00	0.295	O	|	|	|	1.00
129.250	0.00	0.00	0.295	O	|	|	|	1.00
129.333	0.00	0.00	0.295	O	|	|	|	1.00
129.417	0.00	0.00	0.295	O	|	|	|	1.00
129.500	0.00	0.00	0.295	O	|	|	|	1.00
129.583	0.00	0.00	0.295	O	|	|	|	1.00
129.667	0.00	0.00	0.295	O	|	|	|	1.00
129.750	0.00	0.00	0.295	O	|	|	|	1.00
129.833	0.00	0.00	0.295	O	|	|	|	1.00
129.917	0.00	0.00	0.295	O	|	|	|	1.00
130.000	0.00	0.00	0.295	O	|	|	|	1.00
130.083	0.00	0.00	0.295	O	|	|	|	1.00
130.167	0.00	0.00	0.295	O	|	|	|	1.00
130.250	0.00	0.00	0.295	O	|	|	|	1.00
130.333	0.00	0.00	0.295	O	|	|	|	1.00
130.417	0.00	0.00	0.295	O	|	|	|	1.00
130.500	0.00	0.00	0.295	O	|	|	|	1.00
130.583	0.00	0.00	0.295	O	|	|	|	1.00
130.667	0.00	0.00	0.295	O	|	|	|	1.00
130.750	0.00	0.00	0.295	O	|	|	|	1.00
130.833	0.00	0.00	0.295	O	|	|	|	1.00
130.917	0.00	0.00	0.295	O	|	|	|	1.00
131.000	0.00	0.00	0.295	O	|	|	|	1.00

131.083	0.00	0.00	0.295	O	|	|	|	|	1.00
131.167	0.00	0.00	0.295	O	|	|	|	|	1.00
131.250	0.00	0.00	0.295	O	|	|	|	|	1.00
131.333	0.00	0.00	0.295	O	|	|	|	|	1.00
131.417	0.00	0.00	0.295	O	|	|	|	|	1.00
131.500	0.00	0.00	0.295	O	|	|	|	|	1.00
131.583	0.00	0.00	0.295	O	|	|	|	|	1.00
131.667	0.00	0.00	0.295	O	|	|	|	|	1.00
131.750	0.00	0.00	0.295	O	|	|	|	|	1.00
131.833	0.00	0.00	0.295	O	|	|	|	|	1.00
131.917	0.00	0.00	0.295	O	|	|	|	|	1.00
132.000	0.00	0.00	0.295	O	|	|	|	|	1.00
132.083	0.00	0.00	0.295	O	|	|	|	|	1.00
132.167	0.00	0.00	0.295	O	|	|	|	|	1.00
132.250	0.00	0.00	0.295	O	|	|	|	|	1.00
132.333	0.00	0.00	0.295	O	|	|	|	|	1.00
132.417	0.00	0.00	0.295	O	|	|	|	|	1.00
132.500	0.00	0.00	0.295	O	|	|	|	|	1.00
132.583	0.00	0.00	0.295	O	|	|	|	|	1.00
132.667	0.00	0.00	0.295	O	|	|	|	|	1.00
132.750	0.00	0.00	0.295	O	|	|	|	|	1.00
132.833	0.00	0.00	0.295	O	|	|	|	|	1.00
132.917	0.00	0.00	0.295	O	|	|	|	|	1.00
133.000	0.00	0.00	0.295	O	|	|	|	|	1.00
133.083	0.00	0.00	0.295	O	|	|	|	|	1.00
133.167	0.00	0.00	0.295	O	|	|	|	|	1.00
133.250	0.00	0.00	0.295	O	|	|	|	|	1.00
133.333	0.00	0.00	0.295	O	|	|	|	|	1.00
133.417	0.00	0.00	0.295	O	|	|	|	|	

1.00

133.500	0.00	0.00	0.295	O	|	|	|	1.00
133.583	0.00	0.00	0.295	O	|	|	|	1.00
133.667	0.00	0.00	0.295	O	|	|	|	1.00
133.750	0.00	0.00	0.295	O	|	|	|	1.00
133.833	0.00	0.00	0.295	O	|	|	|	1.00
133.917	0.00	0.00	0.295	O	|	|	|	1.00
134.000	0.00	0.00	0.295	O	|	|	|	1.00
134.083	0.00	0.00	0.295	O	|	|	|	1.00
134.167	0.00	0.00	0.295	O	|	|	|	1.00
134.250	0.00	0.00	0.295	O	|	|	|	1.00
134.333	0.00	0.00	0.295	O	|	|	|	1.00
134.417	0.00	0.00	0.295	O	|	|	|	1.00
134.500	0.00	0.00	0.295	O	|	|	|	1.00
134.583	0.00	0.00	0.294	O	|	|	|	1.00
134.667	0.00	0.00	0.294	O	|	|	|	1.00
134.750	0.00	0.00	0.294	O	|	|	|	1.00
134.833	0.00	0.00	0.294	O	|	|	|	1.00
134.917	0.00	0.00	0.294	O	|	|	|	1.00
135.000	0.00	0.00	0.294	O	|	|	|	1.00
135.083	0.00	0.00	0.294	O	|	|	|	1.00
135.167	0.00	0.00	0.294	O	|	|	|	1.00
135.250	0.00	0.00	0.294	O	|	|	|	1.00
135.333	0.00	0.00	0.294	O	|	|	|	1.00
135.417	0.00	0.00	0.294	O	|	|	|	1.00
135.500	0.00	0.00	0.294	O	|	|	|	1.00
135.583	0.00	0.00	0.294	O	|	|	|	1.00
135.667	0.00	0.00	0.294	O	|	|	|	1.00
135.750	0.00	0.00	0.294	O	|	|	|	1.00

135.833	0.00	0.00	0.294	O	|	|	|	|	1.00
135.917	0.00	0.00	0.294	O	|	|	|	|	1.00
136.000	0.00	0.00	0.294	O	|	|	|	|	1.00
136.083	0.00	0.00	0.294	O	|	|	|	|	1.00
136.167	0.00	0.00	0.294	O	|	|	|	|	1.00
136.250	0.00	0.00	0.294	O	|	|	|	|	1.00
136.333	0.00	0.00	0.294	O	|	|	|	|	1.00
136.417	0.00	0.00	0.294	O	|	|	|	|	1.00
136.500	0.00	0.00	0.294	O	|	|	|	|	1.00
136.583	0.00	0.00	0.294	O	|	|	|	|	1.00
136.667	0.00	0.00	0.294	O	|	|	|	|	1.00
136.750	0.00	0.00	0.294	O	|	|	|	|	1.00
136.833	0.00	0.00	0.294	O	|	|	|	|	1.00
136.917	0.00	0.00	0.294	O	|	|	|	|	1.00
137.000	0.00	0.00	0.294	O	|	|	|	|	1.00
137.083	0.00	0.00	0.294	O	|	|	|	|	1.00
137.167	0.00	0.00	0.294	O	|	|	|	|	1.00
137.250	0.00	0.00	0.294	O	|	|	|	|	1.00
137.333	0.00	0.00	0.294	O	|	|	|	|	1.00
137.417	0.00	0.00	0.294	O	|	|	|	|	1.00
137.500	0.00	0.00	0.294	O	|	|	|	|	1.00
137.583	0.00	0.00	0.294	O	|	|	|	|	1.00
137.667	0.00	0.00	0.294	O	|	|	|	|	1.00
137.750	0.00	0.00	0.294	O	|	|	|	|	1.00
137.833	0.00	0.00	0.294	O	|	|	|	|	1.00
137.917	0.00	0.00	0.294	O	|	|	|	|	1.00
138.000	0.00	0.00	0.294	O	|	|	|	|	1.00
138.083	0.00	0.00	0.294	O	|	|	|	|	1.00
138.167	0.00	0.00	0.294	O	|	|	|	|	

1.00

138.250	0.00	0.00	0.294	O	|	|	|	1.00
138.333	0.00	0.00	0.294	O	|	|	|	1.00
138.417	0.00	0.00	0.294	O	|	|	|	1.00
138.500	0.00	0.00	0.294	O	|	|	|	1.00
138.583	0.00	0.00	0.294	O	|	|	|	1.00
138.667	0.00	0.00	0.294	O	|	|	|	1.00
138.750	0.00	0.00	0.294	O	|	|	|	1.00
138.833	0.00	0.00	0.294	O	|	|	|	1.00
138.917	0.00	0.00	0.294	O	|	|	|	1.00
139.000	0.00	0.00	0.294	O	|	|	|	1.00
139.083	0.00	0.00	0.294	O	|	|	|	1.00
139.167	0.00	0.00	0.294	O	|	|	|	1.00
139.250	0.00	0.00	0.294	O	|	|	|	1.00
139.333	0.00	0.00	0.294	O	|	|	|	1.00
139.417	0.00	0.00	0.294	O	|	|	|	1.00
139.500	0.00	0.00	0.294	O	|	|	|	1.00
139.583	0.00	0.00	0.294	O	|	|	|	1.00
139.667	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1676
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.554 (CFS)
Total volume = 2.666 (Ac.Ft)

Status of hydrographs being held in storage

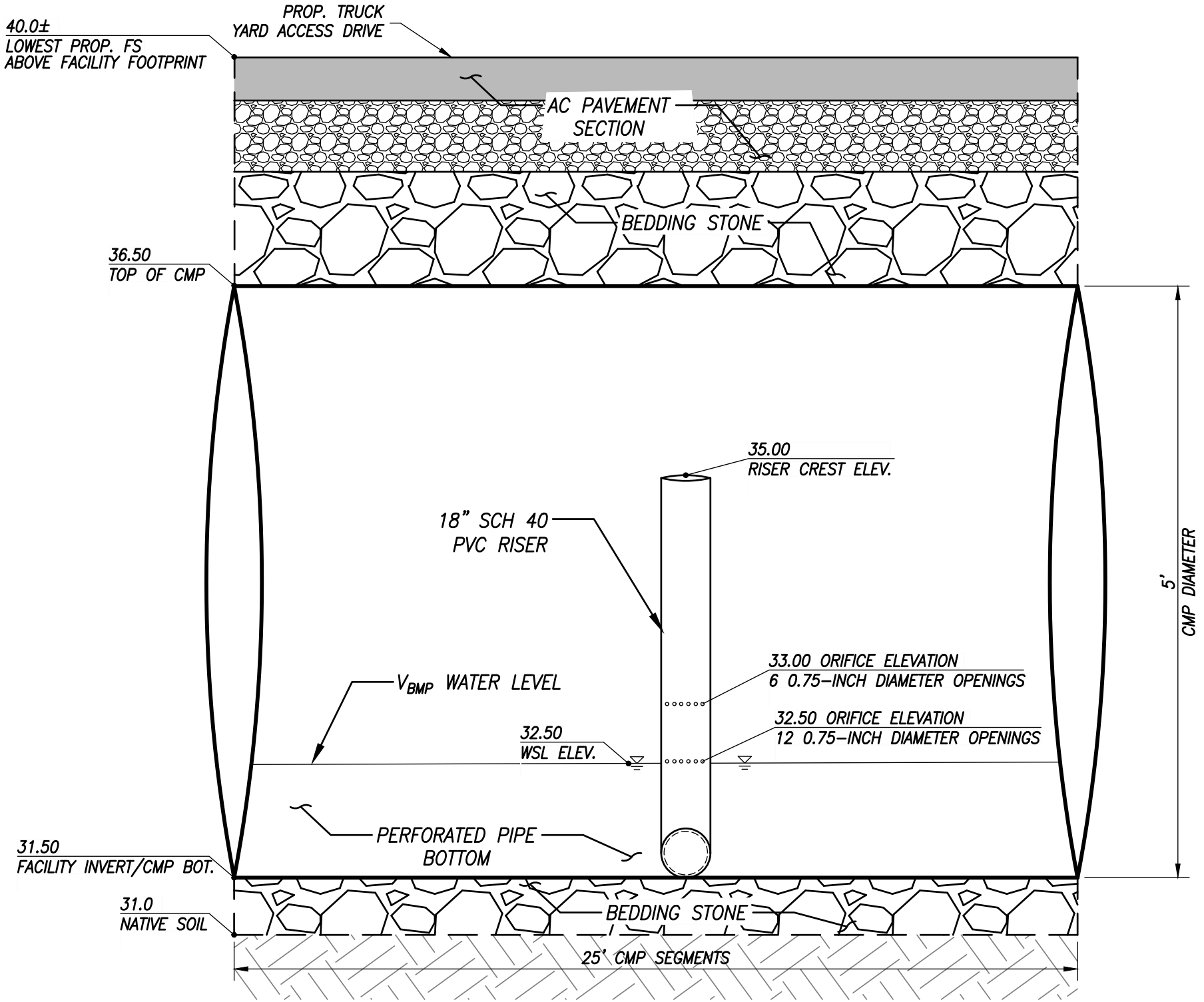
	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

Appendix “C-3”- Stage-Storage-Discharge Calculations

Elevation (ft)	Stage (ft)	Incremental Storage (CF)	Cumulative Storage (CF)	Cumulative Storage (AC*FT)	Discharge (CF)
31.50	0.00	0	0	0	0.000
32.50	1.00	12,794	12,794	0.293710328	0.001
32.75	1.25	4,774	17,568	0.403300128	0.097
33.00	1.50	5,106	22,673	0.520506896	0.138
33.25	1.75	5,356	28,029	0.643460537	0.218
33.50	2.00	5,536	33,565	0.770553606	0.264
33.75	2.25	5,653	39,219	0.900336253	0.302
34.00	2.50	5,711	44,930	1.031442677	0.336
34.25	2.75	5,711	50,641	1.162549101	0.367
34.50	3.00	5,653	56,294	1.292331748	0.395
34.75	3.25	5,536	61,830	1.419424817	0.421
35.00	3.50	5,356	67,186	1.542378458	0.446
35.25	3.75	5,106	72,292	1.659585226	1.552
35.50	4.00	4,774	77,065	1.769175026	3.553
35.75	4.25	4,342	81,407	1.868847006	6.138
36.00	4.50	3,776	85,183	1.955522862	9.039
36.25	4.75	2,997	88,179	2.024317225	10.062
36.50	5.00	1,680	89,859	2.062874848	10.989

60" CMP PIPE area (SF)	19.63494
diameter (ft)	5
radius	2.5
Pipe Storage Only (CF)	89859
No gravel considered	



UNDERGROUND FACILITY OUTLET DETAIL

NTS

		WATER SURFACE LEVEL											
No. Holes	**Orifice Elevation**	32.58	32.67	32.75	32.83	32.92	33.00	33.08	33.17	33.25	33.33	33.42	33.50
12	32.50	0.056	0.080	0.097	0.113	0.126	0.138	0.149	0.159	0.169	0.178	0.187	0.195
6	33.00							0.028	0.040	0.049	0.056	0.063	0.069
ΣDISCHARGE (CFS)		**0.056**	**0.080**	**0.097**	**0.113**	**0.126**	**0.138**	**0.177**	**0.199**	**0.218**	**0.234**	**0.250**	**0.264**

Hole Area = pi*(r)^2 0.75 inch diameter.

0.441786	in^2
0.003068	ft^2

Orifice Discharge Equation= $Q=CA[2g(H-H_0)]^{0.5}$

WATER SURFACE LEVEL											
33.58	33.67	33.75	33.83	33.92	34.00	34.08	34.17	34.25	34.33	34.42	34.50
0.203	0.211	0.218	0.225	0.232	0.239	0.245	0.252	0.258	0.264	0.270	0.276
0.074	0.080	0.084	0.089	0.093	0.097	0.101	0.105	0.109	0.113	0.116	0.119
0.277	**0.290**	**0.302**	**0.314**	**0.325**	**0.336**	**0.347**	**0.357**	**0.367**	**0.377**	**0.386**	**0.395**

WATER SURFACE LEVEL											
34.58	34.67	34.75	34.83	34.92	35.00	35.08	35.17	35.25	35.33	35.42	35.50
0.281	0.287	0.292	0.298	0.303	0.308	0.313	0.318	0.323	0.328	0.333	0.338
0.123	0.126	0.129	0.132	0.135	0.138	0.141	0.144	0.146	0.149	0.152	0.154
0.404	**0.413**	**0.421**	**0.430**	**0.438**	**0.446**	**0.454**	**0.462**	**0.470**	**0.477**	**0.485**	**0.492**

WATER SURFACE LEVEL											
35.58	35.67	35.75	35.83	35.92	36.00	36.08	36.17	36.25	36.33	36.42	36.50
0.342	0.347	0.352	0.356	0.360	0.365	0.369	0.373	0.378	0.382	0.386	0.390
0.157	0.159	0.162	0.164	0.167	0.169	0.171	0.173	0.176	0.178	0.180	0.182
0.499	**0.506**	**0.513**	**0.520**	**0.527**	**0.534**	**0.540**	**0.547**	**0.553**	**0.560**	**0.566**	**0.572**

STAGE VS. DISCHARGE (CREST ELEV.)

Outlet Type	PVC Riser		
Pipe Dia. (ft)	1.5	Pipe Circumfrence (L)	4.71
Crest Elev.	35.0	Quantity	1

*Orifice Equation	**Weir Equation
Q=KORD2H1/2	**Q=CLH1.5**
KOR =3.78	*C=3.33*

Stage (ft)	Effective Head (ft)	Orifice Flow (cfs)	Weir Flow (cfs)	Controlling Discharge (cfs)
35.08	0.083	2.46	0.21	**0.21**
35.17	0.167	3.47	0.59	**0.59**
35.25	0.250	4.25	1.08	**1.08**
35.33	0.333	4.91	1.67	**1.67**
35.42	0.417	5.49	2.33	**2.33**
35.50	0.500	6.01	3.06	**3.06**
35.58	0.583	6.50	3.86	**3.86**
35.67	0.667	6.94	4.71	**4.71**
35.75	0.750	7.37	5.62	**5.62**
35.83	0.833	7.76	6.59	**6.59**
35.92	0.917	8.14	7.60	**7.60**
36.00	1.000	8.51	8.66	**8.51**
36.08	1.083	8.85	9.76	**8.85**
36.17	1.167	9.19	10.91	**9.19**
36.25	1.250	9.51	12.10	**9.51**
36.33	1.333	9.82	13.33	**9.82**
36.42	1.417	10.12	14.60	**10.12**
36.50	1.500	10.42	15.91	**10.42**

*Equation 8-18 (HEC-22 Urban Drainage Manual)

**Equation 8-19 (HEC-22 Urban Drainage Manual)

Appendix “C-4” - Tobacco Road & Placentia Avenue: Half-Street Frontage Hydrology/Hydraulics

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 03/27/24
File:2177HALFSTREETR.out

HALF STREET FLOWS ALONG FRONTAGE
TOBBACO ROAD AND PLACENTIA AVENUE
10 YEAR EVENT

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6313

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 669.000(Ft.)
Top (of initial area) elevation = 68.800(Ft.)
Bottom (of initial area) elevation = 58.590(Ft.)
Difference in elevation = 10.210(Ft.)
Slope = 0.01526 s(percent)= 1.53

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.345 min.
Rainfall intensity =      1.940(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.847
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.690(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =    58.590(Ft.)
End of street segment elevation =    53.500(Ft.)
Length of street segment  =   572.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  20.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.074(CFS)
Depth of flow =   0.264(Ft.), Average velocity =   1.791(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.878(Ft.)
Flow velocity =   1.79(Ft/s)
Travel time =    5.32 min.     TC =   14.67  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.555(In/Hr) for a    10.0 year storm
Subarea runoff =      0.681(CFS) for      0.520(Ac.)
Total runoff =      1.371(CFS)      Total area =       0.940(Ac.)
Street flow at end of street =      1.371(CFS)
Half street flow at end of street =      1.371(CFS)
Depth of flow =   0.282(Ft.), Average velocity =   1.884(Ft/s)
```

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Flow width (from curb towards crown)=   7.753(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      230.000 to Point/Station      240.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =    53.210(Ft.)
Bottom (of initial area) elevation =    28.400(Ft.)
Difference in elevation =    24.810(Ft.)
Slope =    0.03748  s(percent)=       3.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.775 min.
Rainfall intensity =      2.123(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.849
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.369(CFS)
Total initial stream area =        0.760(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  32.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 03/27/24
File:2177HALFSTREETR.out

HALF STREET FLOWS ALONG FRONTAGE
TOBBACO ROAD AND PLACENTIA AVENUE
100 YEAR EVENT

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6313

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 669.000(Ft.)
Top (of initial area) elevation = 68.800(Ft.)
Bottom (of initial area) elevation = 58.590(Ft.)
Difference in elevation = 10.210(Ft.)
Slope = 0.01526 s(percent)= 1.53

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.345 min.
Rainfall intensity =      2.786(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.855
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.000(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =    58.590(Ft.)
End of street segment elevation =    53.500(Ft.)
Length of street segment  =   572.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  20.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.530(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   1.928(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.165(Ft.)
Flow velocity =   1.93(Ft/s)
Travel time =    4.94 min.     TC =   14.29  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.850
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.262(In/Hr) for a   100.0 year storm
Subarea runoff =      1.000(CFS) for      0.520(Ac.)
Total runoff =      2.000(CFS)      Total area =       0.940(Ac.)
Street flow at end of street =      2.000(CFS)
Half street flow at end of street =      2.000(CFS)
Depth of flow =   0.311(Ft.), Average velocity =   2.046(Ft/s)
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Flow width (from curb towards crown)=   9.224(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      230.000 to Point/Station      240.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =    53.210(Ft.)
Bottom (of initial area) elevation =    28.400(Ft.)
Difference in elevation =    24.810(Ft.)
Slope =    0.03748  s(percent)=       3.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.775 min.
Rainfall intensity =      3.048(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.857
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.985(CFS)
Total initial stream area =        0.760(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  32.0
```

Worksheet for Tobacco Rd - 10 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.006 ft/ft
Discharge	1.37 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+26	-0.52
0+28	-0.65
0+28	-0.15
0+39	0.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+39, 0.08)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.0 in
Elevation Range	-0.6 to 0.1 ft
Flow Area	0.8 ft²
Wetted Perimeter	8.5 ft
Hydraulic Radius	1.1 in
Top Width	8.27 ft
Normal Depth	3.0 in
Critical Depth	3.0 in
Critical Slope	0.006 ft/ft
Velocity	1.78 ft/s
Velocity Head	0.05 ft
Specific Energy	0.30 ft
Froude Number	1.030
Flow Type	Supercritical

Worksheet for Tobacco Rd - 10 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	3.0 in
Channel Slope	0.006 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Tobacco Rd - 100 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.006 ft/ft
Discharge	2.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+26	-0.52
0+28	-0.65
0+28	-0.15
0+39	0.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+39, 0.08)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.4 in
Elevation Range	-0.6 to 0.1 ft
Flow Area	1.0 ft²
Wetted Perimeter	10.0 ft
Hydraulic Radius	1.2 in
Top Width	9.71 ft
Normal Depth	3.4 in
Critical Depth	3.4 in
Critical Slope	0.005 ft/ft
Velocity	1.94 ft/s
Velocity Head	0.06 ft
Specific Energy	0.34 ft
Froude Number	1.054
Flow Type	Supercritical

Worksheet for Tobacco Rd - 100 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	3.4 in
Channel Slope	0.006 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Placentia Avenue - 10 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.350 ft/ft
Discharge	1.37 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+30	-0.60
0+32	-0.73
0+32	-0.23
0+53	0.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+53, 0.20)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	1.6 in
Elevation Range	-0.7 to 0.2 ft
Flow Area	0.1 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	0.7 in
Top Width	2.28 ft
Normal Depth	1.6 in
Critical Depth	3.0 in
Critical Slope	0.006 ft/ft
Velocity	10.02 ft/s
Velocity Head	1.56 ft
Specific Energy	1.69 ft
Froude Number	7.202
Flow Type	Supercritical

Worksheet for Placentia Avenue - 10 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.6 in
Critical Depth	3.0 in
Channel Slope	0.350 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Placentia Avenue - 100 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.350 ft/ft
Discharge	1.99 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+30	-0.60
0+32	-0.73
0+32	-0.23
0+53	0.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+53, 0.20)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	1.8 in
Elevation Range	-0.7 to 0.2 ft
Flow Area	0.2 ft²
Wetted Perimeter	3.6 ft
Hydraulic Radius	0.7 in
Top Width	3.40 ft
Normal Depth	1.8 in
Critical Depth	3.4 in
Critical Slope	0.005 ft/ft
Velocity	9.90 ft/s
Velocity Head	1.52 ft
Specific Energy	1.68 ft
Froude Number	7.188
Flow Type	Supercritical

Worksheet for Placentia Avenue - 100 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.8 in
Critical Depth	3.4 in
Channel Slope	0.350 ft/ft
Critical Slope	0.005 ft/ft

Appendix “D” - Proposed Conditions Map: Routed Hydrograph

PROPOSED HYDROLOGIC CONDITIONS - PERRIS NORTH DEVELOPMENT

APN: 317-240-001
OWNER: CHANDLERS SUB REVISED

APN: 317-240-021
OWNER: CHANDLERS SUB REVISED

EXIST. R/W

PLACENTIA AVENUE

JOIN EXIST. 36" RCP PER RCFCD & WCD PLAN DWG. NO. 4-1173 & INSTALL NEW SDMH NO. 2

EXIST. 36" RCP LATERAL H10.1 PER RCFCD & WCD PLAN DWG. NO. 4-1173

PROP. 24" RCP STORM DRAIN CONVEYING OVERFLOWS TO EXIST. LATERAL H10.1 IN PLACENTIA AVENUE

STA. 20+21.44 LATERAL H-10.1 (22.88) INV

#230 53.21 FS

#240 28.40 FL

Q_{10} = 1.369 CFS
Q_{100} = 1.985 CFS

S-2 0.76

662'

18" OVERFLOW SD

PROP. R/W

18" OVERFLOW RISER FOR INFILTRATION TRENCH

28.00 INVERT ELEV.

SD

6" OVERFLOW SD

PROP. MAXWELL DRYWELL FOR WQMP REQUIREMENTS (SEE PWQMP DOCUMENT)

299'

PROP. UNDER SIDEWALK DRAIN (TYP.)

282'

#120 35.00 TG/OVERFLOW 34.00 FL

#130 33.00 INV-OVERFLOW 32.00 INV-INFLOW

4" INLET SD

#220 53.50 FL

Q_{10} = 1.371 CFS
Q_{100} = 2.00 CFS

PROP. 24" RCP STORM DRAIN CONVEYING OVERFLOWS TO EXIST. LATERAL H10.1 IN PLACENTIA AVENUE

A 0.77

B 7.2

C 0.33

78'

TOBACCO ROAD

PROP. INLET PER PPT220047/IP240025 (Q_{100} = 40 CFS)

PROP. CATCH BASIN PER PPT220047/IP240025

#100 53.20 FL

S-1 0.52

572'

SEE FACILITY OUTLET DETAIL HEREON

PPT230048
OWNER: THRIFTY OIL COMPANY
PERRIS - NORTH PARCEL

CMP INFILTRATION & DETENTION FACILITY

CMP INFILTRATION & DETENTION FACILITY

EXIST. PL

APN: 317-260-004
OWNER: SERRANO SILVANO

APN: 317-260-005
OWNER: OAKES AND SAWYERS SUB

APN: 317-260-034
OWNER: COUNTY OF RIVERSIDE
PERRIS-COUNTY PARCEL

EXIST. R/W

PROP. R/W

12" SD

SD

612'

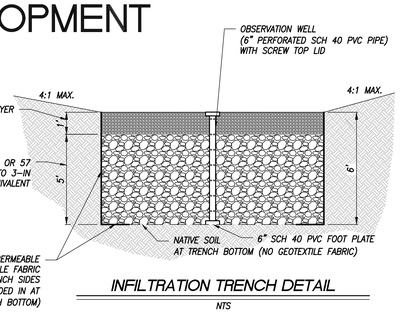
365'

#110 31.50 INV

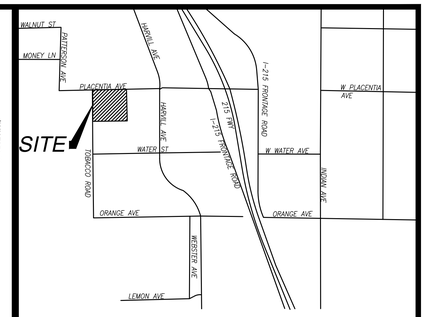
#210 58.59 FL

Q_{10} = 0.690 CFS
Q_{100} = 1.000 CFS
PER PPT20047 STUDY

PPT220047
OWNER: THRIFTY OIL COMPANY
PERRIS - SOUTH PARCEL



INFILTRATION TRENCH DETAIL
NTS

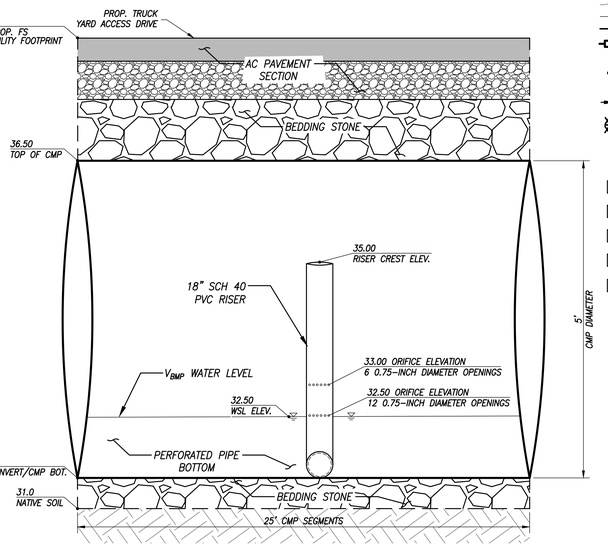


VICINITY MAP

TOWNSHIP 4S,
RANGE 4W, SECTION 13

LEGEND

- U/G ELECTRICAL CONDUITS
- U/G WATER
- EXISTING GROUND CONTOUR
- CENTERLINE
- R/W LINE
- TRIBUTARY AREA BOUNDARY
- SUBAREA
- ACREAGE
- FLOWLINE
- NODE ELEVATION
- CENTROID
- EXIST OFFSITE AC
- PROP. OFFSITE AC
- PROP. PCC PAVEMENT
- EXIST. AC PAVEMENT
- PROP. LANDSCAPE



UNDERGROUND FACILITY OUTLET DETAIL
NTS

WATERSHED A	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.6	1.0	1.2	2.2
3 HR DURATION	0.2	0.4	0.5	1.0
6 HR DURATION	0.2	0.3	0.5	0.9
24 HR DURATION	0.1	0.1	0.1	0.2

WATERSHED B	ROUTED FACILITY PEAK OUTFLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.0	0.1	0.1	0.2
3 HR DURATION	0.1	0.2	0.2	0.3
6 HR DURATION	0.2	0.3	0.3	0.4
24 HR DURATION	0.2	0.3	0.4	3.6

WATERSHED C	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.5	0.7	0.9	1.4
3 HR DURATION	0.2	0.3	0.4	0.6
6 HR DURATION	0.2	0.3	0.4	0.6
24 HR DURATION	0.1	0.1	0.1	0.2

	EXIST. UNDEVELOPED UNIT HYDROGRAPH PEAK FLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	5.8	9.8	12.9	23.2
3 HR DURATION	1.3	3.5	5.2	10.9
6 HR DURATION	0.9	2.8	4.4	9.6
24 HR DURATION	0.2	0.3	0.4	2.1

30 0 30 60 90

SCALE 1" = 30'

PROPOSED DEVELOPMENT UNIT HYDROGRAPH EXHIBIT

FOR

THE ORDEN COMPANY

COUNTY OF RIVERSIDE

PREPARED BY:

Armstrong & Brooks Consulting Engineers, Inc.
Civil Engineering · Water Resources · Surveying

1350 E. Chase Drive, Corona, CA 92881
Mail: P.O. Box 78088, Corona, CA 92887
Ph. (951) 372-8400, Fax (951) 372-8430

Appendix “E” – CMP Detention Facility Plans

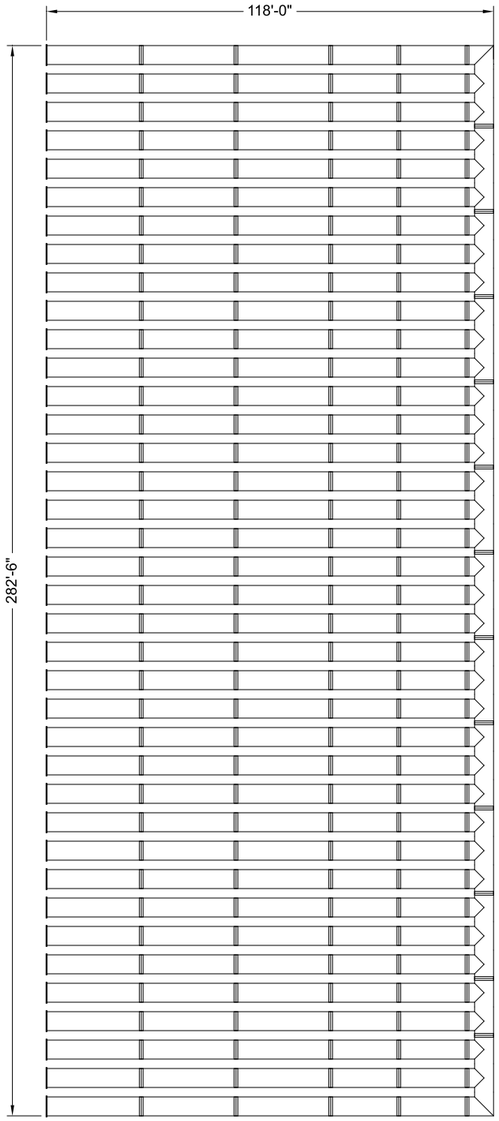
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 4,577 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 89,859 CF
- BACKFILL STORAGE VOLUME = 41,440 CF
- TOTAL STORAGE PROVIDED = 131,300 CF

PIPE DETAILS
- DIAMETER = 60"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 2"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 40'

C:\EXPORTS\TEMPLATES\CMP_V8.DWG 10/18/2019 10:02 AM

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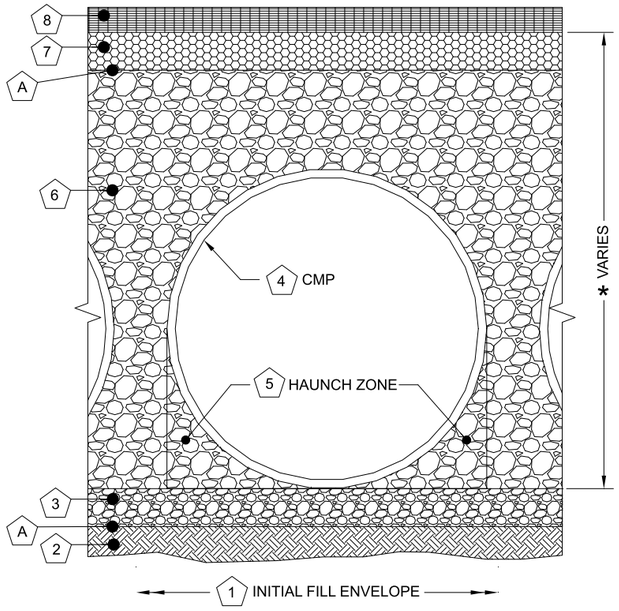
DATE	REVISION DESCRIPTION	BY

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



	Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
	Material Location	Description	Material Designation	Designation
8	Rigid or Flexible Pavement (if applicable)			
7	Road Base (if applicable			
A	Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6	Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ½" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction"
3	Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A	Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
*	Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

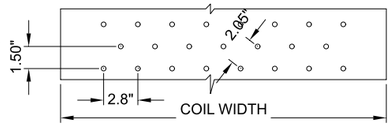
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

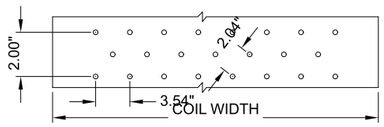
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



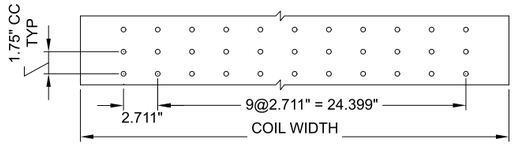
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



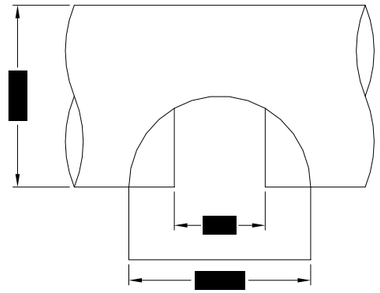
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

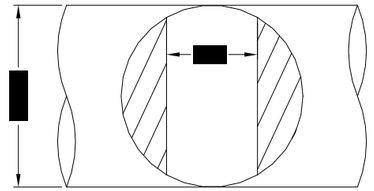
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

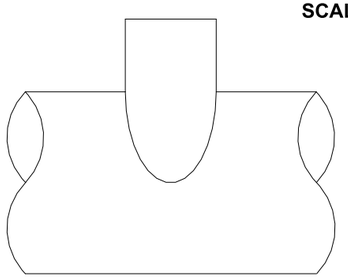


FRONT

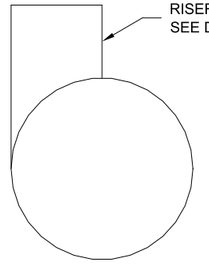
TYPICAL MANWAY DETAIL

SCALE: N.T.S.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.



ELEVATION

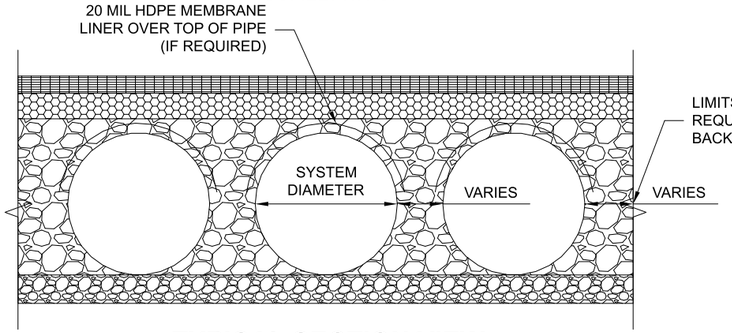


END

TYPICAL RISER DETAIL

SCALE: N.T.S.

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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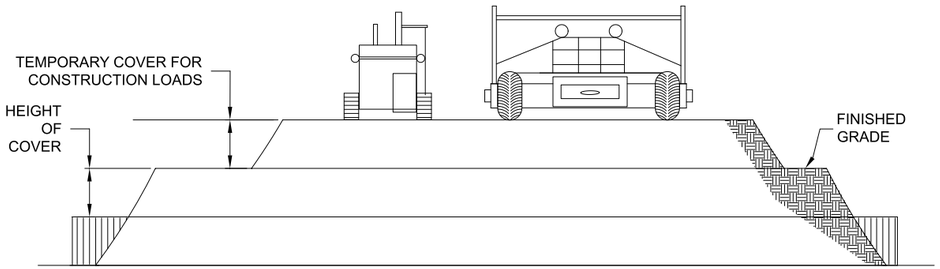


CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

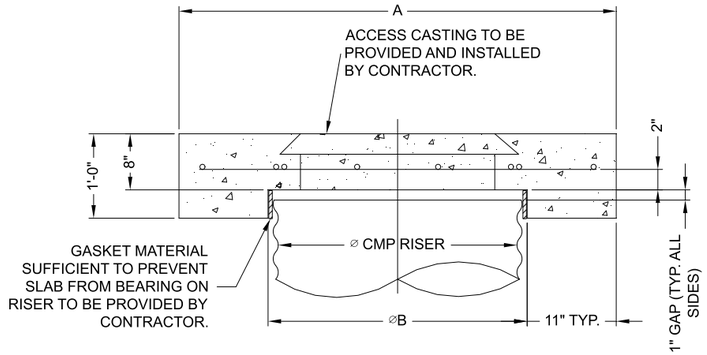
APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

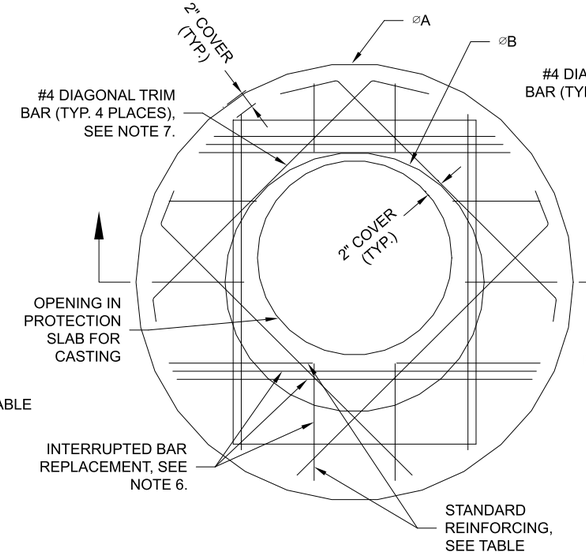
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



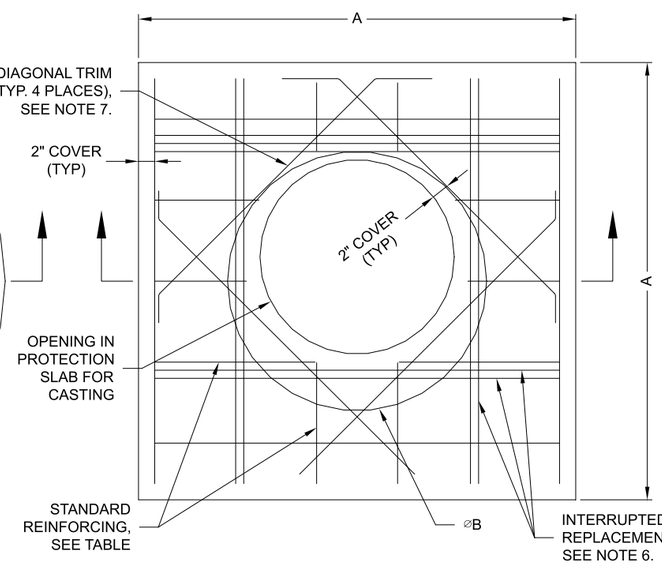
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH CMP DETENTION SYSTEMS
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DYO41779 123.2177 Perris North
CMP Detention - Watershed A
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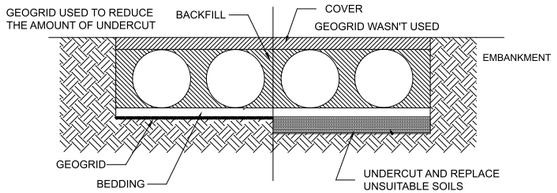
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

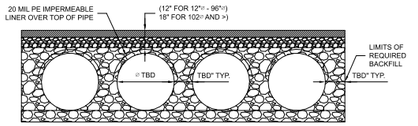


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

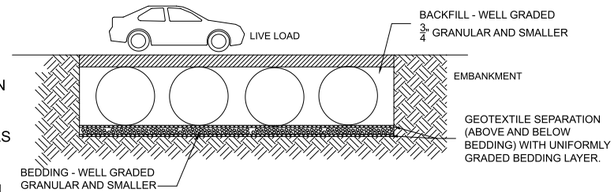
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

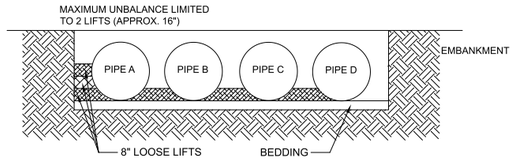
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



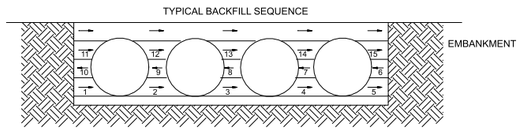
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

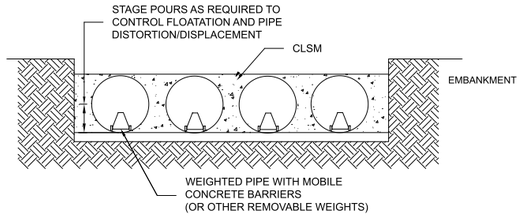


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

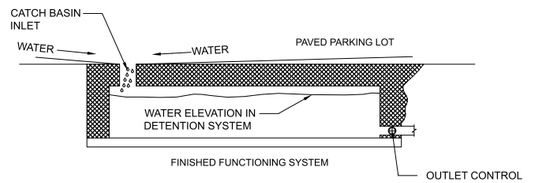


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
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DETENTION SYSTEM

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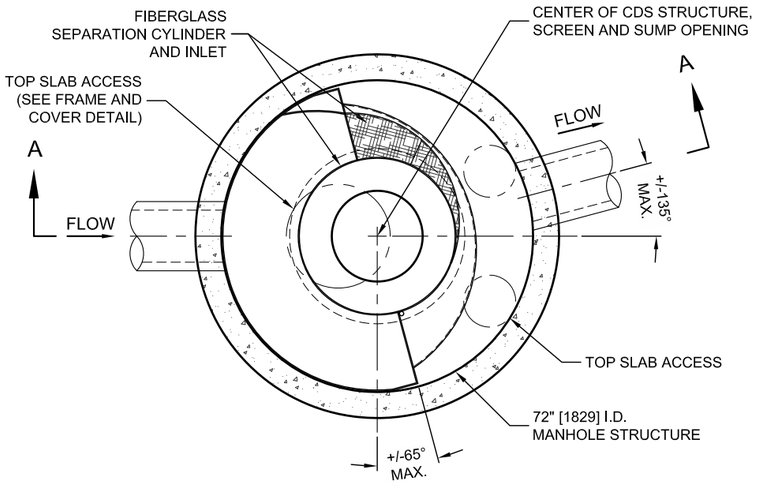
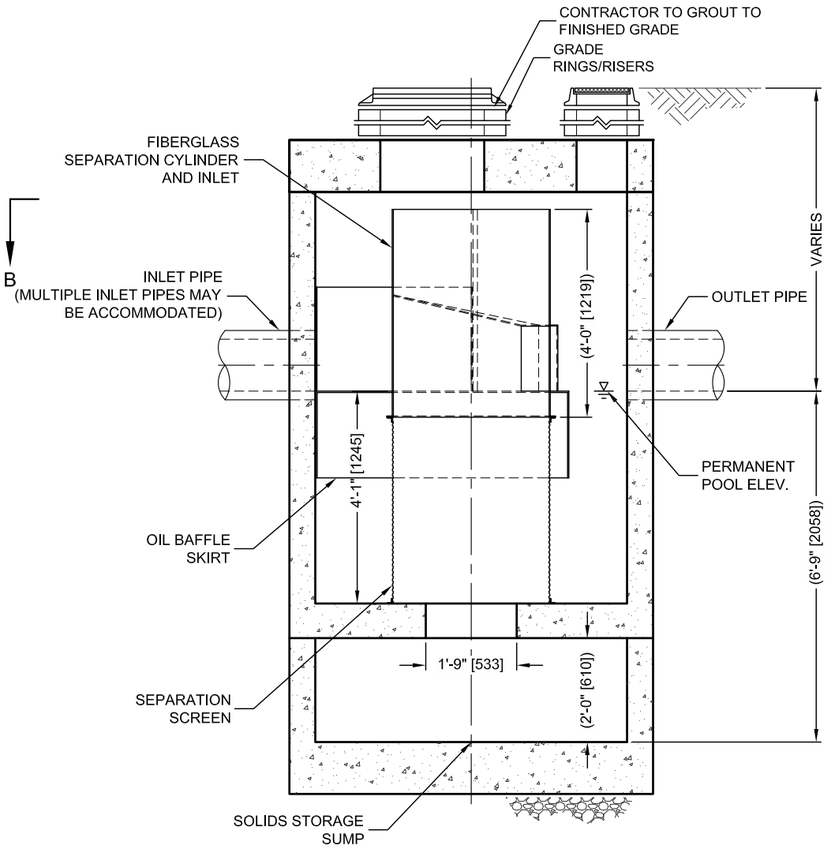


PLAN VIEW B-B
N.T.S.



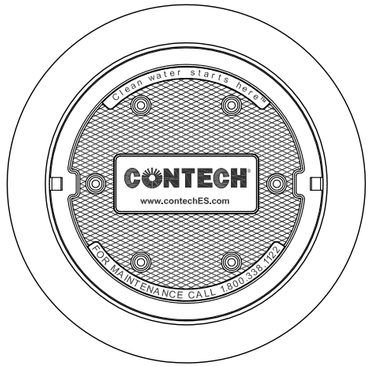
ELEVATION A-A
N.T.S.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS3035-6-C DESIGN NOTES

THE STANDARD CDS3035-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS3035-6-C
INLINE CDS
STANDARD DETAIL

C:\USERS\SCHLACHTERH\DESKTOP\CDS DETAILS 180 MICRON SIZING\CAD\CDS3035-6-C-DTL.DWG 5/19/2014 5:33 PM

Appendix “G” – Hydraulic Calculations for Connection to Lateral H-10.1

EXIST CONDITIONS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
							WARNING - Junction Analysis - Large Lateral Flow(s)							
1210.840	1491.350	1.892	1493.242	158.00	21.82	7.40	1500.64	.00	3.51	5.23	5.500	.000	.00	1 .0
JUNCT STR	.3571					.0424	.30	1.89	3.27		.013	.00	.00	PIPE
1217.840	1493.850	1.857	1495.707	125.00	24.11	9.03	1504.73	.00	3.28	3.49	3.500	.000	.00	1 .0
3.272	.0842					.0502	.16	1.86	3.49	1.60	.013	.00	.00	PIPE
1221.112	1494.125	1.867	1495.992	125.00	23.95	8.91	1504.90	.00	3.28	3.49	3.500	.000	.00	1 .0
19.728	.0842					.0468	.92	1.87	3.45	1.60	.013	.00	.00	PIPE
1240.840	1495.786	1.940	1497.726	125.00	22.84	8.10	1505.82	.00	3.28	3.48	3.500	.000	.00	1 .0
15.389	.0842					.0413	.64	1.94	3.21	1.60	.013	.00	.00	PIPE
1256.229	1497.081	2.017	1499.098	125.00	21.77	7.36	1506.46	.00	3.28	3.46	3.500	.000	.00	1 .0
12.341	.0842					.0365	.45	2.02	2.98	1.60	.013	.00	.00	PIPE
1268.570	1498.120	2.098	1500.218	125.00	20.76	6.69	1506.91	.00	3.28	3.43	3.500	.000	.00	1 .0
TRANS STR	.1182					.0335	.18	2.10	2.76		.013	.00	.00	PIPE

EXIST CONDITIONS

1274.070	1498.770	2.568	1501.338	125.00	19.40	5.85	1507.18	.00	2.96	2.11	3.000	.000	.00	1 .0
294.750	.0328					.0324	9.55	2.57	1.96	2.57	.013	.00	.00	PIPE
1568.820	1508.430	2.610	1511.040	125.00	19.15	5.69	1516.73	.00	2.96	2.02	3.000	.000	.00	1 .0
139.706	.0319					.0321	4.49	2.61	1.88	2.62	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1708.525	1512.890	2.599	1515.490	125.00	19.21	5.73	1521.22	.00	2.96	2.04	3.000	.000	.00	1 .0
252.895	.0319					.0336	8.51	2.60	1.90	2.62	.013	.00	.00	PIPE
1961.421	1520.965	2.460	1523.425	125.00	20.15	6.30	1529.73	.00	2.96	2.30	3.000	.000	.00	1 .0
102.589	.0319					.0369	3.79	2.46	2.16	2.62	.013	.00	.00	PIPE
2064.010	1524.240	2.340	1526.580	125.00	21.13	6.93	1533.51	.00	2.96	2.49	3.000	.000	.00	1 .0
56.962	.0387					.0387	2.21	2.34	2.41	2.34	.013	.00	.00	PIPE
2120.972	1526.445	2.340	1528.785	125.00	21.13	6.93	1535.72	.00	2.96	2.49	3.000	.000	.00	1 .0
277.000	.0387					.0381	10.56	2.34	2.41	2.34	.013	.00	.00	PIPE

2397.973	1537.168	2.376	1539.544	125.00	20.82	6.73	1546.28	.00	2.96	2.44	3.000	.000	.00	1 .0
167.707	.0387					.0358	6.01	2.38	2.34	2.34	.013	.00	.00	PIPE
2565.680	1543.660	2.501	1546.161	125.00	19.85	6.12	1552.28	.00	2.96	2.23	3.000	.000	.00	1 .0
JUNCT STR	.0400					.0387	.19	2.50	2.08		.013	.00	.00	PIPE
2570.680	1543.860	1.786	1545.646	92.00	20.98	6.83	1552.48	.00	2.86	2.95	3.000	.000	.00	1 .0
122.308	.0436					.0426	5.22	1.79	3.03	1.78	.013	.00	.00	PIPE
2692.988	1549.197	1.801	1550.998	92.00	20.76	6.70	1557.69	.00	2.86	2.94	3.000	.000	.00	1 .0
135.512	.0436					.0397	5.38	1.80	2.98	1.78	.013	.00	.00	PIPE
2828.500	1555.110	1.875	1556.985	92.00	19.80	6.09	1563.07	.00	2.86	2.90	3.000	.000	.00	1 .0
66.422	.0396					.0363	2.41	1.87	2.76	1.84	.013	.00	.00	PIPE

Program Package Serial Number: 7062

WATER SURFACE PROFILE LISTING Date:12- 1-2023 Time:10:32:30

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2894.921	1557.741	1.908	1559.649	92.00	19.40	5.84	1565.49	.00	2.86	2.89	3.000	.000	.00	1 .0
72.708	.0396					.0334	2.43	1.91	2.67	1.84	.013	.00	.00	PIPE
2967.629	1560.621	1.989	1562.610	92.00	18.49	5.31	1567.92	.00	2.86	2.84	3.000	.000	.00	1 .0

EXIST CONDITIONS

40.029	.0396						.0297	1.19	1.99	2.46	1.84	.013	.00	.00	PIPE				
3007.658	1562.207	2.076	1564.282	92.00	17.63	4.83	1569.11	.00	2.86	2.77	3.000	.000	.00	1	.0				
26.338	.0396						.0265	.70	2.08	2.26	1.84	.013	.00	.00	PIPE				
3033.997	1563.250	2.169	1565.419	92.00	16.81	4.39	1569.81	.00	2.86	2.69	3.000	.000	.00	1	.0				
18.695	.0396						.0237	.44	2.17	2.08	1.84	.013	.00	.00	PIPE				
3052.692	1563.991	2.270	1566.261	92.00	16.03	3.99	1570.25	.00	2.86	2.57	3.000	.000	.00	1	.0				
13.696	.0396						.0213	.29	2.27	1.89	1.84	.013	.00	.00	PIPE				
3066.387	1564.533	2.382	1566.916	92.00	15.28	3.63	1570.54	.00	2.86	2.43	3.000	.000	.00	1	.0				
10.017	.0396						.0193	.19	2.38	1.71	1.84	.013	.00	.00	PIPE				
3076.404	1564.930	2.509	1567.439	92.00	14.57	3.30	1570.74	.00	2.86	2.22	3.000	.000	.00	1	.0				
6.890	.0396						.0177	.12	2.51	1.52	1.84	.013	.00	.00	PIPE				
3083.294	1565.203	2.657	1567.860	92.00	13.89	3.00	1570.86	.00	2.86	1.91	3.000	.000	.00	1	.0				
3.206	.0396						.0167	.05	2.66	1.31	1.84	.013	.00	.00	PIPE				
3086.500	1565.330	2.858	1568.188	92.00	13.24	2.72	1570.91	.00	2.86	1.28	3.000	.000	.00	1	.0				

PROPOSED CONDITIONS

Program Package Serial Number: 7062

WATER SURFACE PROFILE LISTING Date: 3-27-2024 Time: 1:54: 6

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
						WARNING - Junction Analysis - Large Lateral Flow(s)								
1210.840	1491.350	1.927	1493.277	161.55	21.76	7.35	1500.63	.00	3.55	5.25	5.500	.000	.00	1 .0
JUNCT STR	.3571					.0407	.28	1.93	3.22		.013	.00	.00	PIPE
1217.840	1493.850	1.919	1495.769	128.55	23.80	8.80	1504.57	.00	3.30	3.48	3.500	.000	.00	1 .0
10.898	.0842					.0465	.51	1.92	3.37	1.63	.013	.00	.00	PIPE
1228.738	1494.767	1.960	1496.727	128.55	23.19	8.35	1505.08	.00	3.30	3.47	3.500	.000	.00	1 .0
16.267	.0842					.0423	.69	1.96	3.24	1.63	.013	.00	.00	PIPE
1245.005	1496.136	2.038	1498.174	128.55	22.11	7.59	1505.77	.00	3.30	3.45	3.500	.000	.00	1 .0
12.992	.0842					.0374	.49	2.04	3.00	1.63	.013	.00	.00	PIPE
1257.997	1497.230	2.120	1499.350	128.55	21.08	6.90	1506.25	.00	3.30	3.42	3.500	.000	.00	1 .0
10.573	.0842					.0331	.35	2.12	2.78	1.63	.013	.00	.00	PIPE
1268.570	1498.120	2.208	1500.328	128.55	20.10	6.27	1506.60	.00	3.30	3.38	3.500	.000	.00	1 .0
TRANS STR	.1182					.0325	.18	2.21	2.57		.013	.00	.00	PIPE

PROPOSED CONDITIONS

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1274.070  1498.770    2.961  1501.731    128.55   18.23    5.16  1506.89     .00    2.96      .68    3.000     .000   .00   1   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-       -|-       -|-     -|-     -|-     -|-
 223.420    .0322                                          .0329     7.36     2.96    1.00    2.77    .013       .00   .00  PIPE
        |         |        |         |         |             |        |       |       |       |       |       |       |      |
1497.490  1505.963    2.771  1508.734    128.55   18.84    5.51  1514.25     .00    2.96     1.59    3.000     .000   .00   1   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-       -|-       -|-     -|-     -|-     -|-
 138.485    .0322                                          .0321     4.44     2.77    1.60    2.77    .013       .00   .00  PIPE
```

PROPOSED CONDITIONS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1635.975	1510.421	2.771	1513.193	128.55	18.84	5.51	1518.71	.00	2.96	1.59	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1635.975	1510.421	2.770	1513.192	128.55	18.85	5.52	1518.71	.00	2.96	1.60	3.000	.000	.00	1 .0
40.946	.0322					.0323	1.32	2.77	1.61	2.77	.013	.00	.00	PIPE
1676.920	1511.740	2.749	1514.489	128.55	18.94	5.57	1520.06	.00	2.96	1.66	3.000	.000	.00	1 .0
339.520	.0322					.0333	11.32	2.75	1.65	2.77	.013	.00	.00	PIPE
2016.440	1522.670	2.581	1525.251	128.55	19.87	6.13	1531.38	.00	2.96	2.08	3.000	.000	.00	1 .0
JUNCT STR	.0420					.0356	.18	2.58	1.98		.013	.00	.00	PIPE
2021.440	1522.880	2.395	1525.275	125.00	20.66	6.63	1531.90	.00	2.96	2.41	3.000	.000	.00	1 .0
42.570	.0319					.0378	1.61	2.40	2.30	2.62	.013	.00	.00	PIPE
2064.010	1524.240	2.340	1526.580	125.00	21.13	6.93	1533.51	.00	2.96	2.49	3.000	.000	.00	1 .0
56.962	.0387					.0387	2.21	2.34	2.41	2.34	.013	.00	.00	PIPE
2120.972	1526.445	2.340	1528.785	125.00	21.13	6.93	1535.72	.00	2.96	2.49	3.000	.000	.00	1 .0

PROPOSED CONDITIONS

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       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     -|-     |-
  277.000    .0387                                              .0381    10.56     2.34    2.41    2.34    .013       .00   .00  PIPE
         |         |        |         |         |             |         |       |       |       |       |       |       |      |     |
 2397.973  1537.168    2.376  1539.544    125.00   20.82    6.73  1546.28     .00    2.96    2.44    3.000     .000   .00   1    .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     -|-     |-
  167.707    .0387                                              .0358     6.01     2.38    2.34    2.34    .013       .00   .00  PIPE
         |         |        |         |         |             |         |       |       |       |       |       |       |      |     |
 2565.680  1543.660    2.501  1546.161    125.00   19.85    6.12  1552.28     .00    2.96    2.23    3.000     .000   .00   1    .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     -|-     |-
JUNCT STR   .0400                                              .0387      .19    2.50    2.08            .013       .00   .00  PIPE
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2570.680	1543.860	1.786	1545.646	92.00	20.98	6.83	1552.48	.00	2.86	2.95	3.000	.000	.00	1 .0
122.308	.0436					.0426	5.22	1.79	3.03	1.78	.013	.00	.00	PIPE
2692.988	1549.197	1.801	1550.998	92.00	20.76	6.70	1557.69	.00	2.86	2.94	3.000	.000	.00	1 .0
135.512	.0436					.0397	5.38	1.80	2.98	1.78	.013	.00	.00	PIPE
2828.500	1555.110	1.875	1556.985	92.00	19.80	6.09	1563.07	.00	2.86	2.90	3.000	.000	.00	1 .0
66.422	.0396					.0363	2.41	1.87	2.76	1.84	.013	.00	.00	PIPE
2894.921	1557.741	1.908	1559.649	92.00	19.40	5.84	1565.49	.00	2.86	2.89	3.000	.000	.00	1 .0
72.708	.0396					.0334	2.43	1.91	2.67	1.84	.013	.00	.00	PIPE
2967.629	1560.621	1.989	1562.610	92.00	18.49	5.31	1567.92	.00	2.86	2.84	3.000	.000	.00	1 .0
40.029	.0396					.0297	1.19	1.99	2.46	1.84	.013	.00	.00	PIPE
3007.658	1562.207	2.076	1564.282	92.00	17.63	4.83	1569.11	.00	2.86	2.77	3.000	.000	.00	1 .0
26.338	.0396					.0265	.70	2.08	2.26	1.84	.013	.00	.00	PIPE
3033.997	1563.250	2.169	1565.419	92.00	16.81	4.39	1569.81	.00	2.86	2.69	3.000	.000	.00	1 .0

PROPOSED CONDITIONS

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      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  18.695    .0396                                              .0237      .44     2.17    2.08    1.84    .013       .00   .00  PIPE
       |         |        |         |         |              |         |       |       |       |       |       |       |      |
3052.692  1563.991    2.270  1566.261     92.00   16.03    3.99  1570.25     .00    2.86    2.57    3.000     .000   .00   1   .0
      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  13.696    .0396                                              .0213      .29     2.27    1.89    1.84    .013       .00   .00  PIPE
       |         |        |         |         |              |         |       |       |       |       |       |       |      |
3066.387  1564.533    2.382  1566.916     92.00   15.28    3.63  1570.54     .00    2.86    2.43    3.000     .000   .00   1   .0
      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  10.017    .0396                                              .0193      .19     2.38    1.71    1.84    .013       .00   .00  PIPE
```

PROPOSED CONDITIONS

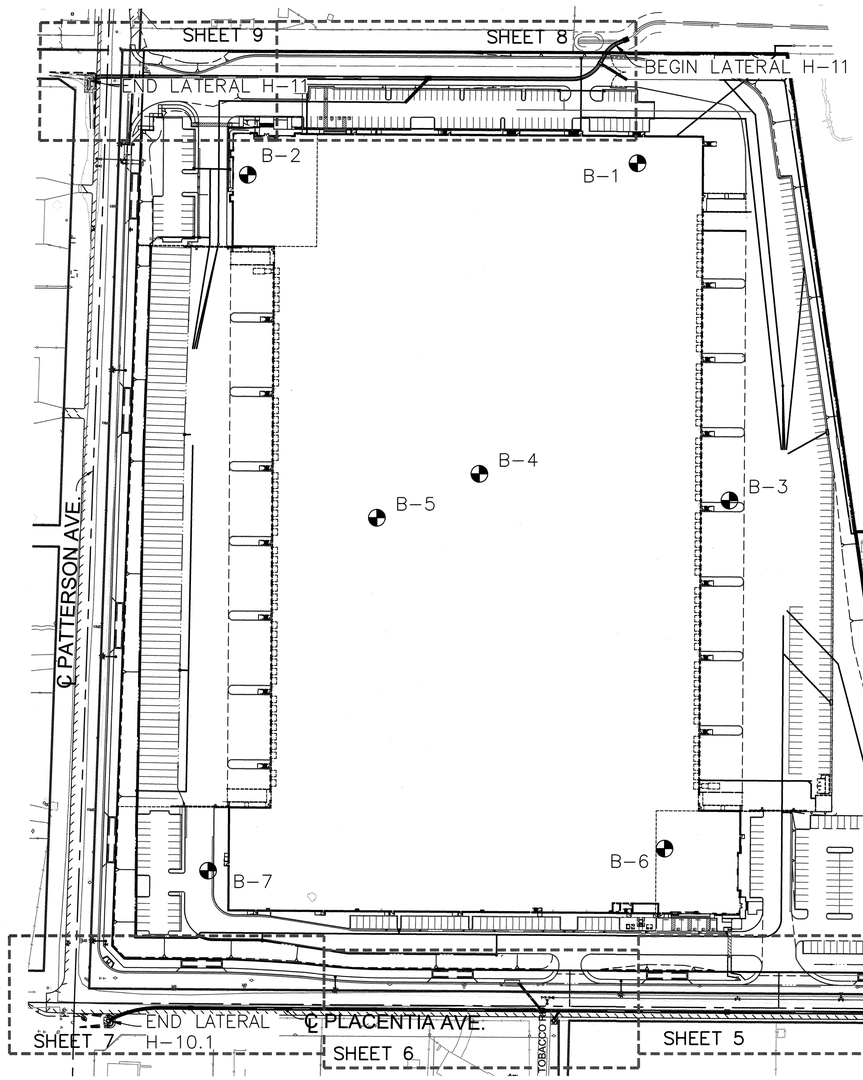
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3076.404	1564.930	2.509	1567.439	92.00	14.57	3.30	1570.74	.00	2.86	2.22	3.000	.000	.00	1 .0
6.890	.0396					.0177	.12	2.51	1.52	1.84	.013	.00	.00	PIPE

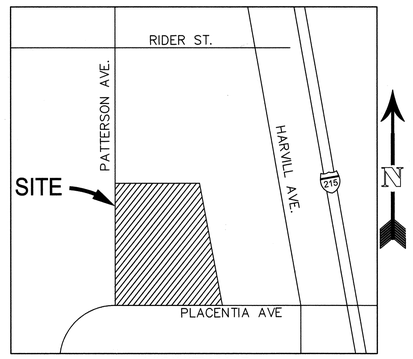
Appendix "H-1" –

Perris Valley MDP Lateral H-10.1 Plans

DWG 4-1173

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT





VICINITY MAP
NOT TO SCALE

SHEET INDEX

	SHEET NO.:
TITLE SHEET	1
LATERAL H-10.1 PLAN & PROFILE	2-7
LATERAL H-11 PLAN & PROFILE	8
LATERAL H-11 PLAN & PROFILE	9
CONNECTOR PIPE PROFILES	10

R.C.F.C. & W.C.D. STANDARD DRAWINGS

MH 252	MANHOLE NO. 2
MH 254	MANHOLE NO. 4
M 803	CONCRETE COLLAR FOR PIPES 12"-66"
CB 100	CATCH BASIN NO. 1
LD 201	LOCAL DEPRESSION NO. 2, CASE B
CB 110	CONCRETE DROP INLET
TS 303	TRANSITION STRUCTURE NO. 3

BASIS OF BEARINGS

BASIS OF BEARINGS S THE C.L. OF PATTERSON AVE PER RS 146/25

BEING: NORTH 00°04'26" WEST

INDEX MAP

100 50 0 100

SCALE 1"=100'

N

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S (DISTRICT) M.O.U. STANDARD SPECIFICATIONS DATED MARCH 2020 AND DISTRICT STANDARD DRAWINGS. FOR THE LATEST STANDARD DRAWINGS, PLEASE REFER TO THE "ENGINEERING TOOLS" PAGE FOUND ON THE "BUSINESS" SECTION OF THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM THE DISTRICT. AFTER THE PERMIT IS ISSUED, THE DISTRICT MUST BE NOTIFIED ONE (1) WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONSTRUCTION MANAGEMENT AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE DISTRICT. THE DISTRICT MUST BE NOTIFIED TWENTY (20) DAYS PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPES REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT (48) HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT AT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD 88).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN DATUM (NAD 83), CALIFORNIA COORDINATE SYSTEM (CCS), ZONE 6 AND EPOCH 2019.30.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "A" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO DISTRICT STANDARD DRAWING NO. M815.
15. BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED 9/2014. LOCATIONS SHOWN ARE APPROXIMATE.
16. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
19. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
20. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
21. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
22. APPROVAL OF THESE PLANS BY DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
23. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
24. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES AND STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2" OVER THE REINFORCING STEEL AND INCREASED TO A MINIMUM OF 3 1/2" OVER REINFORCING STEEL FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20' PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20' PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30' PER SECOND.
25. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO DISTRICT STANDARD DRAWING NO. BOX 401.
26. ROCK FOR ACCESS ROADS, TURN AROUNDS AND OTHER AREAS WITHIN DISTRICT RIGHT OF WAY AS SHOWN ON THE PROJECT DRAWINGS AND AS DIRECTED BY THE ENGINEER SHALL MEET THE REQUIREMENTS FOR 1" X NO. 4 COARSE AGGREGATE AS PER SECTION 90-1.02C(4)(B) OF THE CALTRANS SPECIFICATIONS. X VALUES FOR ROCK GRADATION SHALL BE 75 AND 15 FOR 3/4" AND 3/8" RESPECTIVELY. ROCK SHALL ADDITIONALLY MEET THE SPREADING AND COMPACTION REQUIREMENTS OF SECTIONS 26-1.03D AND 26-1.03E OF THE CALTRANS SPECIFICATIONS. FURTHERMORE, ROCK DEPTH SHALL NOT EXCEED 3" AND SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER. ROCK SHALL NOT CONTAIN RECYCLED CONCRETE PRODUCTS.

RECMD PLAN CHECK OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED
BJ | 7645D | 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

County File # 969-WW

10/7/2021

PPT190008 IP200047

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 80433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: Edwin Quinonez
CHIEF, PLANNING
DATE: 10/13/2021

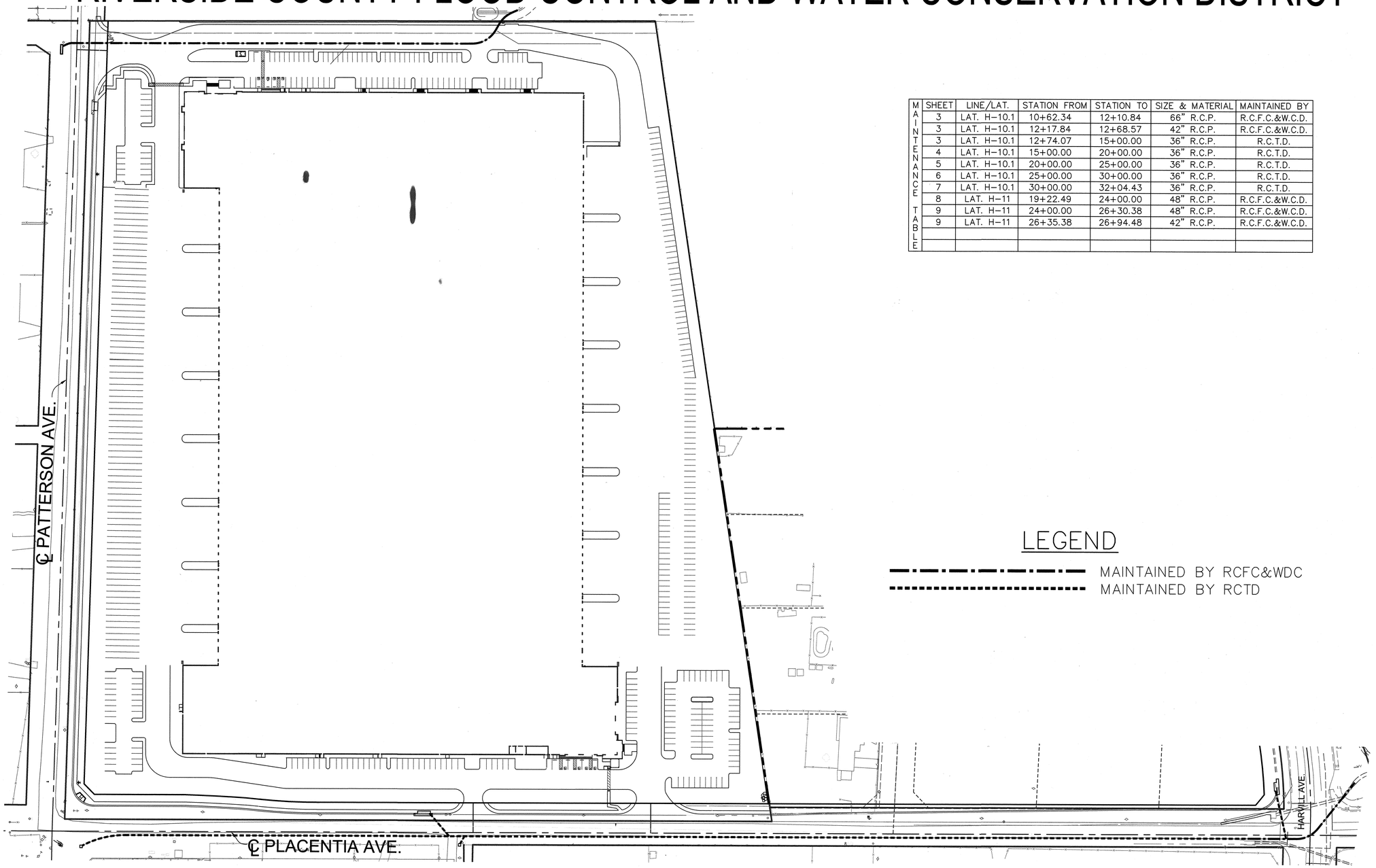
APPROVED BY:
GENERAL MANAGER - CHIEF ENGINEER
DATE: 10/14/2021

PERRIS VALLEY MDP
LATERALS H-10.1 STAGE 2
& H-11 STAGE 4
TITLE SHEET

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 1 OF 10

#969-WW

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



MAINTENANCE TABLE

SHEET	LINE/LAT.	STATION FROM	STATION TO	SIZE & MATERIAL	MAINTAINED BY
3	LAT. H-10.1	10+62.34	12+10.84	66" R.C.P.	R.C.F.C.&W.C.D.
3	LAT. H-10.1	12+17.84	12+68.57	42" R.C.P.	R.C.F.C.&W.C.D.
3	LAT. H-10.1	12+74.07	15+00.00	36" R.C.P.	R.C.T.D.
4	LAT. H-10.1	15+00.00	20+00.00	36" R.C.P.	R.C.T.D.
5	LAT. H-10.1	20+00.00	25+00.00	36" R.C.P.	R.C.T.D.
6	LAT. H-10.1	25+00.00	30+00.00	36" R.C.P.	R.C.T.D.
7	LAT. H-10.1	30+00.00	32+04.43	36" R.C.P.	R.C.T.D.
8	LAT. H-11	19+22.49	24+00.00	48" R.C.P.	R.C.F.C.&W.C.D.
9	LAT. H-11	24+00.00	26+30.38	48" R.C.P.	R.C.F.C.&W.C.D.
9	LAT. H-11	26+35.38	26+94.48	42" R.C.P.	R.C.F.C.&W.C.D.

LEGEND

MAINTAINED BY RCFC&WDC
MAINTAINED BY RCTD

RECMD PLAN CHECK OVERSIGHT ENGINEER: [signature] | REGISTRATION NUMBER: 76450 | DATE SIGNED: 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DANE A. SOMMERS — No. 90335 Exp. 6-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

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REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE
	DESCRIPTION				

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: [signature] DATE: 10-13-2021

APPROVED BY: Edwin Arnaout DATE: 10/13/2021

PERRIS VALLEY MDP
LATERALS H-10.1 STAGE 2
& H-11 STAGE 4

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 2 10

#969-WW

PPT190008 IP200047

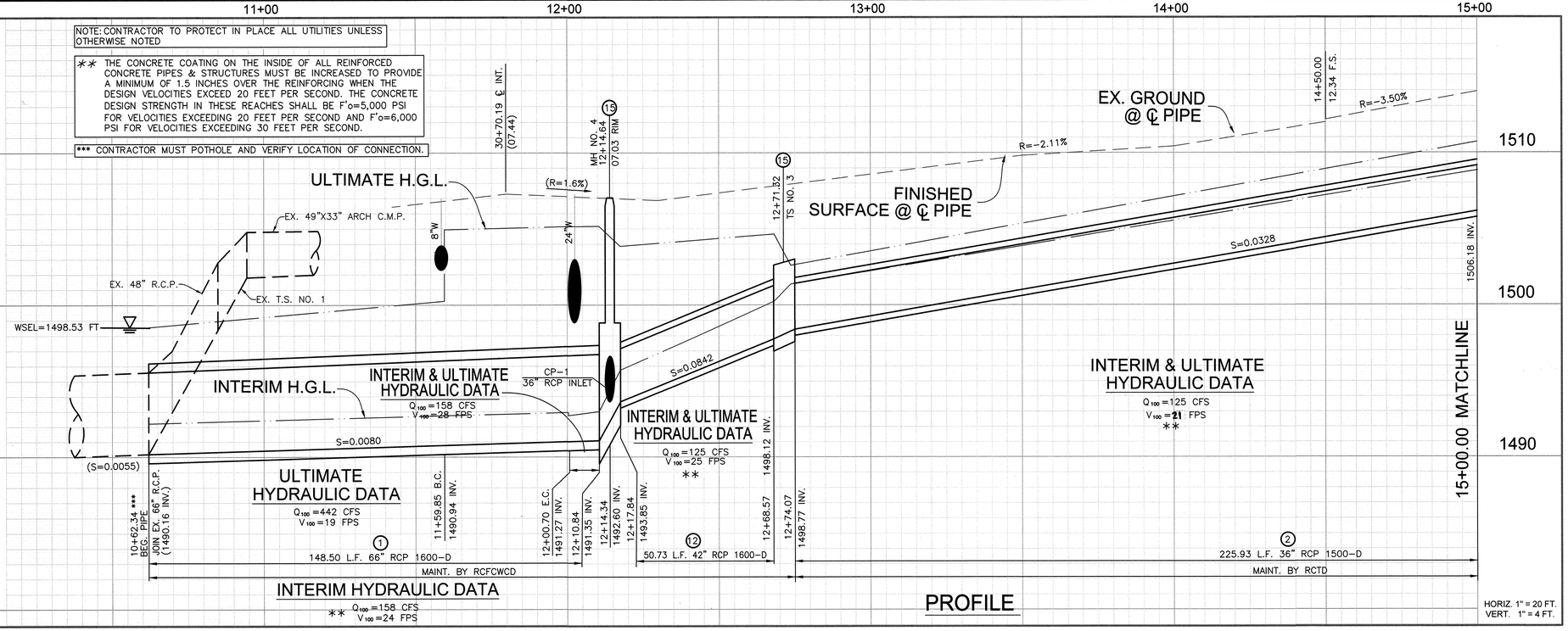
[signature] 10/7/2021

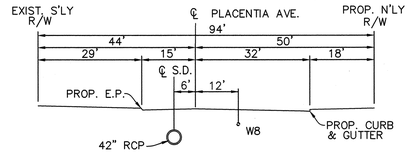
#969-WW

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

*** CONTRACTOR MUST POTHOLE AND VERIFY LOCATION OF CONNECTION.





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PLACENTIA AVE. STA. 12+17.84-12+68.57
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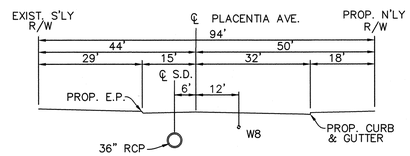

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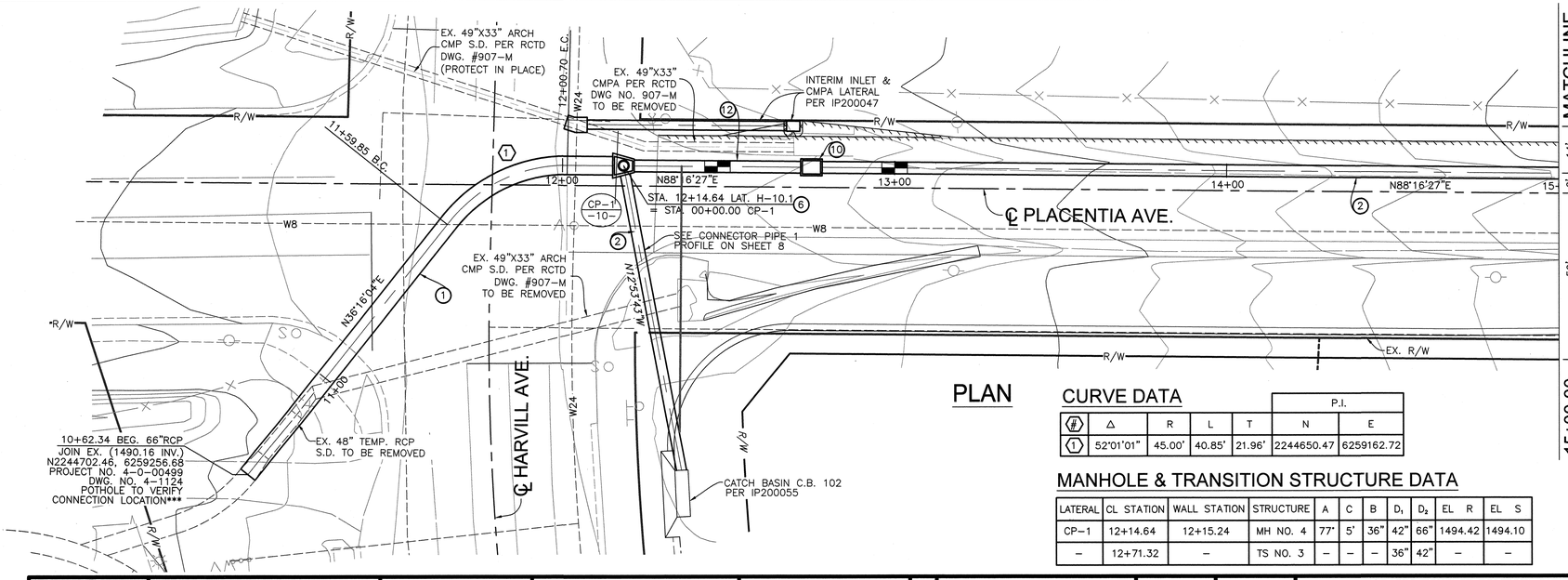


CONSTRUCTION NOTES

1. CONSTRUCT 66" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
2. CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
6. CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
7. CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
10. CONSTRUCT TRANSITION STRUCTURE NO. 3 PER RCFC & WCD STD. DWG. NO. TS303
12. CONSTRUCT 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
15. CONSTRUCT MH NO. 4 PER RCFC & WCD STD. DWG. NO MH254

CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	52°01'01"	45.00'	40.85'	21.96'	2244650.47	6259162.72

MANHOLE & TRANSITION STRUCTURE DATA

LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C	B	D_1	D_2	EL R	EL S
CP-1	12+14.64	12+15.24	MH NO. 4	77'	5'	36"	42"	66"	1494.42	1494.10
–	12+71.32	–	TS NO. 3	–	–	–	36"	42"	–	–

N

0 10 20 40
SCALE: 1"=20'

RECD 10/7/2021

969-WW PPT190008 IP200047

RECM'D PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER 76950 — DATE SIGNED 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE R. SOMMERS No. 76950 Exp. 6-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021
APPROVED BY: Edwin Quinonez DATE: 10/13/2021

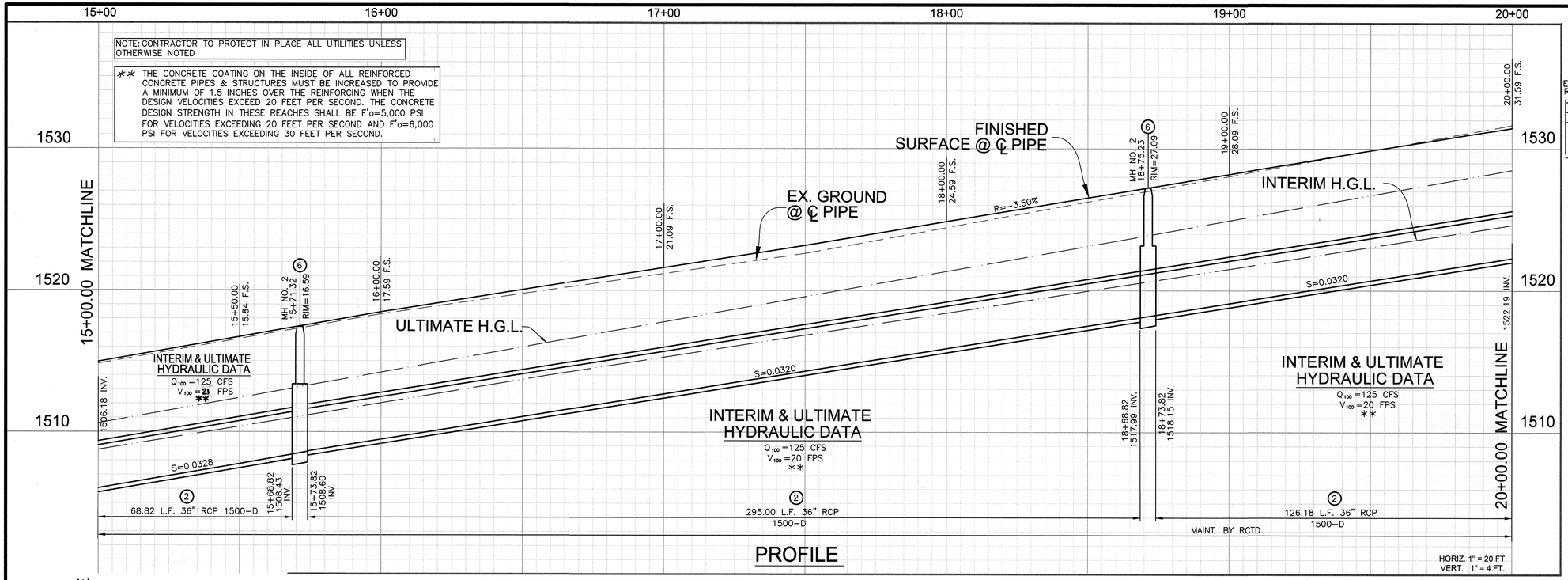
PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 10+62.34 TO 16+00.00

PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 3 10

#969-WW

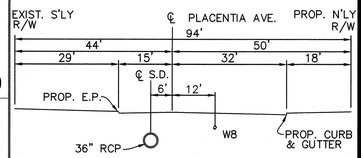
NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

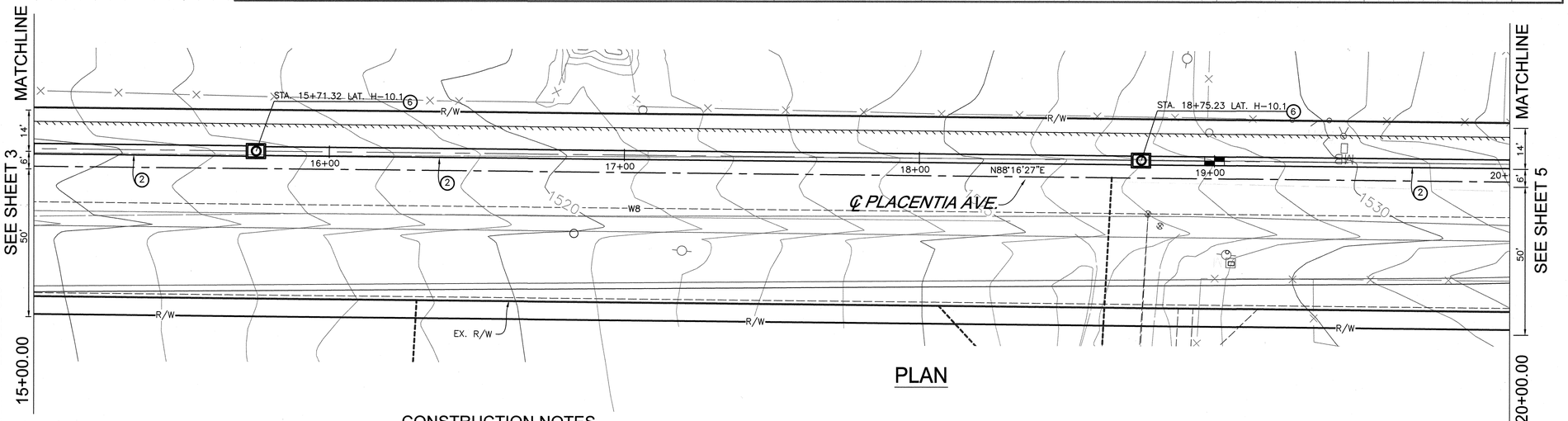


PROFILE

HORIZ. 1" = 20 FT.
VERT. 1" = 4 FT.



TYPICAL SECTION
PLACENTIA AVE. STA. 15+00.00-20+00.00
SCALE: 1"=20'



PLAN

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252

N

0 10 20 40
SCALE: 1"=20' 10/14/2021

RECMD PLAN CHECK OVERSIGHT ENGINEER: Justus — REGISTRATION NUMBER: 76450 — DATE SIGNED: 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DANE A. SOMMERS — No. 90433 — Exp. 6-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

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REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

#969-WW

PPT190008 IP200047

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 15+00.00 TO 20+00.00

PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 4 10

#969-WW

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

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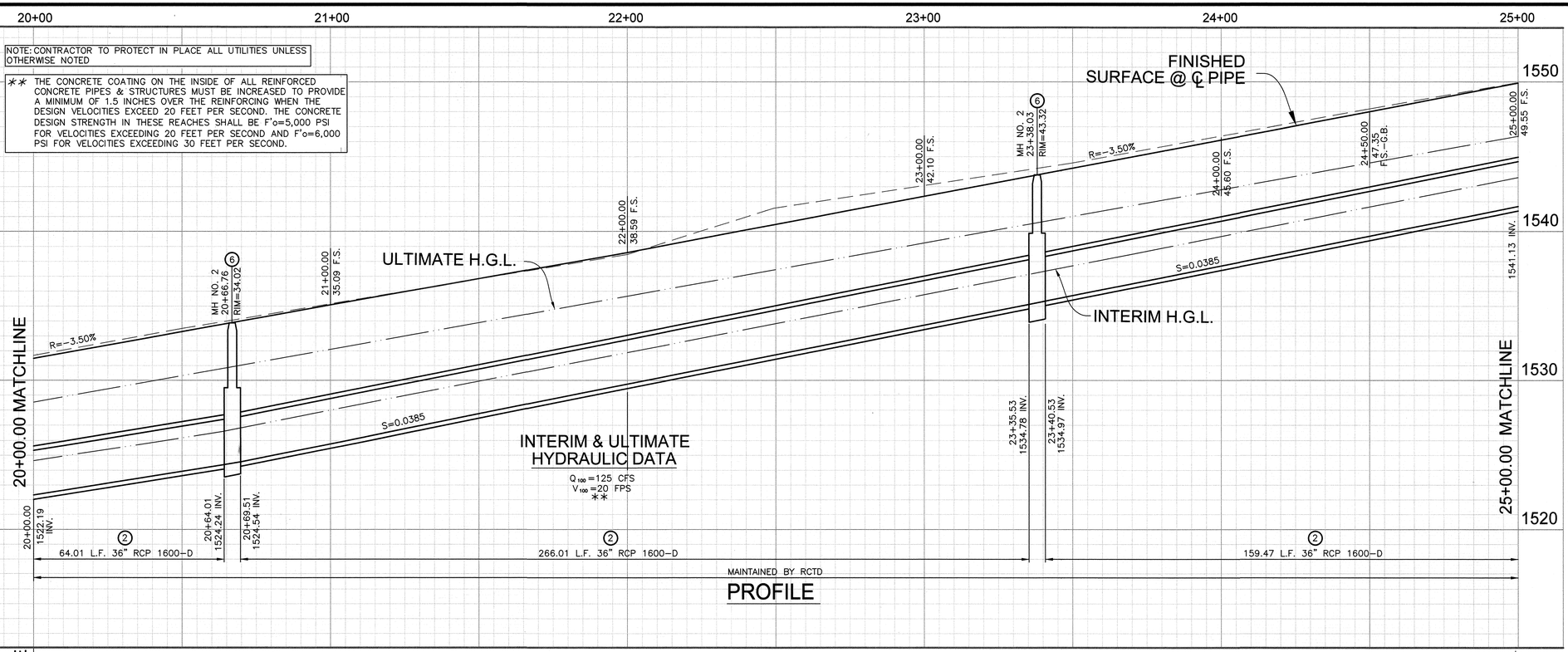
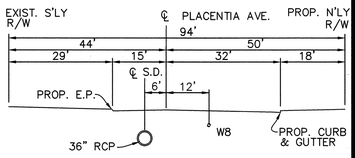
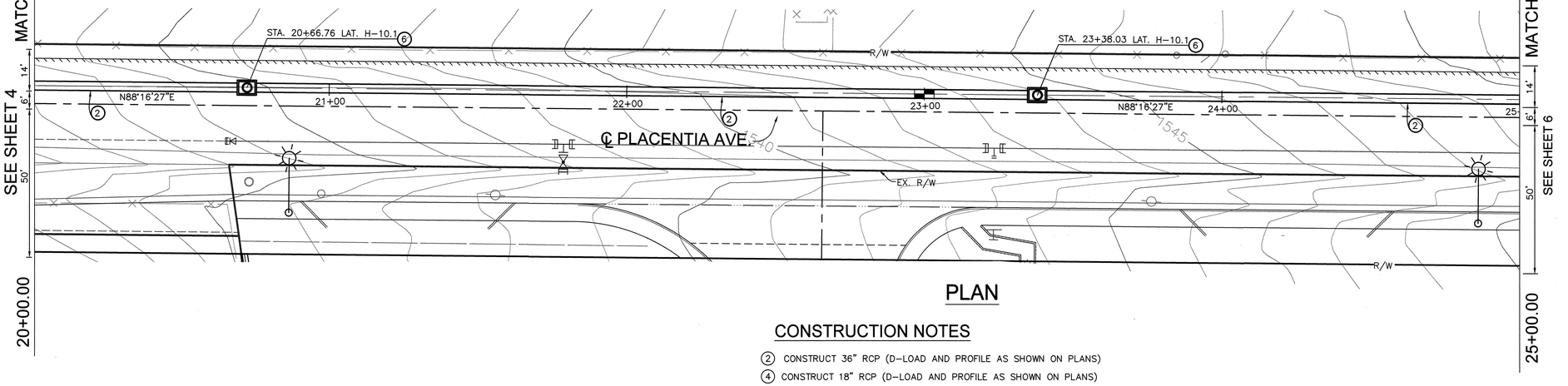


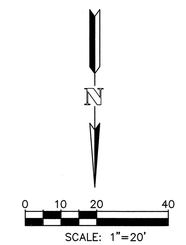
PROFILE



TYPICAL SECTION
PLACENTIA AVE. STA. 20+00.00-25+00.00
SCALE: 1"=20'



PLAN



CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(4) CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.	76450	10/13/21

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE R. SOMMERS No. 19433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 20+00.00 TO 25+00.00

PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 5 10

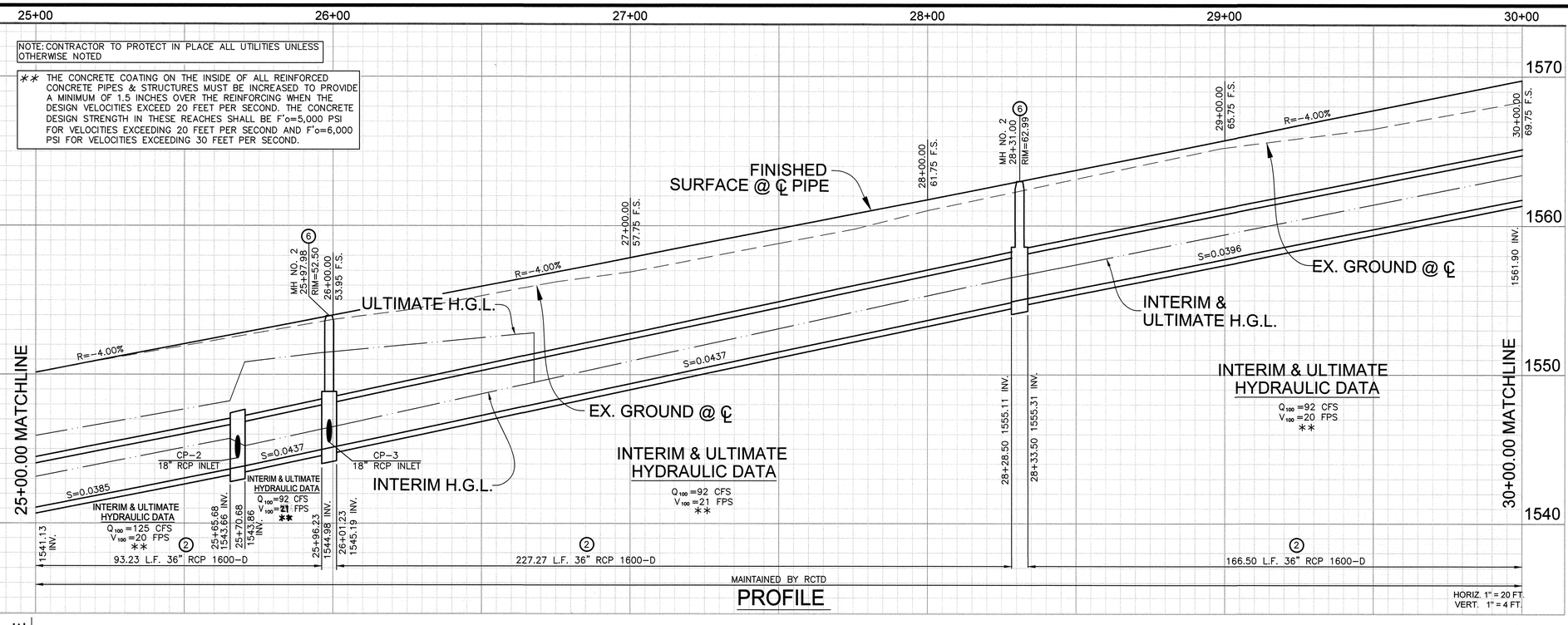
8 CBP 10/7/2021

#969-WW | PPT190008 | IP200047

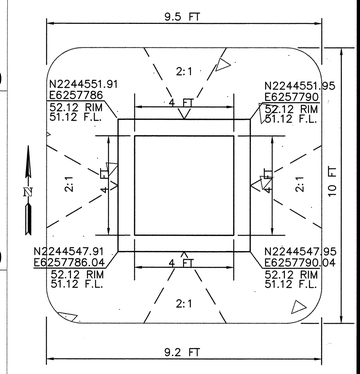
#969-WW

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

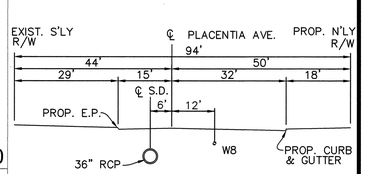


PROFILE

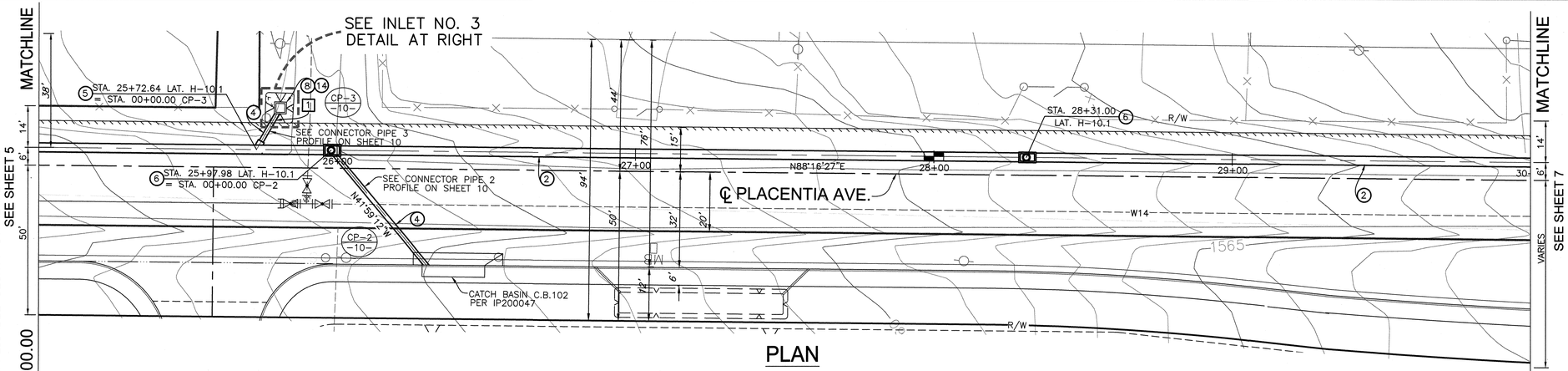


NOTE: SEE CB110 STD DETAIL
T = 12 IN. SUM OF INLET OPENINGS = 16 L.F.
4 L.F. EA. SIDE
6" PCC CONCRETE PAD
F'c=3000 PSI

⑧ INLET NO. 3 DETAIL
NOT TO SCALE



TYPICAL SECTION
PLACENTIA AVE. STA. 25+00.00-30+00.00
SCALE: 1"=20'



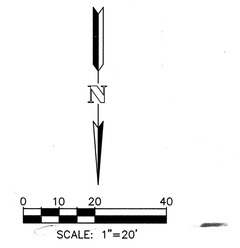
PLAN

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(4) CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(5) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER RCFC&WCD STD. DWG. NO. JS227
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

MANHOLE/JUNCTION STRUCTURE DATA

LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C
CP-2	25+78.70	25+79.63	JS NO. 2	50°	–
CP-3	25+72.64	25+73.70	MH NO. 2	60°	5'



RECMD PLAN CHECK OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED
Bruce | 76450 | 10/13/21
APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DAVID A. SOMMERS — No. 76433 Exp. 9-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

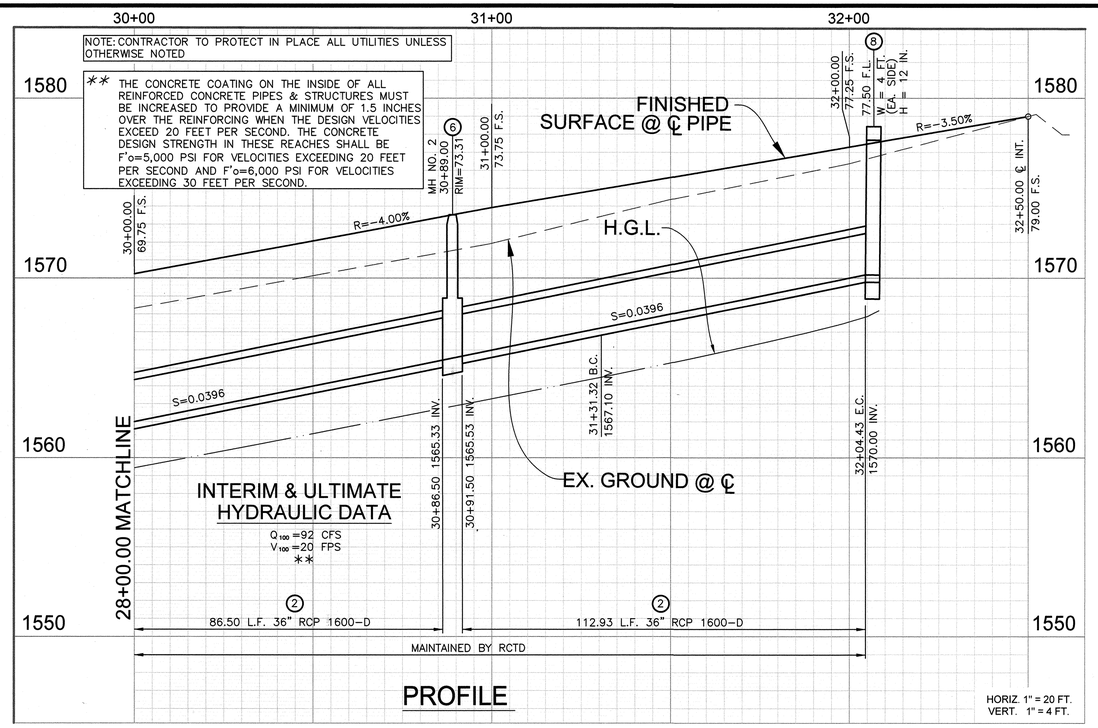
#969-WW
JLR 10/7/2021

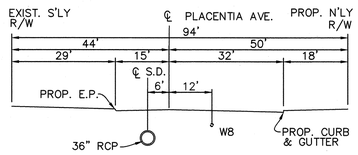
PPT190008 IP200047

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 25+00.00 TO 30+00.00

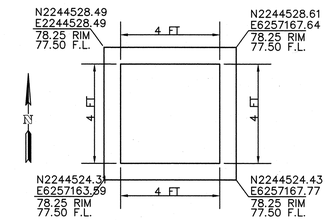
PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 6 10

#969-WW



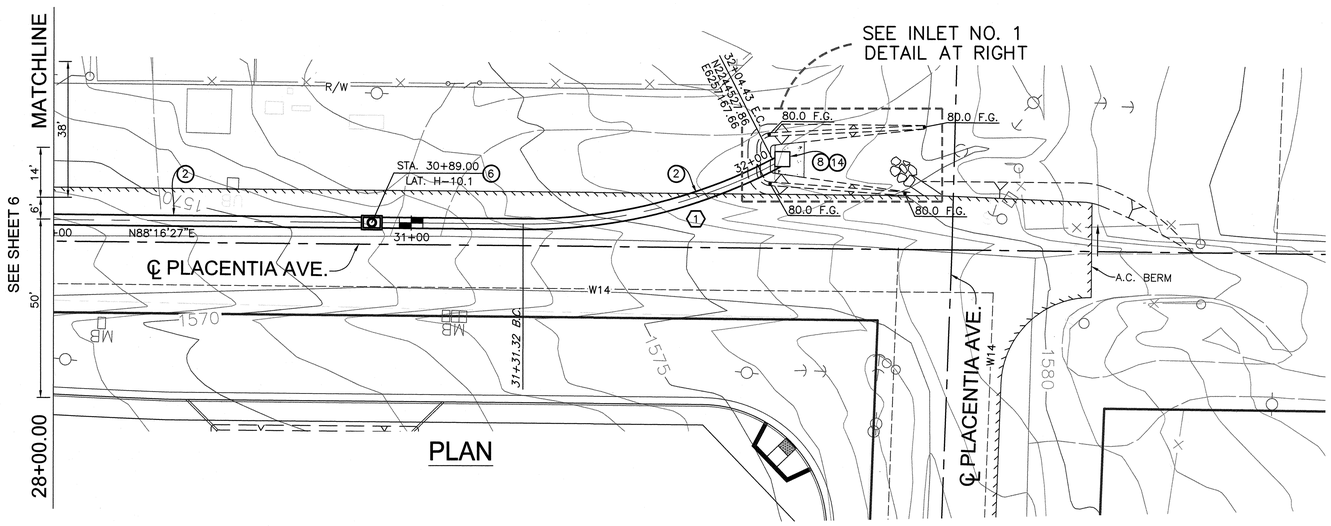


TYPICAL SECTION
PLACENTIA AVE. STA. 30+00.00-31+31.32
SCALE: 1"=20'



NOTE: SEE CB110 STD DETAIL T = 12 IN.
SUM OF INLET OPENINGS = 16 L.F.
4 L.F. EA. SIDE

(8) INLET NO. 1 DETAIL
NOT TO SCALE



CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	27°55'48"	150.00'	73.12'	37.30'	2244546.31	6257200.08

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

N

0 10 20 40
SCALE: 1"=20'

RECMD PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER — DATE SIGNED
76950 — 10/13/21
APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DANE A. SOMMERS — No. 80433 — Exp. 9-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
PB NUMBER: PB/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE
	REVISIONS	ENGINEER		RCFC & WCD	

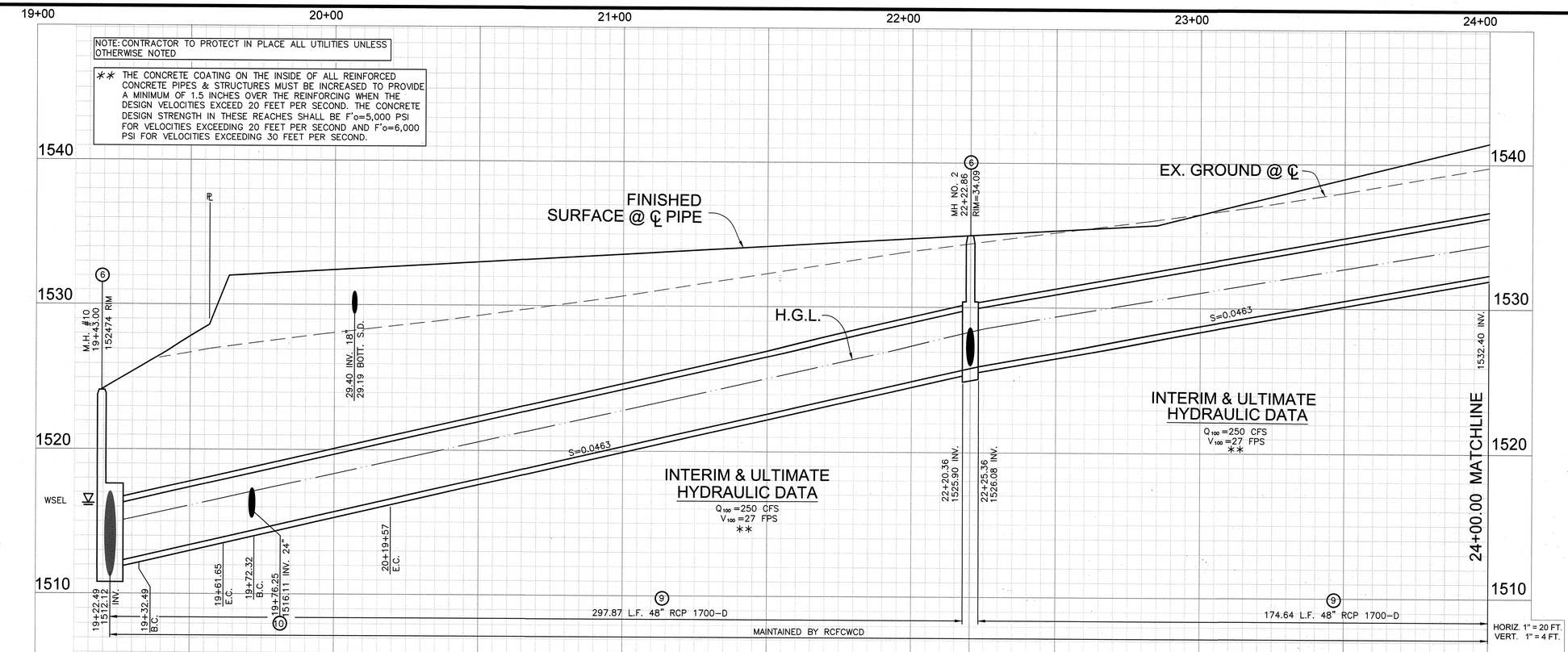
PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 28+00.00 TO 32+58.78

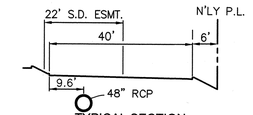
PPT190008 IP200047
PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 7 10

#969-WW

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

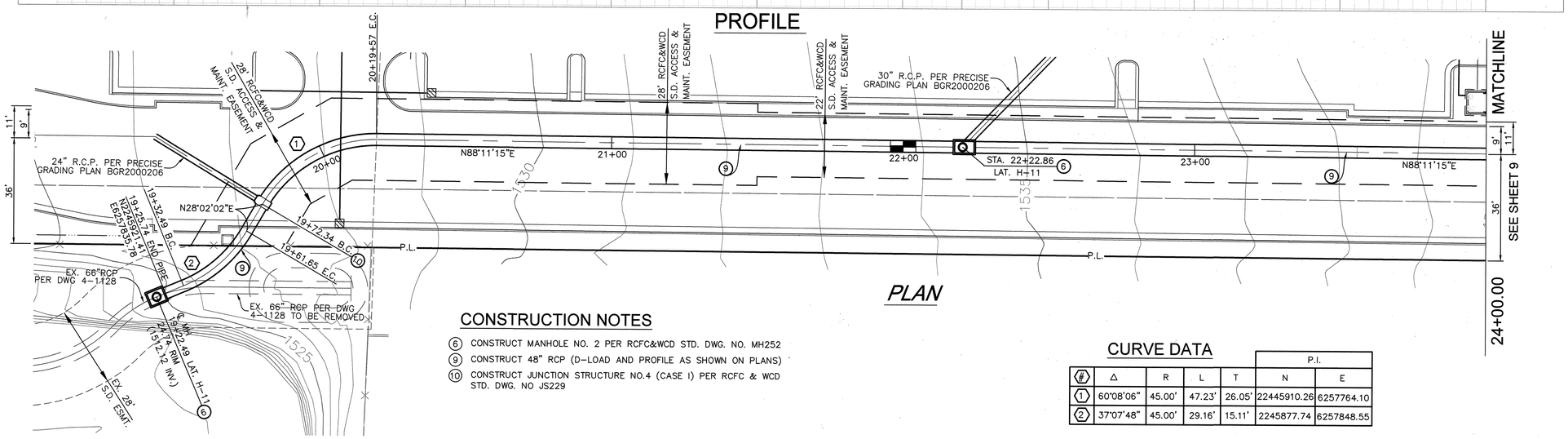
** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.





TYPICAL SECTION
PRIVATE DRIVE STA. 19+48.25-24+00.00
SCALE: 1"=20'

PROFILE



PLAN

CONSTRUCTION NOTES

(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(9) CONSTRUCT 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(10) CONSTRUCT JUNCTION STRUCTURE NO.4 (CASE I) PER RCFC & WCD STD. DWG. NO JS229

CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	60°08'06"	45.00'	47.23'	26.05'	22445910.26	6257764.10
2	37°07'48"	45.00'	29.16'	15.11'	2245877.74	6257848.55

N

0 10 20 40
SCALE: 1"=20'

RECMD PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER 76150 — DATE SIGNED 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE R. SOMMERS No. 80433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021
APPROVED BY: DATE: 10/13/2021

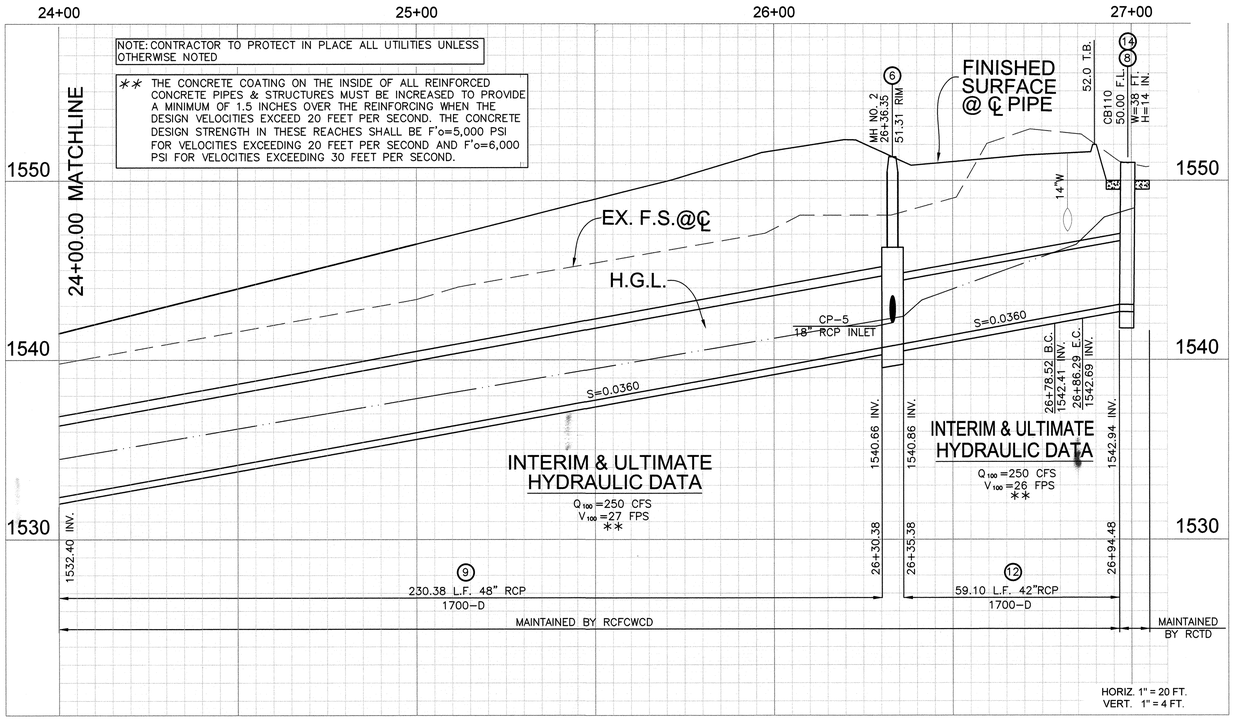
#969-WW

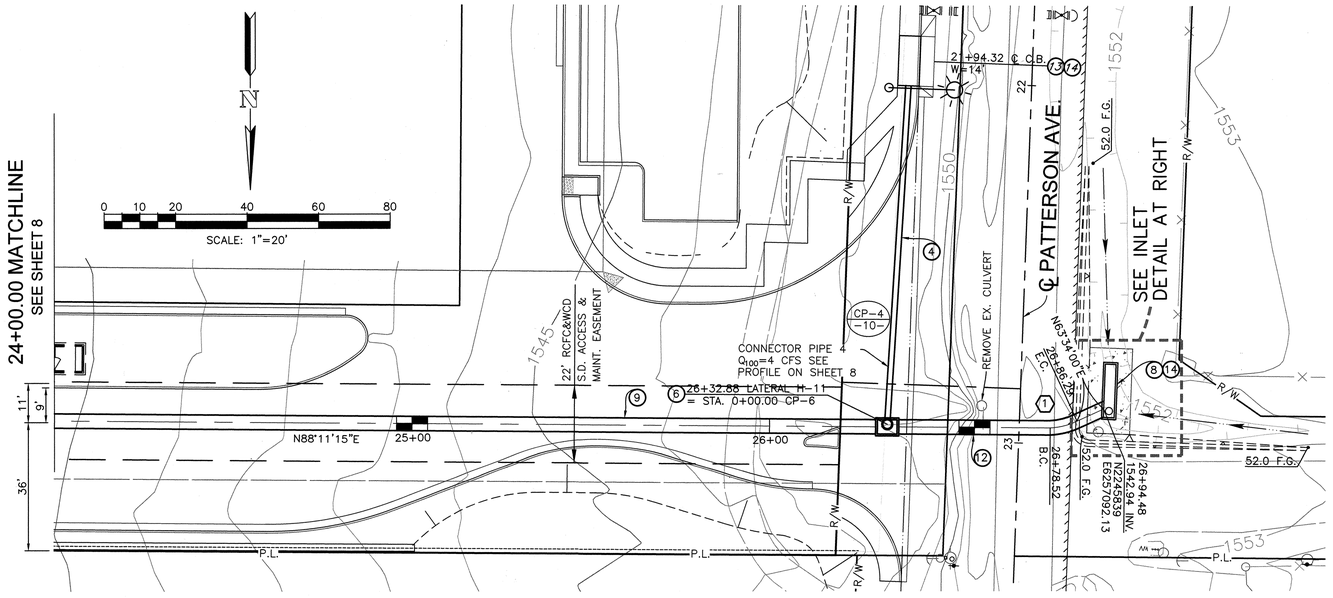
PPT190008 IP200047

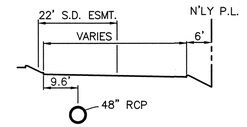
PERRIS VALLEY MDP
LATERAL H-11 STAGE 4
STA. 19+50.00 TO 24+00.00

PROJECT NO. 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 8 10

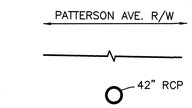
#969-WW







TYPICAL SECTION
PRIVATE DRIVE STA. 24+00.00-26+30.38
SCALE: 1"=20'



TYPICAL SECTION
PRIVATE DRIVE STA. 26+35.38-26+94.48
NO SCALE

MANHOLE DATA

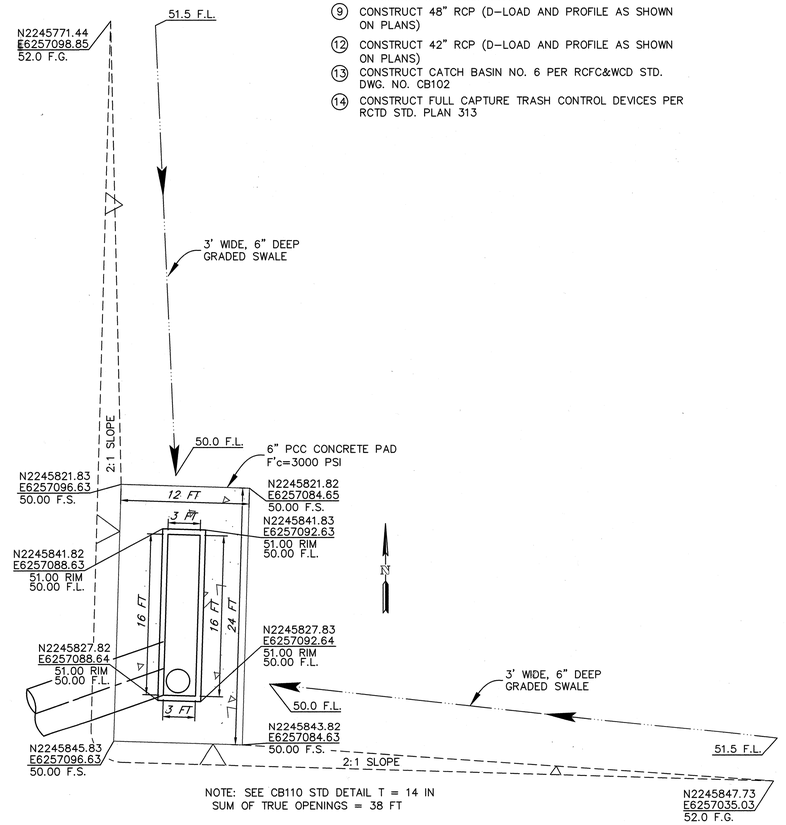
LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C
CP-4	26+36.35	26+36.35	MH NO. 2	87°	5'

CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	23°10'45"	19.22'	7.78'	3.94'	22445825.65	6257848.55

CONSTRUCTION NOTES

(4) CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(5) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER RCFC&WCD STD. DWG. NO. JS227
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. CB110
(9) CONSTRUCT 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(12) CONSTRUCT 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(13) CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313



NOTE: SEE CB110 STD DETAIL T = 14 IN
SUM OF TRUE OPENINGS = 38 FT

(8) INLET DETAIL
NOT TO SCALE

RECMD PLAN CHECK OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED
76450 | 10/13/21
APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 19433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-13 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021
APPROVED BY: Edwin Quintero DATE: 10/13/2021

PERRIS VALLEY MDP
LATERAL H-11 STAGE 4
STA. 24+00.00 TO 26+89.73

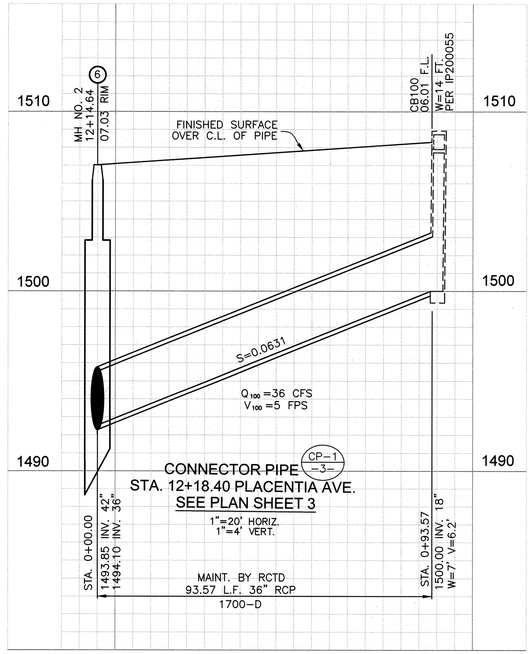
PROJECT NO. 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 9 10

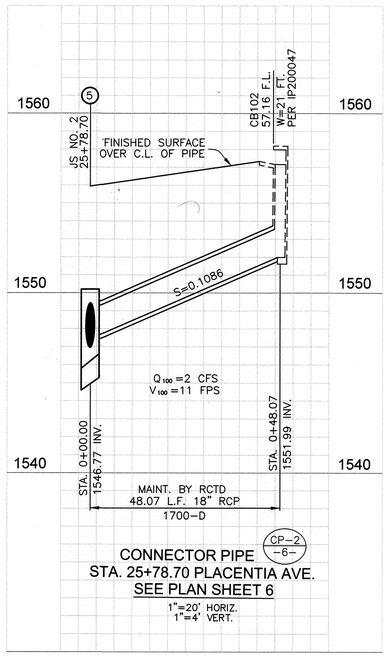
#969-WW

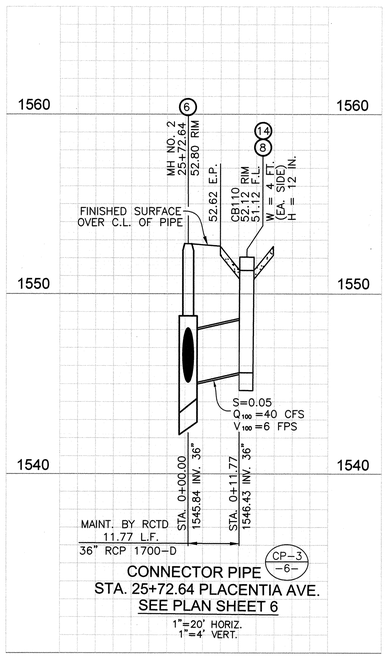
PPT190008 IP200047

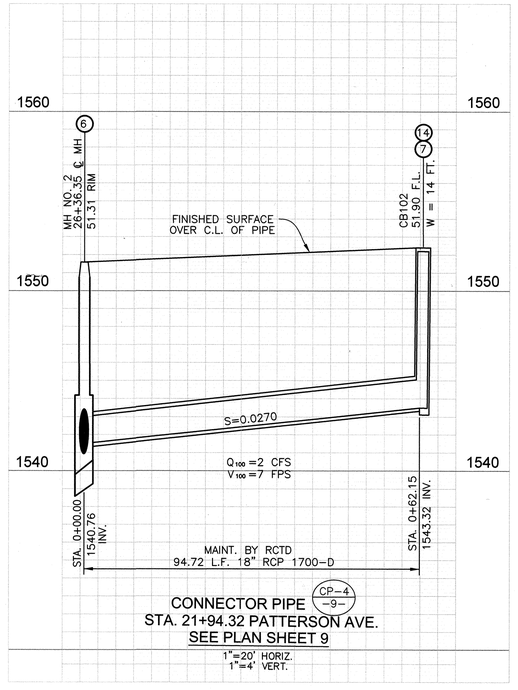
#969-WW

PROFILE SCALE
HORIZ. 1" = 20 FT.
VERT. 1" = 4 FT.









CONSTRUCTION NOTES

(5) CONSTRUCT CONCRETE COLLAR PER RCFC&WCD STD. DWG. NO. M803
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(7) CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. CB110
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	[signature]	76950	10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 30433 Exp. 6-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

#969-WW
JLSQ 10/7/2021

PPT190008 IP200047

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
& H-11 STAGE 4
CONNECTOR PIPE PROFILES

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 10 10

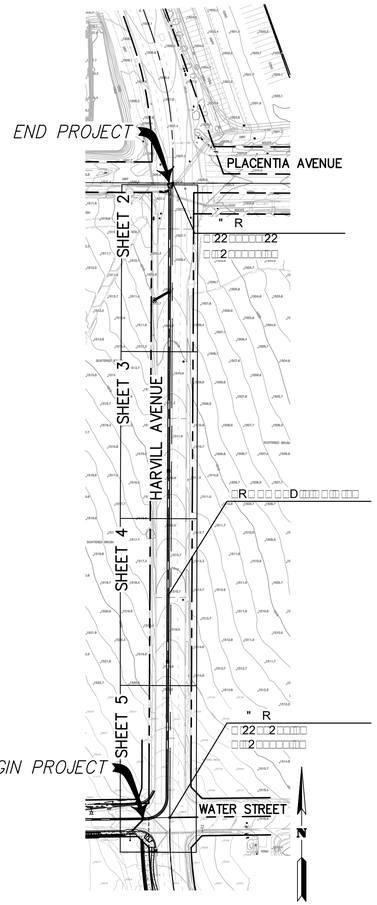
#969-WW

Appendix "H-1" –

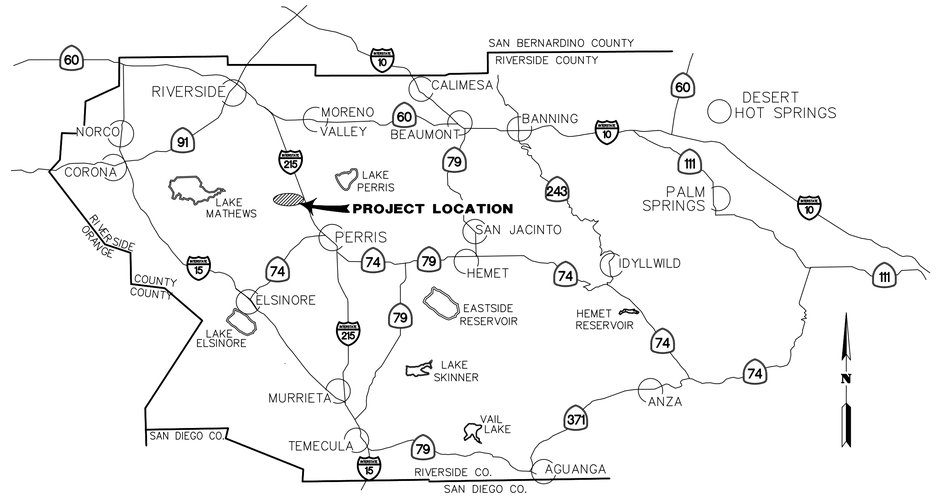
Perris Valley MDP Lateral H-10 Plans

PPT-220002

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



INDEX MAP
1" = 150'



VICINITY MAP
N.T.S.

BASIS OF BEARINGS:
BEARINGS SHOW HEREON ARE BASED ON THE BEARING BETWEEN CORS (OR GPS) "PPBF" AND CORS (OR GPS) "MLFP" BEING NORTH 53°20'18" WEST PER RECORDS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR.

INDEX

	SHEET NO.
TITLE SHEET	1
PLAN & PROFILE	2–6

R.C.F.C & W.C.D STANDARD DRAWINGS

CB108	36" CMP INLET
JS227	JUNCTION STRUCTURE NO. 2
MH252	MANHOLE NO. 2
MH254	MANHOLE NO. 4
M803	CONCRETE COLLAR
M816	CONCRETE BULKHEAD

NOTICE TO CONTRACTOR

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND ELEVATION OF THE EXISTING FACILITIES PRIOR TO THE START OF ANY CONSTRUCTION.

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S M.O.U STANDARD SPECIFICATIONS DATED MARCH 2020, AND THE DISTRICT'S STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM THE DISTRICT. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONSTRUCTION MANAGEMENT AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE DISTRICT. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY–EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NAVD 88).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON AN ASSUMED COORDINATE SYSTEM.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "A" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO THE DISTRICTS STANDARD DRAWING NO. M815
15. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
16. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
17. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
18. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
19. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
20. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
21. APPROVAL OF THESE PLANS BY THE DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
22. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
23. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES OR STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1–1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3–1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
24. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO THE DISTRICT STANDARD DRAWING NO. BOX 401.
25. TWO HYDRAULIC GRADE LINES ARE SHOWN ON THE STORM DRAIN PROFILE FOR REFERENCE. REFLECTING THE RATIONAL METHOD CALCULATED FLOWS AND THE PRORATED FLOWS FROM THE MASTER DRAINAGE PLAN.

IP 220057
PPT–220002

RECMD	COUNTY OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER — JOHNNY MURAD — NO. 67512 — EXPIRATION 6-30-2023 — CIVIL — STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799

PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD

R.C.E.	EXPIRES	DATE
67512	6-30-23	

DESIGNED BY: MG
DRAWN BY: H–Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
PB NUMBER:

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM–432 ADJUSTED 1992
AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3–1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.

ELEVATION = 1455.11' (NAVD88)

REF.	REVISIONS	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL: CHIEF OF PLANNING DATE:

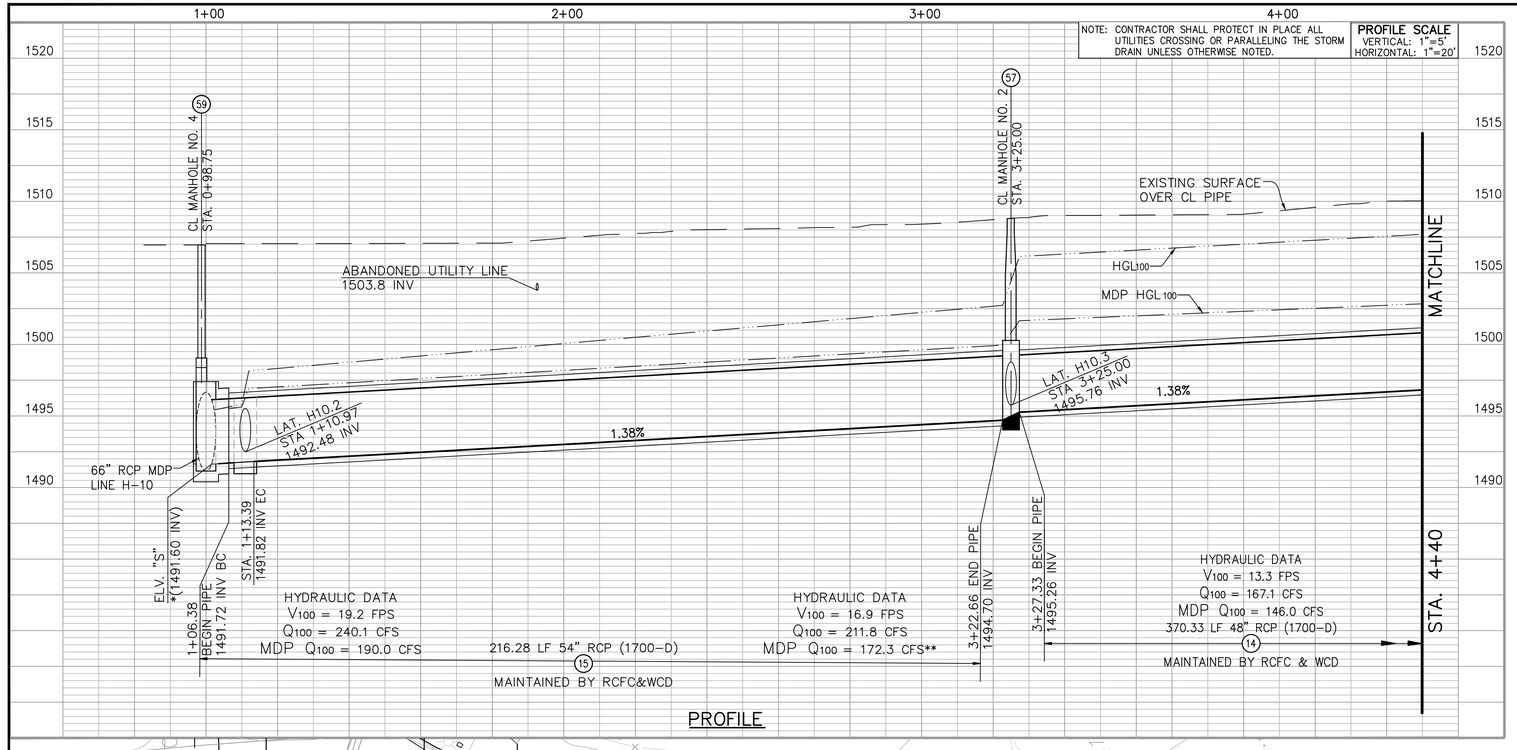
APPROVED BY: GENERAL MANAGER – CHIEF ENGINEER DATE:

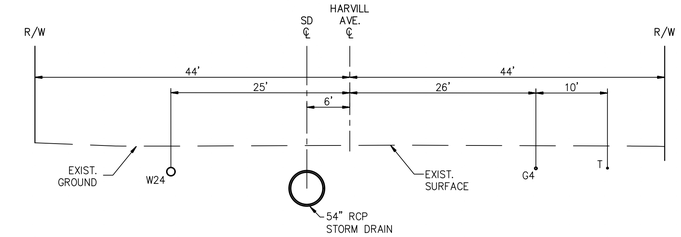
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 1 OF 6

D:\R\...\...dwg Layout: D Date: ... DR: ...

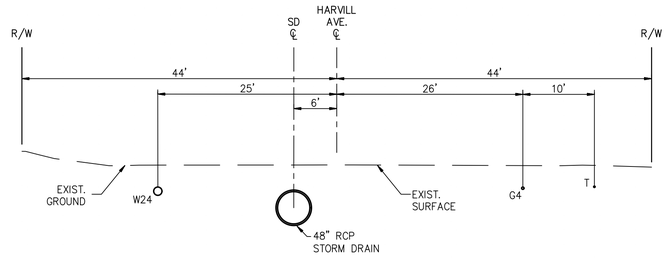




SECTION AT STA 1+68.00

TYPICAL FROM STA. 1+00.00 TO 3+22.66

10' 0 10'

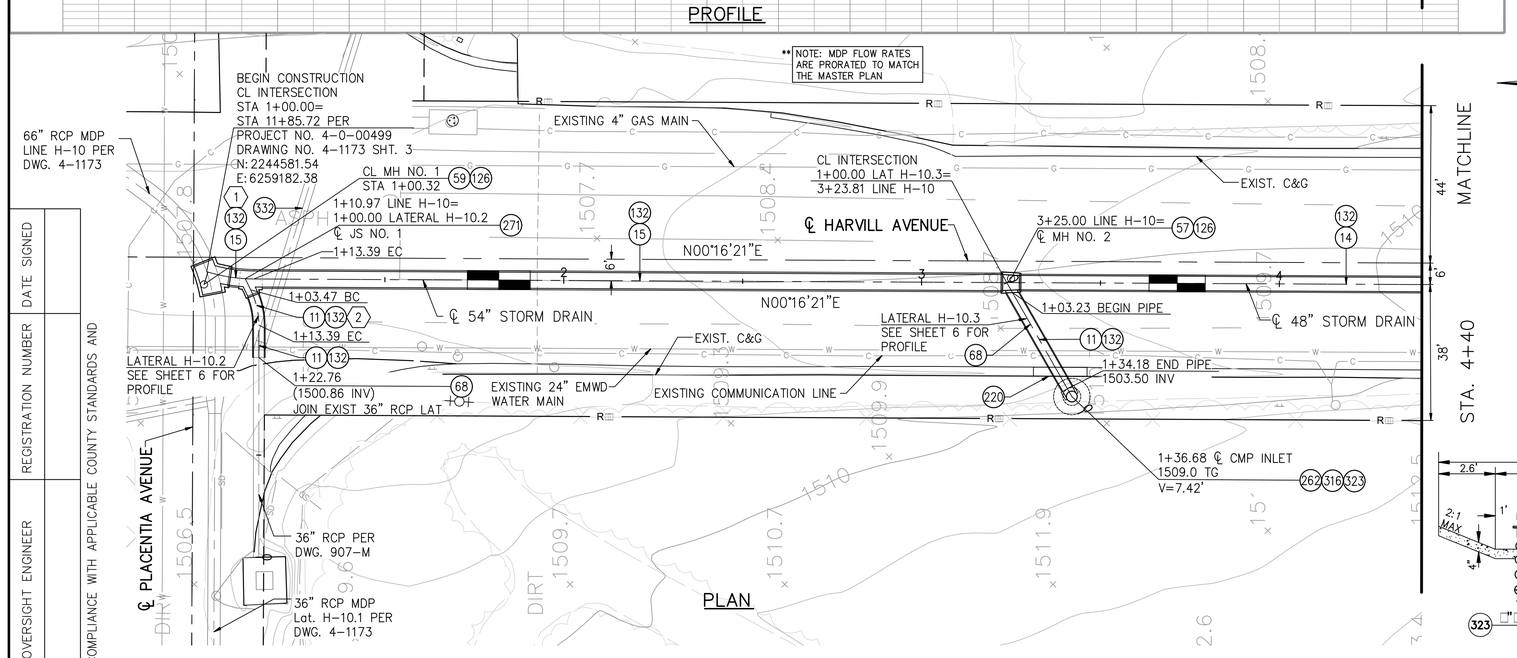


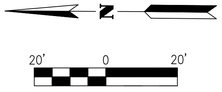
SECTION AT STA 3+90.00

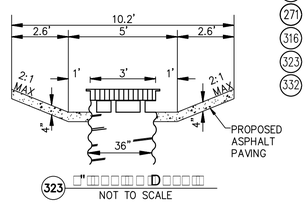
TYPICAL FROM STA. 3+27.33 TO 4+40.00

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
H-10	1+00.00	1+06.38	MH NO. 1	45°	4.85'
H-10.2	1+10.97	1+12.15	JS NO. 1	45°	4.81'
H-10.3	3+25.00	3+25.04	MH NO. 2	60°	3.23'

CURVE DATA		①	②
R		45.00'	22.50'
∆		17°02'51.72"	26°02'53.88"
L		13.39'	10.23'
T		6.74'	5.20'
B.C.		1+00.00	1+03.47
E.C.		1+13.39	1+13.69
P.I.	NORTHING	2244575.10	2244566.97
	EASTING	6259180.38	6259172.63







CONSTRUCTION NOTES

(11) INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(15) INSTALL 54" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
(59) CONSTRUCT TRANSITION STRUCTURE NO.3 PER RCFC&WCD STD. PLAN TS303
(68) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. PLAN M803
(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
(220) SAWCUT AND REMOVE EXISTING CURB & GUTTER AND REPLACE IN KIND
(262) GRADE AROUND RISER TO ALLOW FOR A 1.3' DEPRESSION WITH 2:1 MAX SIDES
(271) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER R.C.F.C. & W.C.D. STD. PLAN JS227
(316) CONSTRUCT CMP INLET PER R.C.F.C. & W.C.D. STD. PLAN CB108
(323) INSTALL 4" MIN. AC PAVING AROUND THE RISER
(332) REMOVE CONFLICTING PORTION OF STORM DRAIN, ABANDON AND BACKFILL WITH SAND

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

DATE SIGNED | REGISTRATION NUMBER | COUNTY OVERSIGHT ENGINEER | RECMD

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2023 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600 TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992
AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.
ELEVATION = 1455.11' (NAVD88)

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

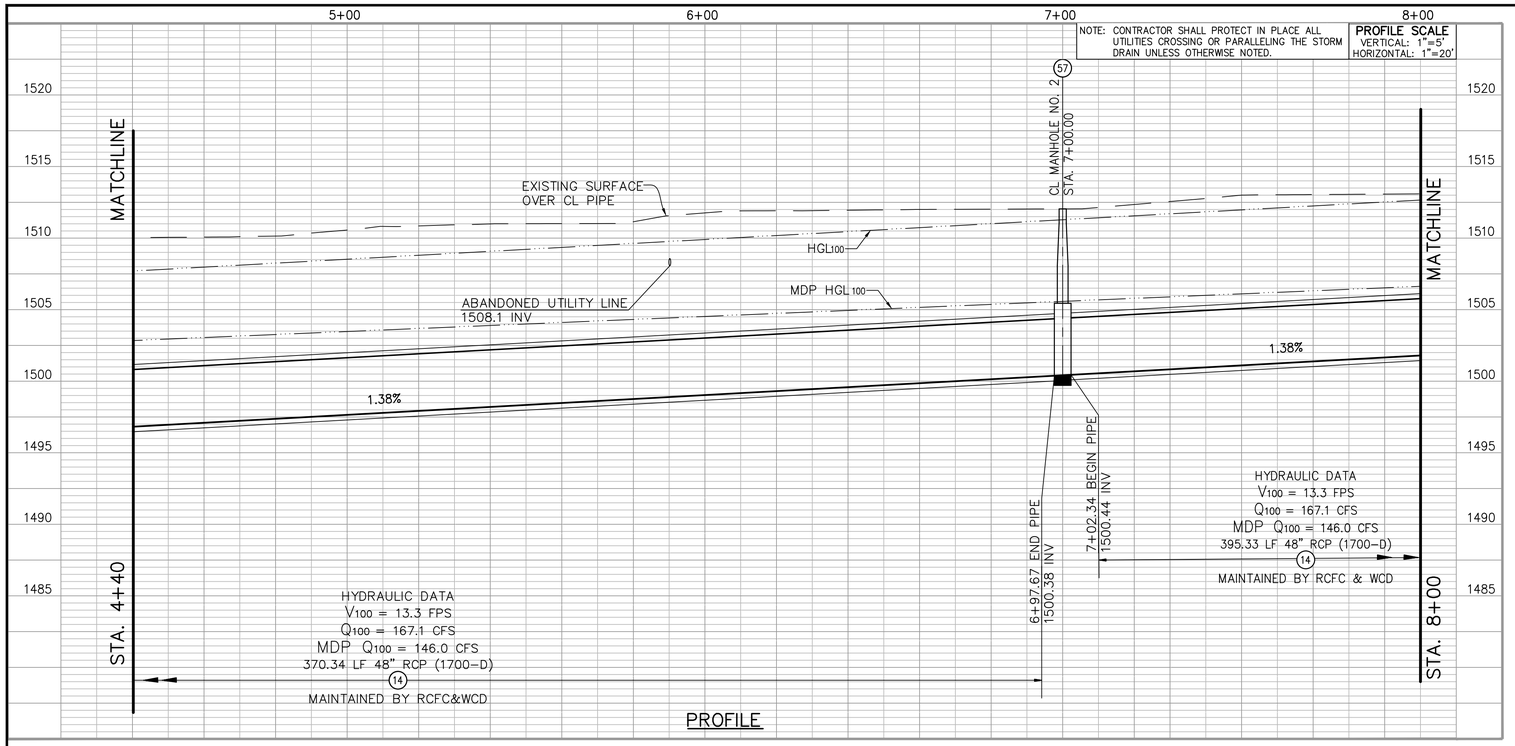
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: CHIEF OF PLANNING DATE:
APPROVED BY: GENERAL MANAGER - CHIEF ENGINEER DATE:

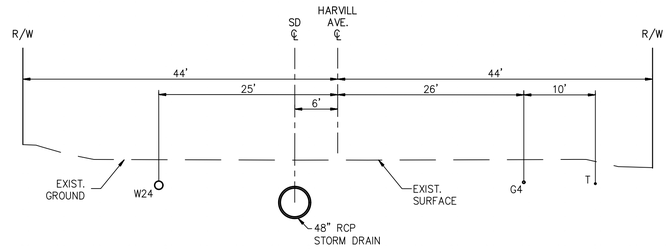
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 1+00.00 TO 4+40.00

PROJECT NO. ---
DRAWING NO. ----
SHEET NO. 2 OF 6

D:\Projects\projects\Perris Valley MDP\Line H-10\Plans\Harvill Ave\Harvill Ave_Sheet 2.dgn 2/2/2023

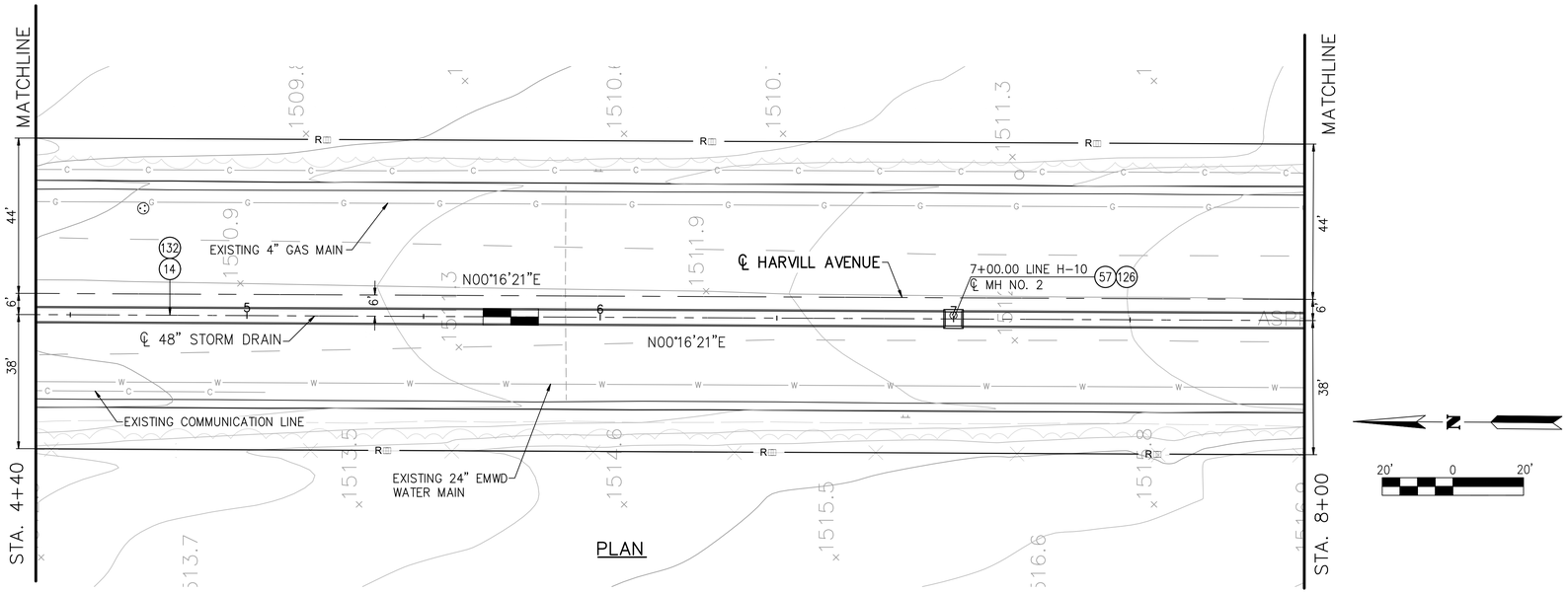




SECTION AT STA 6+26.50

TYPICAL FROM STA. 4+40.00 TO 8+00.00

10' 0 10'



MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	7+00.00	–	MH NO. 3	–	–

20' 0 20'

CONSTRUCTION NOTES

(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252

(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED

(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

RECMD | COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2023 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799

PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992 AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.
ELEVATION = 1455.11' (NAVD88)

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY:
CHIEF OF PLANNING
DATE:

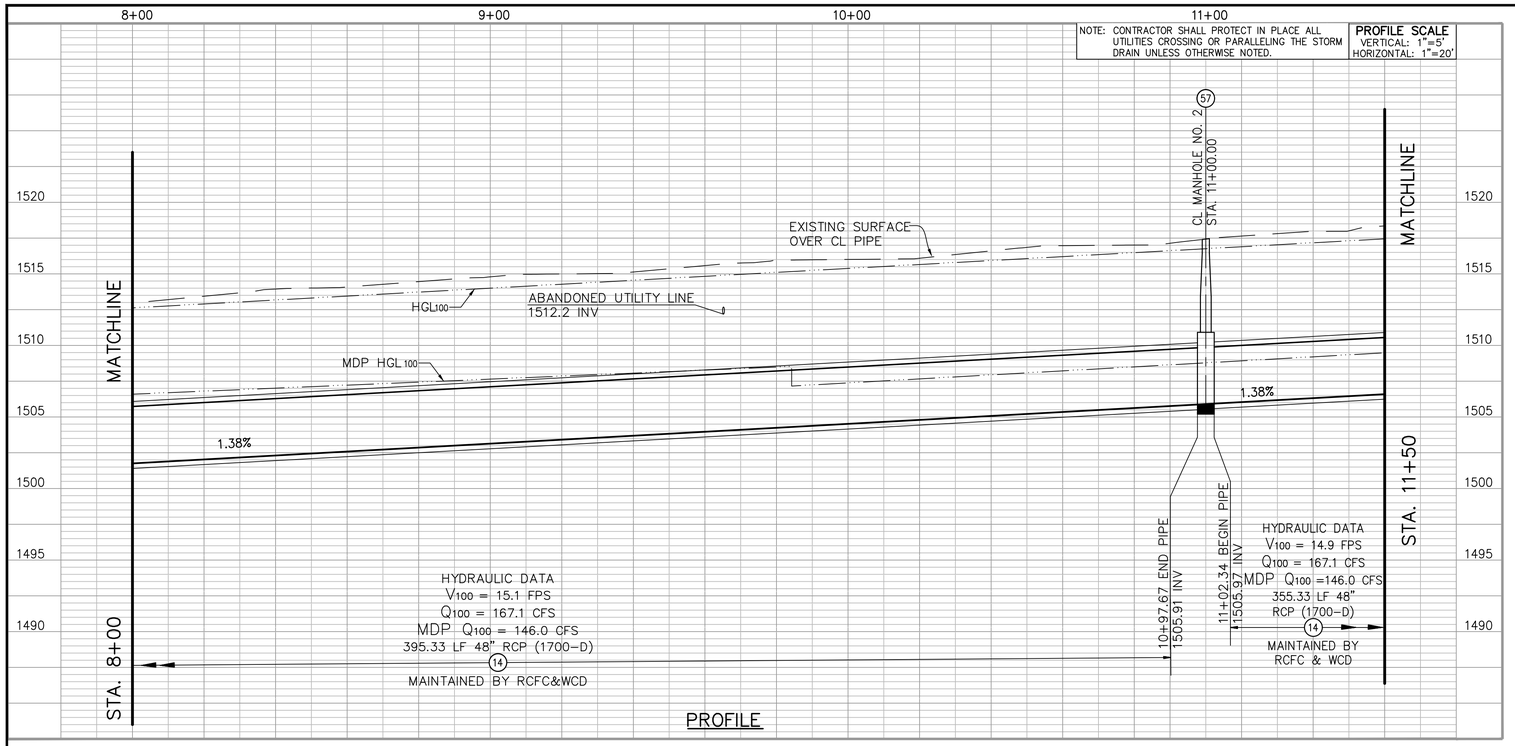
APPROVED BY:
GENERAL MANAGER – CHIEF ENGINEER
DATE:

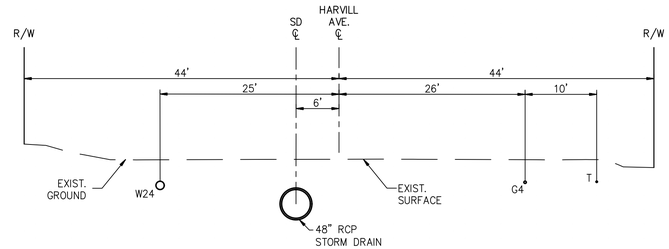
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 4+40.00 TO 8+00.00

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 3 OF 6

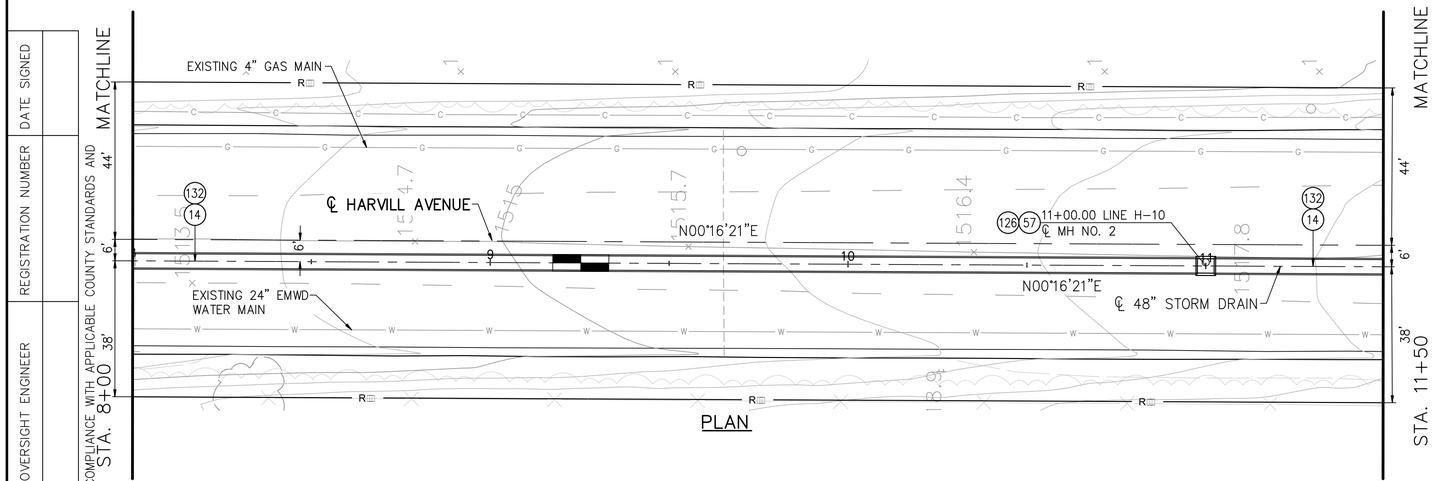
D:\R\[illegible]\DR_2.dgn 12/2/2022





SECTION AT STA 9+27.00
TYPICAL FROM STA. 8+00.00 TO 11+50.00

10' 0 10'



20' 0 20'

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	11+00.00	–	MH NO. 4	–	–

CONSTRUCTION NOTES

(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
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(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
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* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

RECMD | COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER — JOHNNY MURAD — NO. 67512 — EXPIRATION 6-30-2023 — CIVIL — STATE OF CALIFORNIA

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PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992 AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.

ELEVATION = 1455.11' (NAVD88)

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: _____ CHIEF OF PLANNING DATE: _____

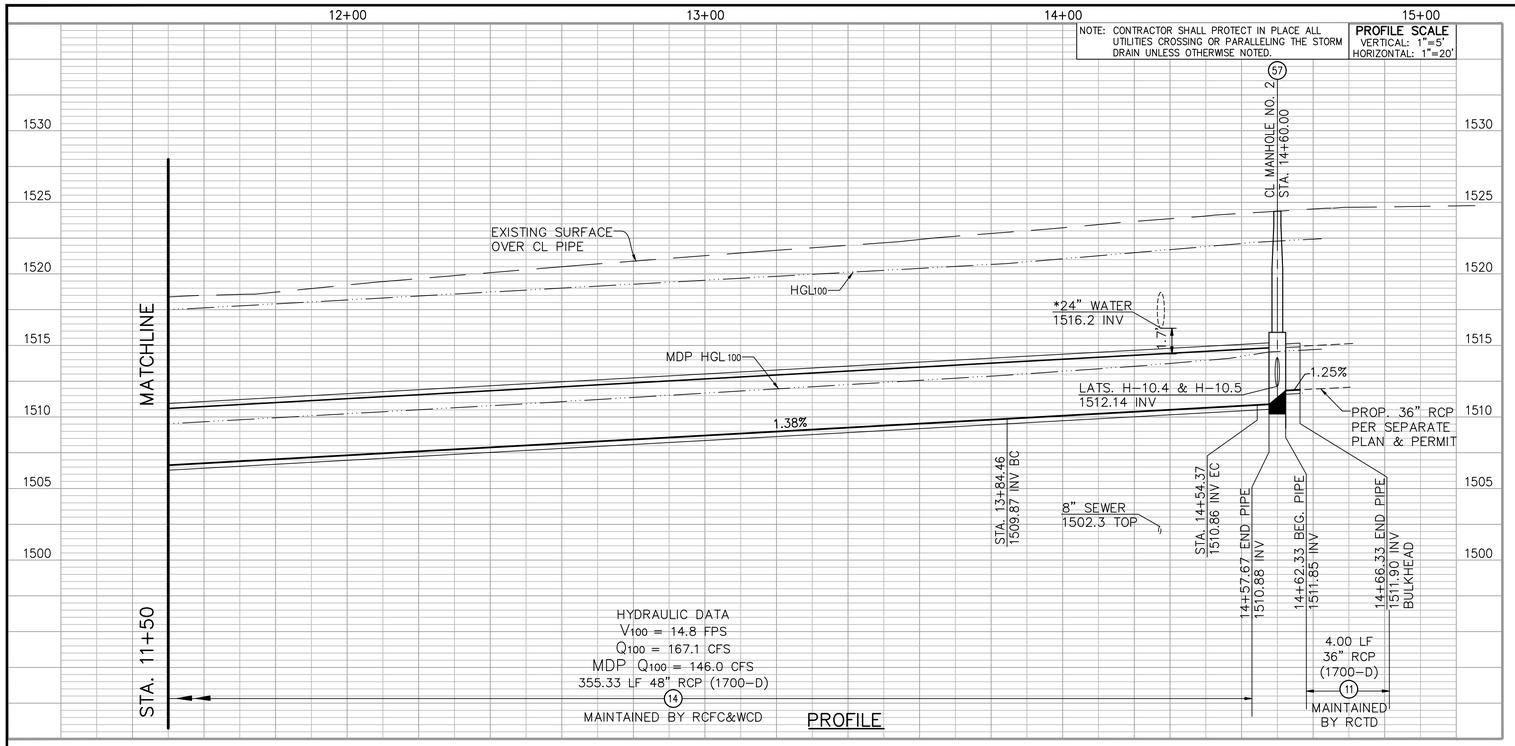
APPROVED BY: _____ GENERAL MANAGER – CHIEF ENGINEER DATE: _____

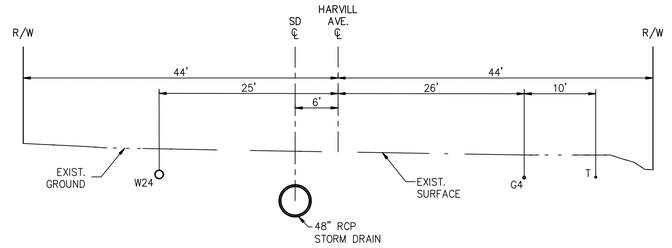
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 8+00.00 TO 11+50.00

PROJECT NO. ---
DRAWING NO. ----
SHEET NO. 4 OF 6

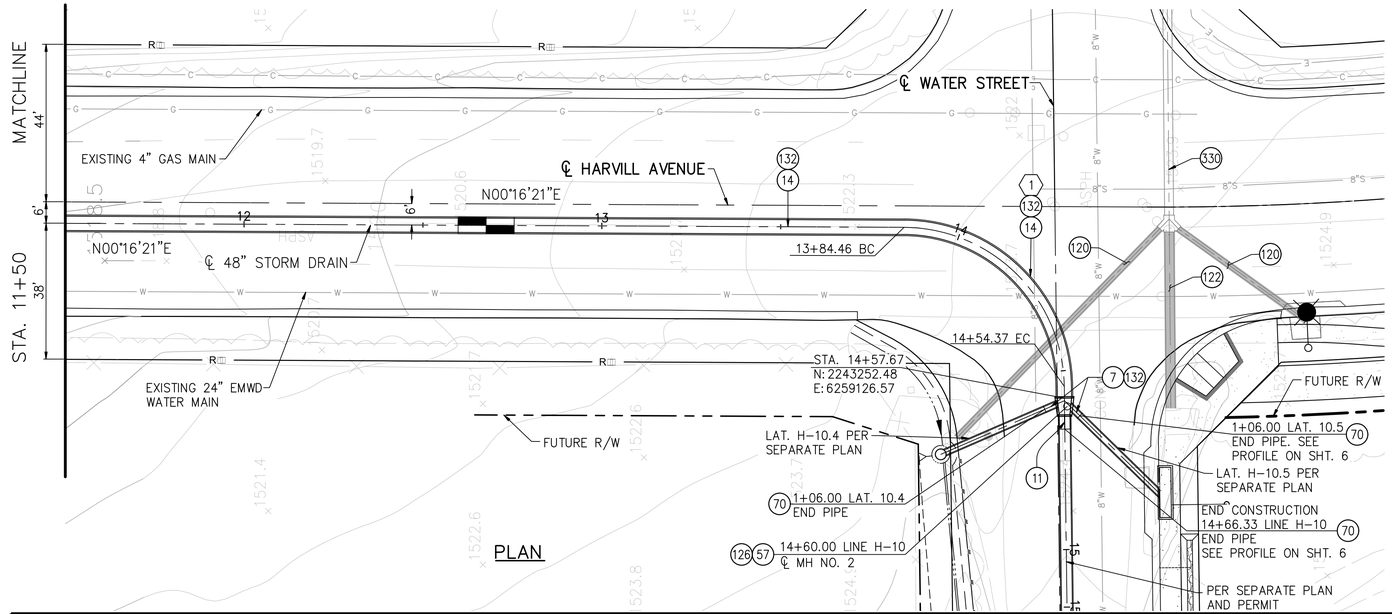
DATE PLOTTED: 2/2/2022 10:22:00 AM
DRAWING: D:\Projects\Perris Valley MDP Line H-10\Harvill Ave\Plan\Harvill Ave Sta 8+00 to 11+50.dwg





SECTION AT STA 11+65.00
TYPICAL FROM STA. 11+50.00 TO 13+84.46

10' 0 10'



20' 0 20'

HATCHING LEGEND

120	LIMITS OF REMOVAL FOR EXISTING 18" SD
122	LIMITS OF REMOVAL FOR EXISTING 30" SD

CURVE DATA	①
R	45.00'
Δ	89°00'59.04"
L	69.91'
T	44.23'
B.C.	13+84.46
E.C.	14+54.37
P.I. NORTHING	2243253.06
P.I. EASTING	6259174.09

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	14+79.65	–	MH NO. 5	–	–

CONSTRUCTION NOTES

(7) INSTALL 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(11) INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
(70) CONSTRUCT CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STANDARD M816
(120) REMOVE EXISTING 18" RCP (LIMITS OF REMOVAL AS INDICATED ON PLAN)
(122) REMOVE EXISTING 30" RCP (LIMITS OF REMOVAL AS INDICATED ON PLAN)
(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
(330) EXISTING STORM DRAIN TO BE ABANDONED, FILLED WITH SAND, AND CAPPED PER R.C.F.C. & W.C.D. STANDARD M816.

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

RECMD	COUNTY OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2023 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT
DIAL BEFORE YOU DIG TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992 AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.
ELEVATION = 1455.11' (NAVD88)

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY:
CHIEF OF PLANNING
DATE:

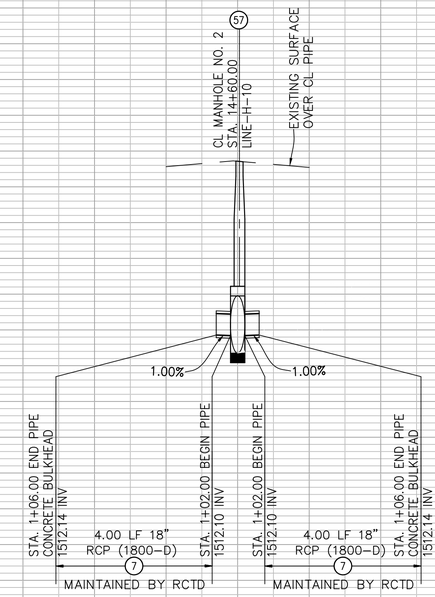
APPROVED BY:
GENERAL MANAGER – CHIEF ENGINEER
DATE:

PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 11+50.00 TO 14+76.32

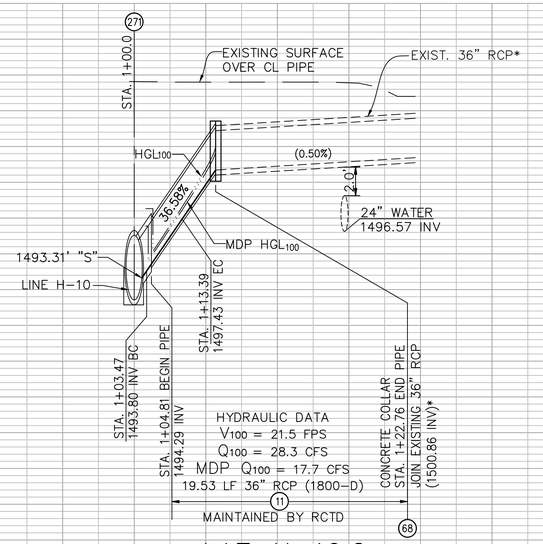
PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 5 OF 6

DR: I:\Projects\Perris Valley MDP\Line H\Design\Drawings\Dr_Dsgn\Harvill\Harvill_Plan_Profile_Sht_5.dwg DR: 2 - 8 Jan 2022 - 2:2 pm



LAT. H-10.4
SEE SHEET 5

LAT. H-10.5
SEE SHEET 5



LAT. H-10.2
SEE SHEET 2

LAT. H-10.3
SEE SHEET 2

PROFILE SCALE
VERTICAL: 1"=5'
HORIZONTAL: 1"=20'

5' 0 5'

IP 220057
PPT-220002

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

RECMD | COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER — JOHNNY MURAD — NO. 67512 EXPIRATION 6-30-2023 — CIVIL — STATE OF CALIFORNIA

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ELEVATION = 1455.11' (NAVD88)

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RECOMMENDED FOR APPROVAL BY:
CHIEF OF PLANNING
DATE:

APPROVED BY:
GENERAL MANAGER - CHIEF ENGINEER
DATE:

PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
PROFILES

PROJECT NO. ———
DRAWING NO. ———
SHEET NO. 6 OF 6

Appendix “I” –

Percolation Report (Southerly Neighboring Property)

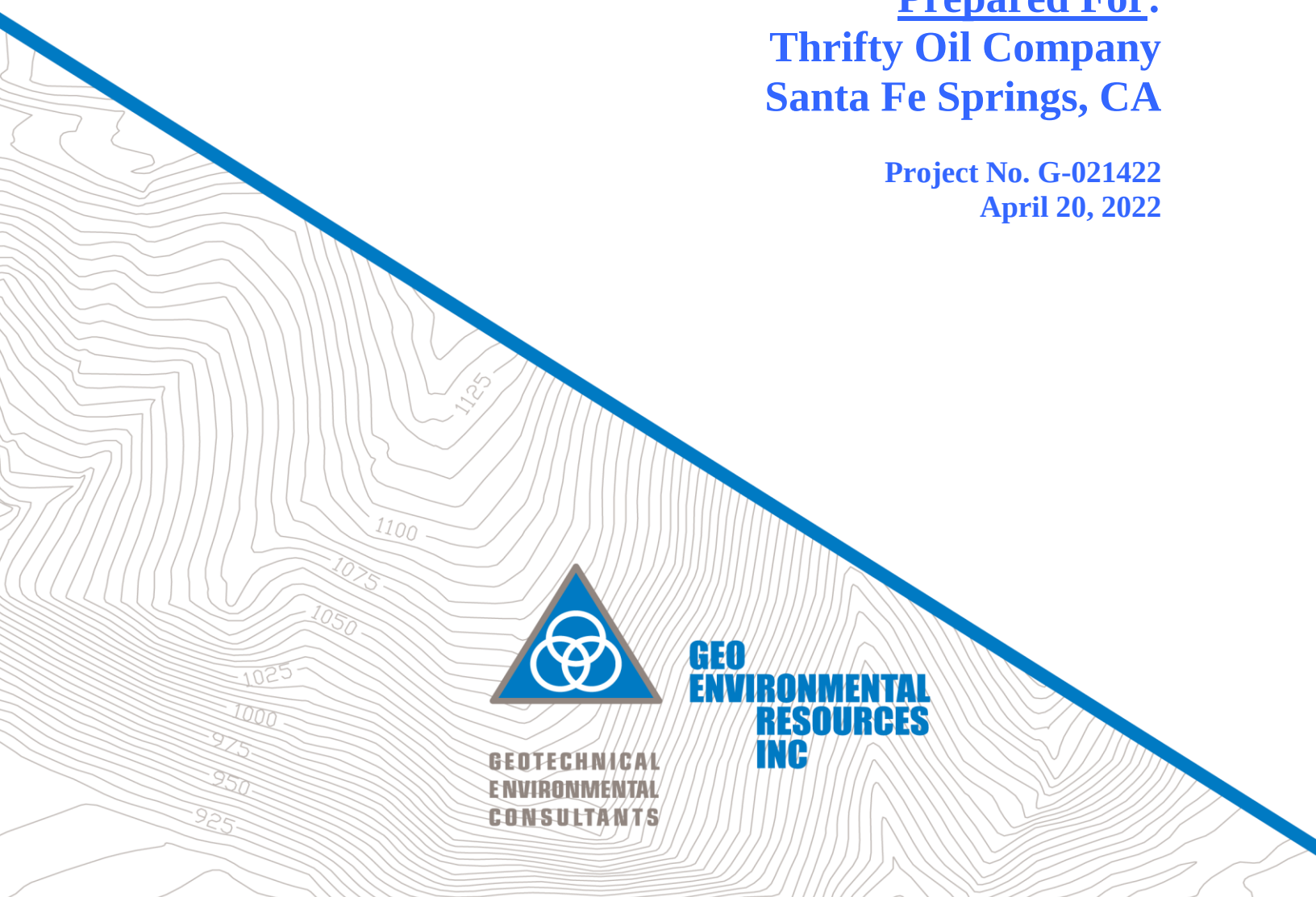
Geotechnical Engineering Exploration and Analysis

Percolation Feasibility Study Results

23628 Water Street, Perris, CA

Prepared For:
Thrifty Oil Company
Santa Fe Springs, CA

Project No. G-021422
April 20, 2022



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ENVIRONMENTAL
CONSULTANTS

GEO
ENVIRONMENTAL
RESOURCES
INC

1. PURPOSE AND SCOPE

This report provides the results of our recent percolation feasibility study for the proposed Tilt-up Commercial structure. The purpose of the study is to present the results of the field evaluation for the infiltration rate for the storm water runoff at the subject property.

Peculation test was conducted in accordance with **ASTM D 3385 "STANDARD TEST METHOD FOR INFILTRATION RATE OF SOILS IN FIELD USING DOUBLE-RING INFILTROMETER".** Two (2) locations have been designated to conduct the percolation test procedure. Please review the "Site Location Plan" Figure No.1 to review the approximate percolation tests location. The main purpose of multiple-locations is to obtain additional infiltration rates.

2. SUBSURFACE EXPLORATION

Percolation test No.1 was conducted next to Boring No.6 and Percolation No.2 was performed adjacent to the Boring No.5. For percolation, No.1 Test Pit No.1 was excavated to an approximate depth of 80 inches below the existing grade. Test pit Number 2, which was excavated for per was excavated to an approximate depth of 84 inches below the existing grade. Both two test pits were excavated with the help of backhoe and field equipment. The exposed subgrade within both locations were saturated 24-hours prior to actual percolation test.

3. SUBSURFACE CONDITION

The subsurface soil encountered in Test Pit No 1 (TP-1) consisted of Brown Silty Fine to Coarse Sand, Trace Clay Alluvial Deposits (Qof) Dry to damp to the depth of about 18 inches, which was underlain by Orange Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits (Qof) to the depth of 8 feet. The samples were obtain by the help of the hand auger and field equipment and it was obtained at the corner of test pit, where the percolation had been performed.

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In case of Test pit No 2 (TP-2), Soil classified as Brown Silty Fine to Coarse Sand, Trace Clay

Alluvial Deposits (Qof), Dry to damp and dense. This layer was continued to the depth of 3 feet. Then after that we observed Cemented soil with CALICHE, Alluvial Deposit (Qof) and moist which was very dense as well

Detailed geotechnical subsurface condition was originally discussed in our original geotechnical report (G-021422), which was prepared as Proposed Tilt up.

According to attached figure 6, the subject site is not located within a "Liquefaction Zone" based on the review of the liquefaction map of California (California Department of Conservation). Also there is no evidence of near-surface groundwater in our subsurface exploration. Within Test Pit No.1 and 2 there was no groundwater encountered to maximum explored depth.

4. GEOTECHNICAL CONSIDERATIONS

The followings were considered prior to test procedure. :

1. Water infiltration into the ground should be at least 10 feet above the groundwater table.
2. The distance between the infiltration facility and the adjacent private property lines should be at least 10 feet.
3. The minimum foundation set back should be at least 10 feet from the infiltration facility.

4. Test Procedure

The double ring infiltrometer test (ASTM D 3385) is a well recognized and documented technique for directly measuring the soil infiltration rate of a site. Double ring infiltration was developed in response to the fact that smaller (less than 40 inch diameter) single ring infiltrometers tend to overestimate vertical infiltration rates. This has been attributed to the fact that the flow of water beneath the cylinder is not purely vertical and diverges laterally.

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Double ring infiltrometers minimize the error associated with the single-ring method because the water level in the outer ring forces vertical infiltration of water in the inner ring. Care should be taken when driving the rings into the ground as there can be a poor connection between the ring wall and the soil. This poor connection can cause a leakage of water along the ring wall and an overestimation of the infiltration rate. Another potential source of error is attributed to the size of the cylinders. As such, the use of cylinder sizes less than those prescribed in ASTM D 3385 is not recommended by most codes.

Geo Environmental Resources, double ring infiltrometer consists of a 12-inch inner ring and a 24-inch outer ring. While there are two operational techniques used with the double-ring infiltrometer, the constant head method and the falling head method; ASTM D3385 mandates the use of the constant head method.

With the constant head method, water is consistently added to both the outer and inner rings to maintain a constant level throughout the testing. The volume of water needed to maintain the fixed level of the inner ring is measured. To help maintain a constant head, a variety of devices may be used. A hook gauge, steel tape or rule, or length of steel or plastic rod pointed on one end, can be used for measuring and controlling the depth of liquid (head) in the infiltrometer ring. If available, a graduated Mariotte tube or automatic flow control system may also be used.

On the other hand and with the falling head method, which has been used in this report, the falling level of the water is measured in each time interval and ultimately, as shown in following tables, a final report shall be provided and, based on the test results, an infiltration rate shall be recommended. The final number is average of previous 4-infiltration rate.

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5. FINDINGS AND CONCLUSIONS

Result of Percolation test **No.1 indicates 5.25 inch/hr.** with a percolation **No.2 indicating 4.7 inch/hr.** Attached please see percolation tables and graphs.

($\boldsymbol{Final\ Infiltration\ rate} = \frac{\boldsymbol{Infiltration\ rate\ from\ test}}{\boldsymbol{Factor\ of\ safety}}$) **The minimum recommended factor of safety will be two (2).** Therefore, the actual infiltration rate of subject property will be half of the obtained infiltration rate**.**

It is our opinion that due the variability within the near-surface soil, the lower infiltration rate (Infiltration No.2) should be considered to utilize in the design. Therefore, the recommended infiltration rate is 2.35 Inch/hr.

1. The infiltration of the storm water will not result in ground settlement that could affect adversely the proposed structure.
2. All results and findings are based on level (Horizontal) surface area. Effect of any slope or inclination shall be considered to evaluate the final Percolation rate.
3. The proposed infiltration facility should be designed in such way that in case of "Drainage Capacity Failure" overflow to street.

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Figure 20: Approximate location and depth of the test.

Figure 21: Using bentonite to seal the apparatus, Soil was firm and dry

Figure 22: Position of laser meter and method of reading level of the water.

Figure 23: Accuracy of Reading water level by laser meter. Test was done by reading level of the water at specific time intervals

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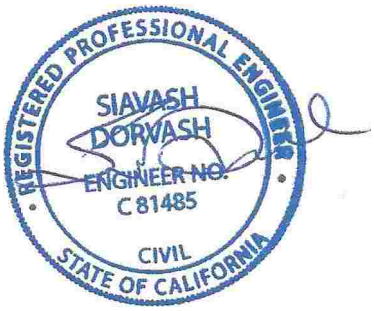
We appreciate the opportunity to be of service on this report. If we may be of additional Assistance, should Geotechnical Related problems occurs, please do not hesitate to contact us at Any time.

Very truly yours,

GEO ENVIRONMENTAL RESOURCES, INC.

Alexander A. Rastegar

Project Engineer



S. Dorvash, P.E.

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GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location 1 (TP-1)

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:30	0:15	5 3/16		6 4/16			-	-
1	End	9:45		7 2/16	1 15/16	8 9/16	2 5/16	64	-	-
	Start	10:00	0:15	9 3/16	2 1/16	11	2 7/16	64	-	-
2	End	10:15		11 4/16	2 1/16	13 7/16	2 7/16	64	-	-
	Start	10:30	0:15	13 5/16	2 1/16	Water (5 9/16))	2 8/16	64	9 11/16	**8 2/16**
3	End	10:45		15 5/16	2	8	2 7/16	64	9 13/16	**8 3/16**
	Start	11:00	0:15	Water(5 4/16)	2 1/16	10 6/16	2 6/16	64	9 12/16	**8 3/16**
4	End	11:15		7 5/16	2 1/16	12 12/16	2 6/16	65	9 10/16	**8 3/16**
	Start	11:30	0:15	9 5/16	2	15 1/16	2 5/16	65	9 7/16	**8 2/16**
5	End	11:45		11 4/16	1 15/16	Water (6 3/16))	2 7/16	65	9 7/16	**8 1/16**
	Start	12:00	0:15	13 3/16	1 15/16	8 10/16	2 7/16	65	9 8/16	**7 15/16**
6	End	12:15		15 1/16	1 14/16	10 15/16	2 5/16	65	9 8/16	**7 12/16**
	Start	12:30	0:15	Water(5 4/16)	2	13 5/16	2 6/16	66	9 9/16	**7 12/16**
7	End	12:45		7 4/16	2	15 10/16	2 5/16	66	9 7/16	**7 13/16**
	Start	13:00	0:15	9 2/16	1 14/16	(Water)5 3/16	2 7/16	66	9 7/16	**7 12/16**
8	End	13:15		10 14/16	1 12/16	7 8/16	2 5/16	66	9 7/16	**7 10/16**
	Start	13:30	0:15	12 8/16	1 10/16	9 13/16	2 5/16	66	9 6/16	**7 4/16**
9	End	13:45		14 1/16	1 9/16	12	2 3/16	70	9 4/16	**6 13/16**
	Start	14:00	0:15	Water(5 10/16)	1 14/16	14 1/16	2 1/16	70	8 14/16	**6 13/16**
10	End	14:15		7 4/16	1 10/16	(Water)5 3/16	2	70	8 9/16	**6 11/16**
	Start	14:30	0:15	8 13/16	1 9/16	7 5/16	2 2/16	70	8 6/16	**6 10/16**
11	End	14:45		10 6/16	1 9/16	9 5/16	2	70	8 3/16	**6 10/16**
	Start	15:00	0:15	11 14/16	1 8/16	11 3/16	1 14/16	70	8	**6 4/16**
12	End	15:15		13 5/16	1 7/16	13	1 13/16	72	7 13/16	**6 1/16**
	Start	15:30	0:15	14 11/16	1 6/16	(Water)5 7/16	1 12/16	72	7 8/16	**5 14/16**
13	End	15:45		Water(6 6/16)	1 7/16	7 2/16	1 13/16	72	7 5/16	**5 12/16**
	Start	16:00	0:15	7 12/16	1 6/16	8 12/16	1 10/16	72	7 1/16	**5 10/16**
14	End	16:15		9 1/16	1 5/16	10 4/16	1 8/16	73	6 8/16	**5 8/16**
	Start	16:30	0:15	10 6/16	1 5/16	11 12/16	1 8/16	74	6 5/16	**5 7/16**
15	End	16:45		11 11/16	1 5/16	13 4/16	1 8/16	75	6 2/16	**5 5/16**
	Start	17:00	0:15	13	1 5/16	14 12/16	1 8/16	76	6	**5 4/16**
16	End	17:15		14 5/16	1 5/16	16 4/16	1 8/16	77	6	**5 4/16**

Infiltration Rate (Inch/Hour): *5 5/16*

5.25

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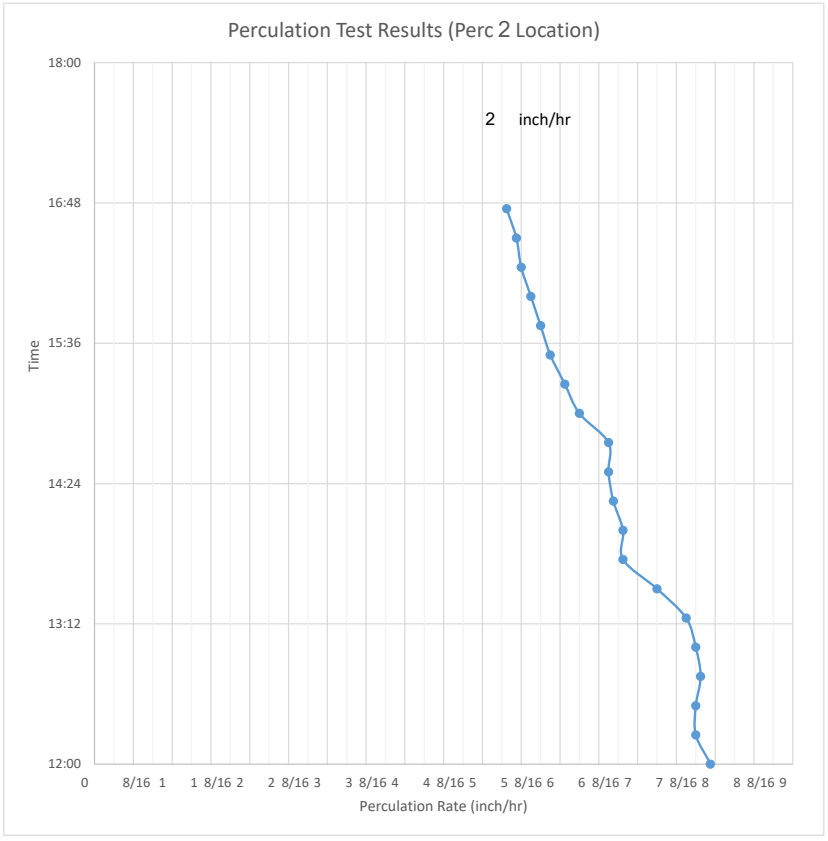
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



GEO ENVIRONMENTAL RESOURCES INC
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Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/15/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	67°-87° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location TP-2

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:00	0:15	5 14/16		5 11/16			-	-
1	End	9:15		8	2 2/16	7 15/16	2 4/16	64	-	-
	Start	9:30	0:15	10 4/16	2 4/16	10 6/16	2 7/16	64	-	-
2	End	9:45		12 6/16	2 2/16	12 11/16	2 5/16	64	-	-
	Start	10:00	0:15	14 8/16	2 2/16	Water (5 1/16)	2 4/16	64	9 4/16	**8 10/16**
3	End	10:15		16 8/16	2	7 7/16	2 6/16	64	9 6/16	**8 8/16**
	Start	10:30	0:15	Water(5 8/16)	2 2/16	9 10/16	2 3/16	64	9 2/16	**8 6/16**
4	End	10:45		7 8/16	2	11 14/16	2 4/16	65	8 15/16	**8 4/16**
	Start	11:00	0:15	9 9/16	2 1/16	14	2 2/16	65	8 13/16	**8 3/16**
5	End	11:15		11 9/16	2	Water (5 1/16))	2 3/16	65	8 10/16	**8 3/16**
	Start	11:30	0:15	13 8/16	1 15/16	7 5/16	2 4/16	65	8 11/16	**8**
6	End	11:45		15 7/16	1 15/16	9 6/16	2 1/16	65	8 10/16	**7 15/16**
	Start	12:00	0:15	Water(5 15/16)	1 14/16	11 6/16	2	66	8 8/16	**7 12/16**
7	End	12:15		7 15/16	2	13 4/16	1 14/16	66	8 3/16	**7 12/16**
	Start	12:30	0:15	9 13/16	1 14/16	15 2/16	1 14/16	66	7 13/16	**7 11/16**
8	End	12:45		11 9/16	1 12/16	Water(5 5/16)	1 12/16	66	7 8/16	**7 8/16**
	Start	13:00	0:15	13 5/16	1 12/16	7 2/16	1 12/16	66	7 4/16	**7 6/16**
9	End	13:15		15	1 11/16	8 13/16	1 11/16	70	7 1/16	**7 1/16**
	Start	13:30	0:15	Water(5 2/16)	1 11/16	9 8/16	11/16	70	5 14/16	**6 14/16**
10	End	13:45		6 15/16	1 13/16	11 2/16	1 10/16	70	5 12/16	**6 15/16**
	Start	14:00	0:15	8 8/16	1 9/16	12 11/16	1 9/16	70	5 9/16	**6 12/16**
11	End	14:15		10 1/16	1 9/16	14 3/16	1 8/16	70	5 6/16	**6 10/16**
	Start	14:30	0:15	11 8/16	1 7/16	Water (5 5/16)	1 8/16	70	6 3/16	**6 6/16**
12	End	14:45		12 13/16	1 5/16	6 15/16	1 10/16	72	6 3/16	**5 14/16**
	Start	15:00	0:15	14 1/16	1 4/16	8 6/16	1 7/16	72	5 14/16	**5 9/16**
13	End	15:15		Water(5 12/16)	1 3/16	9 10/16	1 4/16	72	5 10/16	**5 3/16**
	Start	15:30	0:15	7	1 4/16	10 15/16	1 5/16	72	5 7/16	**5**
14	End	15:45		8 3/16	1 3/16	12 3/16	1 4/16	73	5 5/16	**4 14/16**
	Start	16:00	0:15	9 5/16	1 2/16	13 7/16	1 4/16	74	5	**4 12/16**
15	End	16:15		10 7/16	1 2/16	14 11/16	1 4/16	75	5 1/16	**4 11/16**
	Start	16:30	0:15	11 9/16	1 2/16	15 15/16	1 4/16	76	5	**4 9/16**
16	End	16:45		12 11/16	1 2/16					

Infiltration Rate (Inch/Hour): ***4 11/16 =4.7***

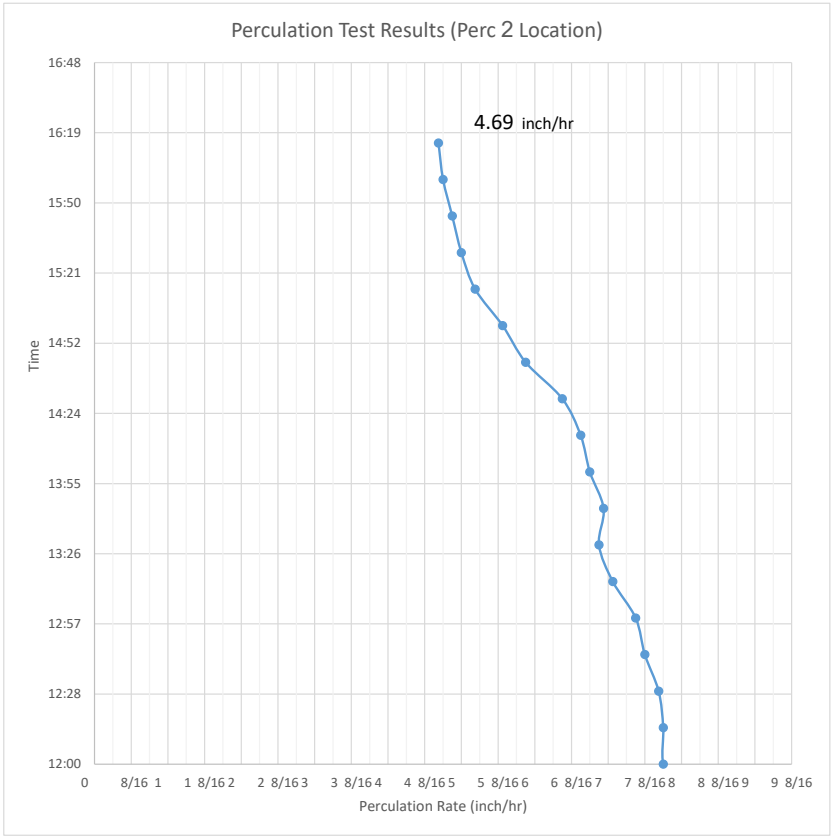
GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



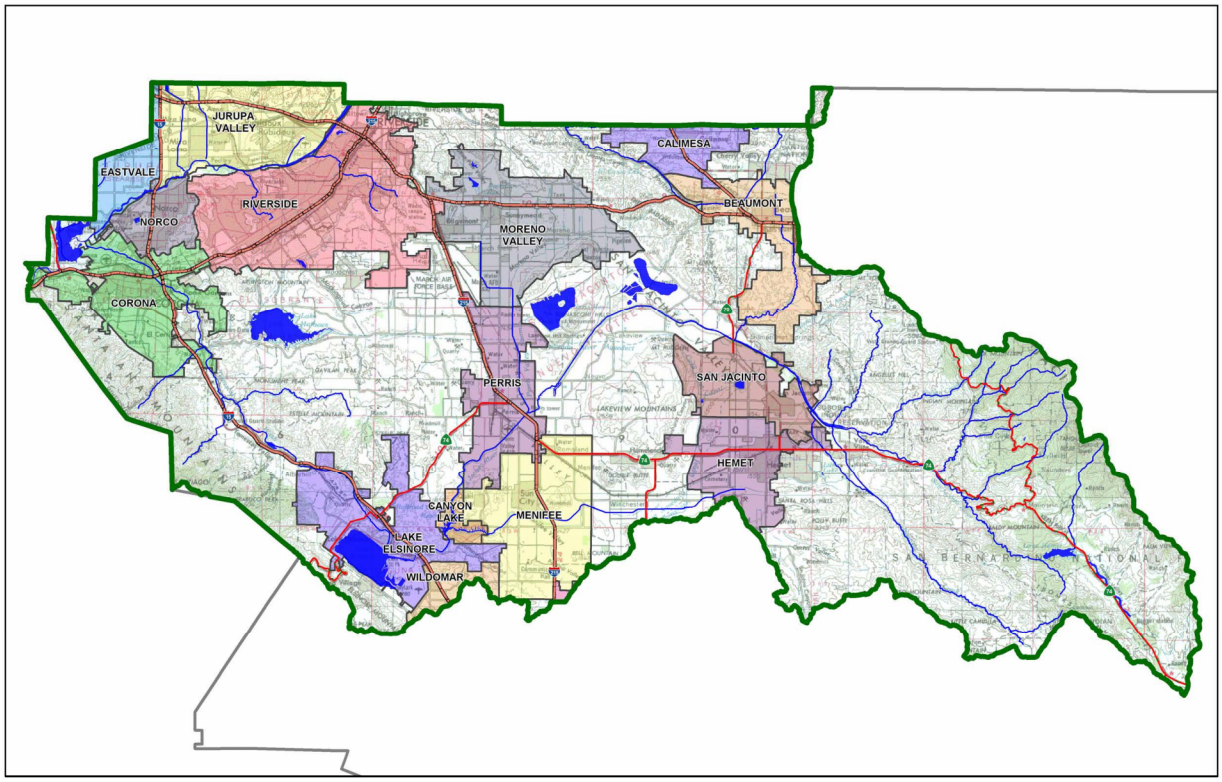
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Perris North – The Orden Company

Development No: PPT230048

Design Review/Case No:



☒ **Preliminary**
☐ **Final**

Original Date Prepared: December 1, 2023

Revision Date(s): March 27, 2024; November 1, 2024

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

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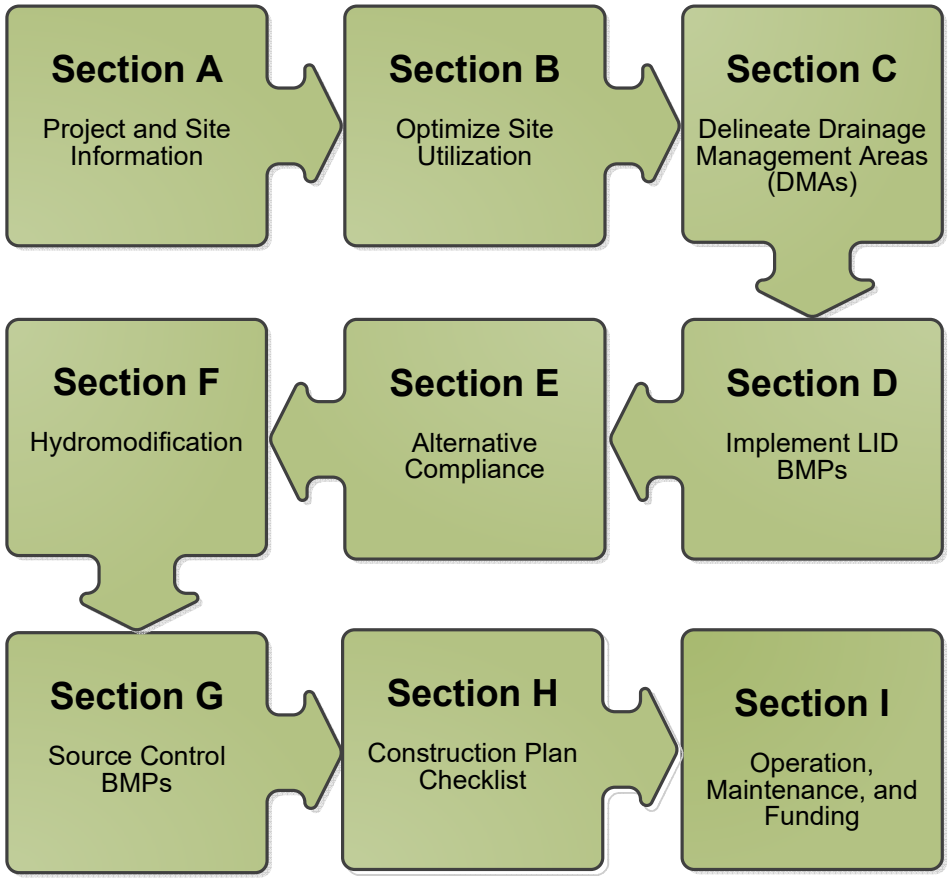
A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well-prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared by Armstrong and Brooks Consulting Engineers for Thrifty Oil Company for their Tobacco Road project.

This WQMP is intended to comply with the requirements of the Riverside County 2010 SAR MS4 Permit and Riverside County Municipal Code Section XII.D which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under Riverside County Water Quality Ordinance Order No. R8-2010-0033 (MS4 Permit).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Stephane Wandel	Executive Director of Acquisitions & Development
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Bill Brooks	Principal
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Industrial	
Planning Area:	Mead Valley Area Plan I-P Zone (Industrial Park)	
Community Name:	N/A	
Development Name:	N/A	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33°49'19" N, 117°14'58" W		
Project Watershed and Sub-Watershed: Santa Ana Watershed		
Gross Acres: 9.14 acres APN(s): 317-260-017, 317-260-018 Map Book and Page No.: MB 1/5		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Warehouse	
Proposed or Potential SIC Code(s)	4225	
Area of Impervious Project Footprint (SF)	379,819	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	323,229	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☒ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:	N/A	
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☐ Y	☒ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)		
What is the Water Quality Design Storm Depth for the project?	0.59 in	

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Drain	N/A	N/A	N/A
San Jacinto River Reach 3	None	AGR*,GWR*,REC1*,REC2*,WARM*,WILD*	N/A
San Jacinto River Reach 2	None	AGR,GWR,WILD,MUN,REC1,REC2,WARM	N/A
Canyon Lake (Railroad Canyon Reservoir)	Nutrients	WILD, REC2,WARM,GWR,MUN,REC1,AGR	N/A
San Jacinto River Reach 1	None	AGR*,GWR*,REC1*,REC2*,WARM*,WILD*	N/A
Lake Elsinore	DDT, Nutrients, Low Dissolved Oxygen, PCBs, Toxicity	REC1, REC2, WARM, WILD	N/A

Denotes **Intermittent Beneficial Use*

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ Y	☒ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes, based on topographical evidence the site currently drains easterly and the grading for the site mimics current site drainage. Proposed grading and proposed storm drains will allow for site runoff to be conveyed to a proposed underground retention chamber below the eastern truck parking lot. Excess runoff from this proposed facility will be discharged using an overflow pipe at a rate less than existing, predeveloped conditions.

Did you identify and protect existing vegetation? If so, how? If not, why?

No, a small percentage of the existing site is covered by vegetation making it infeasible to protect. Vegetation will be placed through proposed landscaping areas within proposed parking islands and alongside sidewalks.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, infiltration capacity was estimated per attached Geotechnical Report for adjacent property and was used in determining the BMPs applied to the site.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes, impervious area was minimized through the implementation of landscaped parking islands throughout the site instead of impervious asphalt/concrete.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, however all site runoff will be routed to the underground detention chambers which will also infiltrate into the gravel bed.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA A	Mixed	33,331	D
DMA B	Mixed	316,213	D
DMA C	Mixed	14,478	D
DMA D	Ornamental Landscape	15,682	A

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA D	15,682	Landscaped	Drip

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	INFILTRATION TRENCH #1
DMA B	UNDERGROUND INFILTRATION CHAMBER #1
DMA C	DRY WELL #1

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☒The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape:

Type of Landscaping (Conservation Design or Active Turf):

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces:

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor:

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area:

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users:

Project Type:

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces:

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor:

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users:

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A	☒	☐	☐	☐	☐
DMA B	☒	☐	☐	☐	☐
DMA C	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-A	*33,331*	*Mixed Surface Types*	*0.41**	*0.29*	*9,511.2*	*0.59*	*467.6*	*680*

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-B	*316,213*	*Mixed Surface Types*	*0.95**	*0.81*	*255,176 .9*	*0.59*	*12,546.2*	*12,794*

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-C	*14,478*	*Mixed Surface Types*	*0.88**	*0.7*	*10,160. 5*	*0.59*	*499.6*	*1,770*

** Per Section 2.3.1 of the 2012 Santa Watershed Region WQMP Guidance Document, a composite effective impervious fraction can be used when multiple surfaces types are present in a DMA. A composite effective impervious fraction has been used for DMA-A, DMA-B, and DMA-C. Proposed site grading will convey DMA-A flows to an infiltration trench. Sheet and concentrated flows from DMA-B will be conveyed to an underground retention chamber. DMA-C flows will concentrate at a dry well at the northeastern corner of the site.*

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☒ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☒	☐	☐	☒	☐	☒	☒

P = Potential

N = Not Potential

[(1)] A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

[(2)] A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

[(3)] A potential Pollutant is land use involving animal waste

[(4)] Specifically petroleum hydrocarbons

[(5)] Specifically solvents

[(6)] Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

Project site identified to be within a non-HCOC applicable area on HCOC applicability map included in Appendix 7. HCOC applicability map also indicates that all downstream conveyance channels that receive runoff from the project are classified as "not susceptible stream channels."

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance, " in Appendix 10.
Landscape/ Outdoor Pesticide Use	Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the	Maintain landscaping using minimum or no pesticides.

	use of fertilizers and pesticides that can contribute to stormwater pollution. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	See applicable operational BMPs in SC-41, " Building and Grounds Maintenance," in Appendix 10.
Refuse areas	State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34,"Waste Handling and Disposal," in Appendix 10.
Loading Docks		Move loaded and unloaded items indoors as soon as possible. See Fact Sheet SC-30, "Outdoor Loading and Unloading," in Appendix 10.
Plazas, sidewalks, and parking lots.		Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
UNDERGROUND RETENTION CHAMBER #1	*Retention and Infiltration below eastern truck parking on site*	*WQMP Exhibit, Conceptual Grading Plan*	
INFILTRATION TRENCH #1	*Infiltration at easterly end of vegetated swale*	*WQMP Exhibit, Conceptual Grading Plan*	
DRY WELL #1	*Deep infiltration at northeast corner parking lot*	*WQMP Exhibit, Conceptual Grading Plan*	

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Property Owner will be responsible for BMP maintenance.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

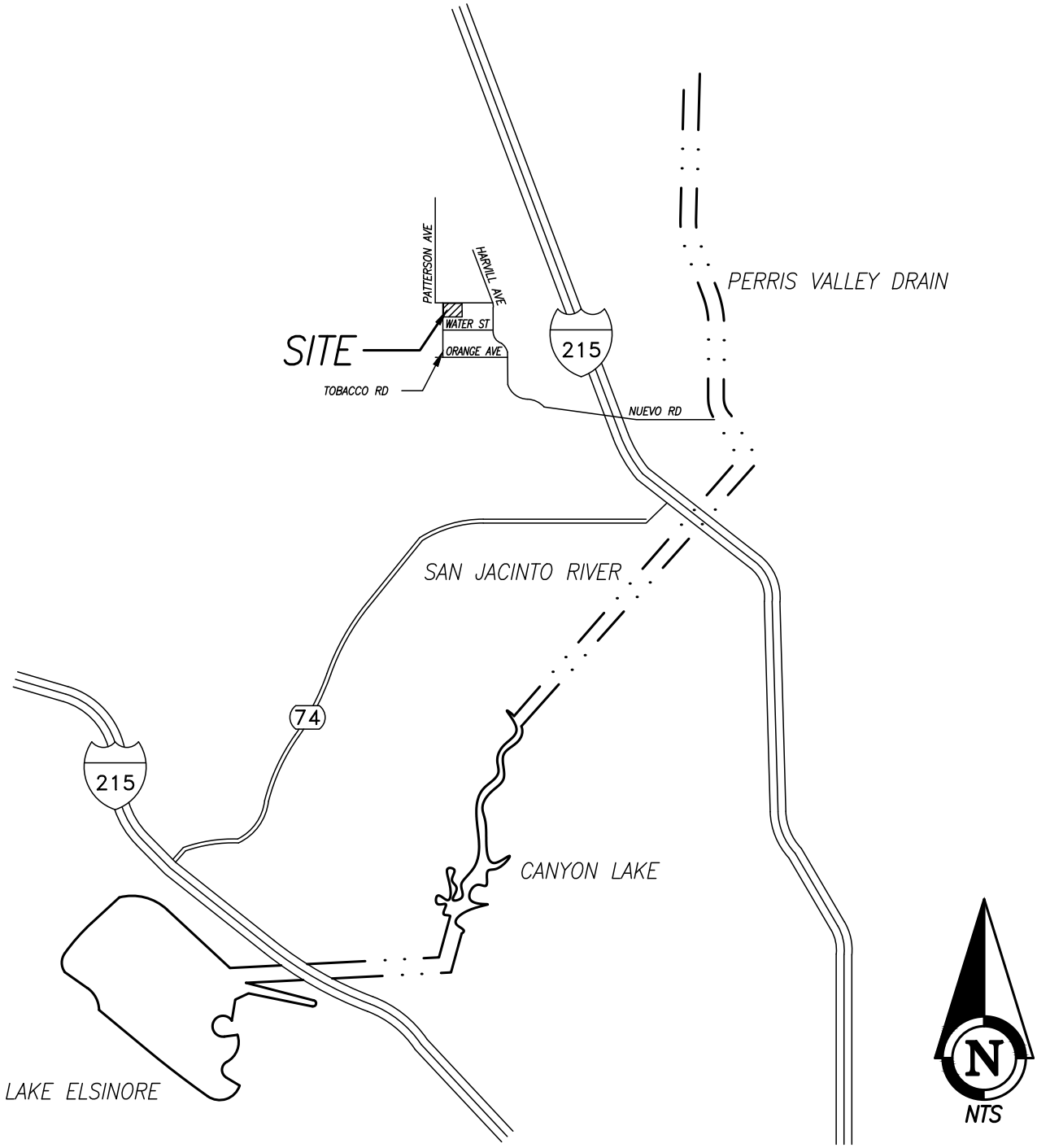
☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

RECEIVING WATERS MAP



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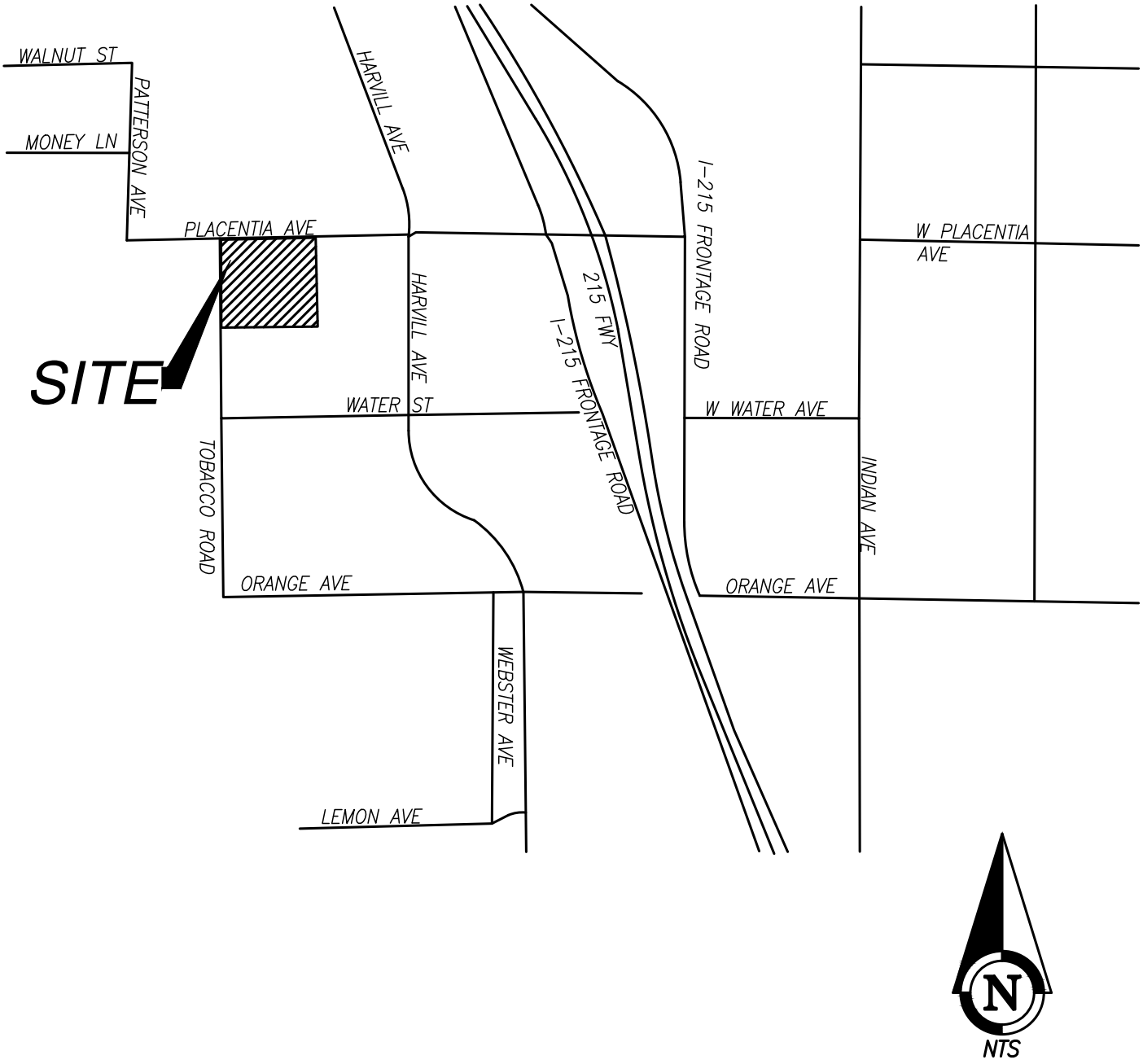
RECEIVING WATERS MAP
FOR
THE ORDEN COMPANY
WAREHOUSE FACILITY

COUNTY OF RIVERSIDE

VICINITY MAP



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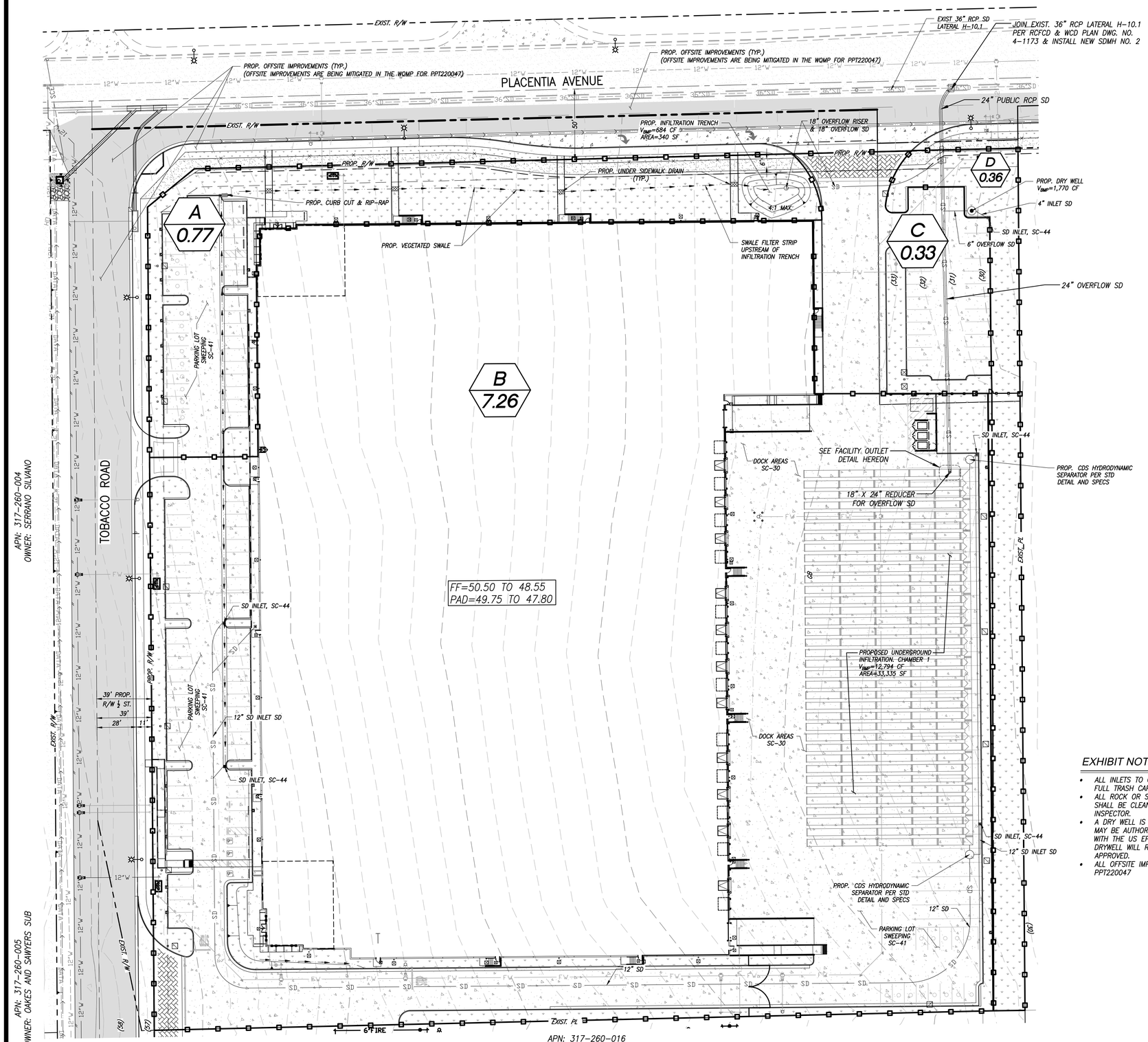
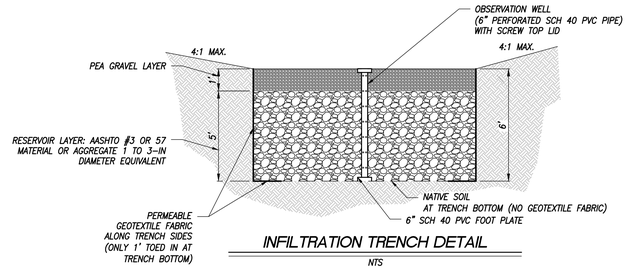
VICINITY MAP
FOR
THE ORDEN COMPANY
WAREHOUSE FACILITY
COUNTY OF RIVERSIDE



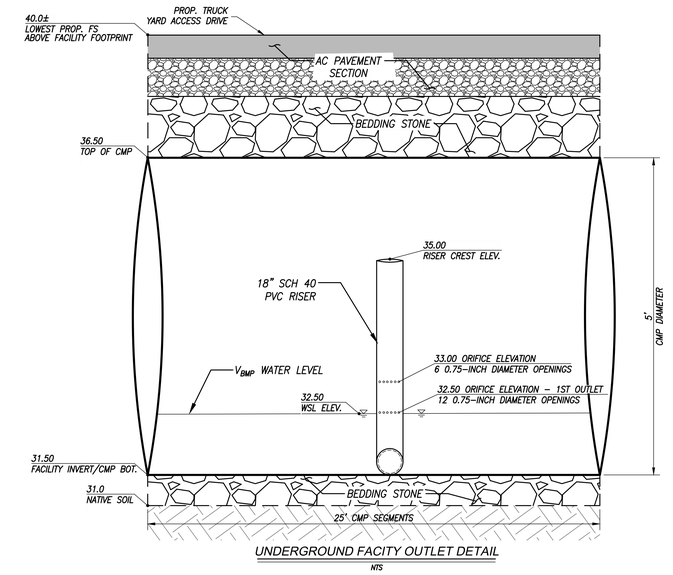
SITE DATA	
TOTAL PROJECT AREA (AC)	8.72
HYDROLOGIC SOIL GROUP	A
APPROXIMATE DEPTH TO GROUNDWATER (FT)	65

DMA ID	DMA TYPE	PERVIOUS AREA (SF)	IMPERVIOUS AREA (SF)	TOTAL AREA (SF)	DCV (CU FT)	V_{BMP} (CU FT)
DMA-A	DRAINS TO BMP	21,793	11,538	33,331	467.6	684
DMA-B	DRAINS TO BMP	17,131	299,082	316,213	12,546.2	12,794
DMA-C	DRAINS TO BMP	1,921	12,557	14,478	499.6	1,770
DMA-D	SELF-TREATING	15,682	0	15,682	N/A	N/A



INFILTRATION TRENCH DETAIL

NTS



UNDERGROUND FACITY OUTLET DETAIL

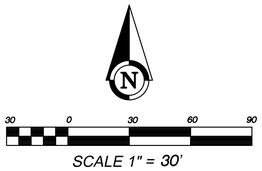
NTS

EXHIBIT NOTES

- ALL INLETS TO ONSITE UNDERGROUND STORM DRAIN ARE TO INCLUDE FULL TRASH CAPTURE DEVICES.
- ALL ROCK OR SAND TO BE PLACED IN POST-CONSTRUCTION BMPS SHALL BE CLEAN-WASHED ROCK TO THE SATISFACTION OF THE GRADING INSPECTOR.
- A DRY WELL IS CONSIDERED A CLASS V INJECTION WELL. DRY WELLS MAY BE AUTHORIZED TO OPERATE AS LONG AS THEY ARE REGISTERED WITH THE US EPA AND ONLY INJECT UNCONTAMINATED STORMWATER. THE DRYWELL WILL REGISTER WITH THE US EPA BEFORE THE FINAL WQMP IS APPROVED.
- ALL OFFSITE IMPROVEMENTS ARE BEING MITIGATED IN THE WQMP FOR PPT220047

LEGEND

590	GROUND CONTOUR		EXIST OFFSITE AC
	CENTERLINE		PROP. OFFSITE AC
	R/W LINE		PROP. PCC PAVEMENT
	DMA BOUNDARY		EXIST. AC PAVEMENT
	STORM DRAIN		PROP. LANDSCAPE
CB	CATCH BASIN	X / X.XX	DRAINAGE MANAGEMENT AREA / ACREAGE
SDMH	STORM DRAIN MANHOLE		
	EXISTING TREE EXISTING		



SCALE 1" = 30'

PRELIMINARY WATER QUALITY MANAGEMENT PLAN

FOR

PPT230048 - THE ORDEN COMPANY

RIVERSIDE COUNTY, CA

SHEET 1 OF 1

SEAL: REGISTERED PROFESSIONAL ENGINEER WILLIAM D. BROOKS No. C53114 Exp. 6/30/25 CIVIL STATE OF CALIFORNIA

PREPARED BY:

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E:\123\177 ORDEN COMPANY_PERRIS NORTH\ADMIN\WQMP\177-WQMP-EXH.DWG 10/31/24

Appendix 2: Construction Plans

Grading and Drainage Plans

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Geotechnical Engineering Exploration and Analysis

Proposed Commercial Building
23641 Placentia Avenue
Perris, CA

Prepared For:

The Orden Company
Santa Fe Springs, CA

Project No. G-012424-1
February 8, 2024

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL
ENVIRONMENTAL
CONSULTANTS

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

February 8, 2024

The Orden Company
Santa Fe Springs, California

Attention: Ms. Jamie Jones
Project Manager

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Commercial Building
23641 Placentia Street, Perris, California

Project No. G-012424-1 APN: 317-260-017

Dear Ms. Jones:

In accordance with your request and authorization, **Geotechnical Engineering Exploration and Analysis** has been conducted for the above referenced site. Conclusions and recommendations developed from the exploration and analysis are discussed in the accompanying report.

We appreciate the opportunity to be of service on this project. If we may be of additional assistance, should geotechnical related problems occur or to provide observation and testing services during construction, please do not hesitate to call at any time.

Very truly yours,
GEO ENVIRONMENTAL RESOURCES, INC.

A. Rastegar

Alexander A. Rastegar
Project Engineer

REGISTERED PROFESSIONAL ENGINEER
SHAVASH DORVASH
ENGINEER No.
C 81485
CIVIL
STATE OF CALIFORNIA

S. Dorvash. P.E.

PROFESSIONAL GEOLOGIST
DENNIS L. HANNAN
No. 963
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Dennis L. Hannan, C.E.G
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1.0 PROPOSED DEVELOPMENT

Based on the review of the CONCEPTUAL GRADING PLAN (SHEET 1) which we have received via email, the proposed development consists of construction of 185,785 S.F. of commercial (concrete tilt-up) building within the above subject property.

Based on the information obtained during our site reconnaissance and subsurface exploration, the subject property is a vacant parcel located within the southeast corner of Tobacco Road & Placentia Avenue. It appears that the subject property used to be part of a larger parcel, which was bordered by Water Street to the south, Placentia Avenue to the north, Harvill Avenue to the east and Tobacco Road to the west.

The property is rectangular in shape, is covered with vegetation, and assorted sizes of trees. According to the proposed grading plan the western portion of the site is 3-4 feet higher than the east side. The proposed general parking areas will be located along the west and south side of the subject property. As part of our exploration, we have conducted a percolation test for the proposed Infiltration basin, which will be constructed within the northeast corner of the subject property, which will be designed as landscape area.

2.0 SCOPE OF SERVICES

This report provides the results of a Percolation test and geotechnical engineering exploration and analysis for the construction of the proposed commercial building and other related improvements. We performed a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis in order to provide geotechnical grading and design recommendations for the proposed commercial building and other related improvement.

3.0 SITE LOCATION

The property is located at 23641 Placentia Avenue in Perris California. The property is bordered by an existing vacant parcel to the east, south, Placentia Avenue to the east and Tobacco Road to the west.

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4.0 SUBSURFACE EXPLORATION

4.1 Subsurface Exploration

Total of five (5) Borings were excavated within the area of the proposed developments to the depths ranging from of 7 to 30½ feet below existing backyard grade. The approximate boring locations are shown on the boring location plan **(Figure 1, Appendix C).** The Borings was advanced by the drilling rig. Borings No. 5 was also utilized for a perc test for retention basin design.

The relatively undisturbed soil sample was collected at approximate every 1½-3 ½ ft. Soil sampling was conducted in accordance with ASTM D1587 and D3550 Standard Specifications. Soil sample was visually reviewed and classified in the field pursuant to ASTM D2488, placed in sealed containers and transported to our laboratory for further review and testing. **Field and laboratory testing is enclosed in Appendix B**. The terms and symbols on the test boring logs are defined in the **General Notes in Appendix D**.

4.2 Local Geology

Based on review of the **GEOLOGIC MAP OF THE PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2003,** the native material was identified as **Alluvial Fan Gravel & Sand Deposits (Qoa) See FIGURE NO.2.**

4.3 Earth Material

The subsurface soil profile at test boring No.1 consists of Silty fine to coarse Sand with Caliche, Gray brown in color, damp to moist and loose to very dense extended to the maximum explored depth of 30 ½ feet below existing grade.

4.4 Top Soil (Ts)

The encountered soil within the top 12-to-18 inches were identified as Topsoil (Ts). The topsoil was classified as brown Silty fine to medium Sand, trace roots.

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4.5 Native Soil (Ns)

Native materials were encountered below depth of topsoils within all five (5) boring locations. The native soils (Ns) were identified as Alluvial Gravel, Sand & Silt **(Qoa)** deposits.

4.6 Groundwater

Ground water was not encountered during our sub surface exploration. However, it is not uncommon for groundwater or seepage conditions to develop where none previously existed. Groundwater elevations are dependent on seasonal precipitation, irrigation, land use, among other factors, and vary as a result. Based on review of some of the nearest well(s) to the subject property the approximate depth of ground water is between 75-to-85 feet below Ground Surface Elevation **see (Figure No.3)**

4.7 Expansive Potential

Expansion Index (EI) test was conducted according to the ASTM (D-2429) on bulk samples (1-4 feet) from Boring No. 2 of the near-surface materials. Results indicated that the near-surface material are low expansive with in expansion potential of (EI = 4).

4.8 Laboratory Testing

The relatively undisturbed soil samples were subjected to various laboratory tests such as Water-Content Determination (ASTM D2216), Moisture-Unit Weight Relationships (ASTM D-1557), Consolidation Test (ASTM D-2435) and Direct-Shear Test (ASTM D-3080).

4.9 Sulfate Potential

Based on our review of laboratory testing result, the water-soluble sulfate (SO4) content is (56.7 mg/kg), according to ACI 318 Section 4.3.1 (type V) concrete is not required to be utilized for the proposed project.

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4.10 Corrosion Potential

Based on the review of laboratory test results the on- site soil possess a PH of **6.6** (EPA 9045B) and Resistivity of 3000 (Ohm-cm). Therefore, the on-site soil has been classified as having "**Corrosive"** potential. And the project Structural Engineer should provide specific recommendations for mitigation and protection, as necessary.

5.0 PERCOLATION FEASIBILITY STUDY

Percolation feasibility study for design of retention basin has been conducted. Our exploration consisted of a site inspection, subsurface exploration and percolation test. The purpose of this test was to determine the permeability rate of subsurface materials for retention basin design for onsite water runoffs.

Percolation test holes were excavated to a depth of about 5-feet below existing grades using a field equipment's hand auger. Two inches of gravel was place at the bottom of the hole. A 3-inch in diameter PVC pipe was placed into the hole and extended to the gravel layer. The test locations were pre-saturated prior to testing. Percolation testing began about 24 hours after the holes were pre-saturated. Percolation data sheets are presented in **APPENDIX F** of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 5. A factor of safety should be applied to the infiltration rates below per the Handbook.

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TABLE 5
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1
Depth (inches)	60
Test Type	Falling Head
Change in head over time: ΔH (inches)	1.5
Average head: Havg (inches)	20.
Time Interval (minutes): Δt (minutes)	10
Radius of test hole: r (inches)	4
Tested Infiltration Rate: It (inches/hour per square inch)	2.7

The in-situ field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time frame of the test (hours instead of days) and the amount of water used. Where appropriate, the short-term infiltration rates should be converted to long-term infiltration rates using reduction factors depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors, as determined by the project civil engineer. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered only as index values of infiltration rates.

Landscaping adjacent to newly paved areas is not recommended due to the potential of irrigation water infiltrating beneath the pavement's subgrade and base course and cause pavement failure. Where landscaping are planned adjacent to the new pavement, construction of a cutoff wall along the edge of the new pavement is necessary.

The cutoff wall should extend at minimum 6-inch below the bottom of the Aggregate Base Course Material. Finally, if not properly constructed, there is a potential for distress to improvements and properties located in down gradient or adjacent to infiltration areas.

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6.0 GEOLOGIC AND SEISMICITY

5.1 Seismic Design Parameters

The site is located at approximately 33.8226 Latitude and -117.2501 longitudes. Any new structural related construction must be designed in accordance with the requirements of the latest edition of the California Uniform Building Code (CBC).

The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, seismic zoning, occupancy, and the seismic design parameters.

The Site Seismic Parameters presented below are based on the Mapped Acceleration Parameters (Ss and S1) as well as the Site Coefficients and Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameters. Based on the California Building Code, the site have been identified as Category II and classified as **SITE CLASS D (STIFF SOIL)** based on Table 1613.5.2 (Site Class definitions). The following parameters may be utilized for the subject site. In addition, copies of most current USGS Design Maps Summary is in Appendix E of this report.

SITE SEISMIC PARAMETERS	
Mapped 0.2 second Period Spectral Acceleration, Ss	1.488
Mapped 1.0 second Period Spectral Acceleration, S1	0.551
Site Coefficient for Site Class “D”, Fa	1.0
Site Coefficient for Site Class “D”, Fv	Null-See Section 11.4.8
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 0.2 second, SMS	1.488
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 1 second, SM1	Null-See Section 11.4.8
Design Spectral Response Acceleration parameter for 0.2 Second, SDS	0.992
Design Spectral Response Acceleration parameter for 0.2 Second, SD1	Null-See Section 11.4.8

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5.2 Geological Hazards

It is our judgment, that based on the specific data and information contained or referenced in this report, the construction of the proposed commercial building will be safe against hazards from landslides, settlement or slippage, and they would not adversely affect the stability of the existing and adjacent structures, provided the recommendations presented herein are properly interpreted and implemented.

6.0 SECONDARY SEISMIC EFFECTS

The primary geologic hazard at the sites is moderate to strong ground shaking caused by an earthquake on any of the local or regional faults. The subject property is 16 and 10 miles east and west of active faults, respectively **see (FIGURE-5).** The potential for secondary geologic hazards was also evaluated including, liquefaction, dynamic settlement.

6.1 Liquefaction

Liquefaction is the loss of strength in generally cohesion less, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors in which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, and relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface.

However, based on the review of **"CGS Seismic Zonation Program"** as well as the **GEOLOGIC MAP OF PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2005**, the subject property is NOT located within "Liquefiable" area. In addition, review of the Susceptibility map of Riverside County revealed that the subject property is within an area with **LOW LIQUEFACTION SUSCEPTIBILTY see (FIGURE-7).**

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6.2 Surface Rupture

Based on research of available literature and results of site reconnaissance, no known active or potentially active faults underlie the subject site. In addition, the subject site is not located within any **Alquist-Priolo** Earthquake Fault Zone. Based on these considerations, the potential for surface ground rupture at the subject site is considered moderate.

6.3 Landslide

As indicated previously, the subject property is relatively flat. In addition, based on review of "CGS Seismic Hazards Zonation "the subject property is NOT located within potential "Landslide" area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the result of sub-surface exploration, laboratory testing, and research, it is the finding of this firm that the construction of the proposed commercial building is considered feasible from a geotechnical engineering standpoint provided the advice and recommendations presented herein are followed and implemented during construction.

Results of moisture-density testing revealed that the majority of the near-surface materials are in damp condition. In addition, results of Consolidation tests, which were conducted on the randomly selected soil samples at various depths also indicated excessive consolidation under potential building pressure.

Therefore, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics with proper in-situ moisture content, following completion of the existing vegetation and tree removal, the proposed building pad area should be over-excavated to approximate depth of **four (4) feet below bottom of proposed parameter and column footings. The lateral extend of the proposed over-excavations should be 3-feet beyond the edge of the proposed parameter and column footings.**

The foundation system may consist of either independently poured spread footings or a monolithically poured foundation and floor slab thereby using a turned-down slab

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construction technique. The proposed continuous and column pad footings should be designed by the project structural engineer. However, at the minimum, the parameter and column pad footings should be embedded at least 30-to-24 inches into the newly placed and compacted structural fill material, respectively. The proposed column and continuous footings may be designed for a maximum, allowable soil bearing strength of 2,500 pounds per square foot (psf).

7.1 Site Preparation and Grading

Subgrade Preparation within the Building pad Area

As indicated in section 7.0, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics, following completion of the trees and vegetation removal, the proposed building area to be over-excavated to approximate depth of eight (8) feet below its proposed Rough Finished Grade (RFG) elevation or an equivalent of four (4) feet below the proposed foundation subgrade (whichever is lower in elevation).

Upon completion of over-excavation, the exposed subgrade within the entire pad area should be scarified to depth of 12-inch, moisture conditioned as necessary and compacted to 90 percent of Maximum Laboratory Dry Density, as determined by (ASTM D-1557) Test Method. **It should be noted that the upper 12-inch should be compacted to 95 percent of its Maximum Laboratory Dry Density.**

Any loose or otherwise unsuitable soil that is encountered during compaction and proof rolling should be removed to depth of firm subgrade, which should be determined and confirmed by a representative from this office.

The entire grading operation should be conducted in the presence of a representative from this office. And the ultimate depth of removal as well as bottom scarification and compacting should be verified and confirmed by our representative as well.

7.2 Pavement Grading Recommendation

Following removal of all the grass, vegetation and trees and necessary cuts. We are recommending that the entire new pavement area to be over-excavated to depth of 24-inch below its Proposed Rough Finished Grade (RFG). Upon completion, the exposed

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subgrade should be scarified to depth of 12-inch, moisture conditioned, and compacted to at least 90 percent of its Maximum Dry Density as Determined by the (ASTM D 1557-12) Test Method.

7.3 Fill Placement

All the new fill soils should be placed in 8-10 inches thick loose lift and each lift should be Moisture conditioned to the suitable moisture content and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) Test Method.

On-site soil may be utilized as structural fill provided they are free of debris and moisture conditioned as necessary to the satisfaction of our field representative.

All grading and fill placement activities should be completed in accordance with the requirements of the City of Perris and/or County of Riverside Grading Guidelines. All fill soils should be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12).

Compaction tests should be performed periodically by a representative from this office as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at random locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the project specification.

7.4 Imported Structural Fill

In general, all imported structural fill soils (If needed) should consist of low to non-expansive (EI<20), well-graded soil. Imported soils should be evaluated by a geotechnical engineer or his representative prior to placement.

7.5 Utility Trench Backfill

In general, all the new utility trench backfill should also be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D- 1557-12). Compacted trench backfill should be performed to the requirement of the local grading guidelines. The trench backfill soils should be compaction tested where possible, probed

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and visually evaluated elsewhere. Temporary Excavation In general, temporary excavation higher than four (4) feet should be sloped back to 1:1(Vertical: Horizontal).

8.0 CONSTRUCTION CONSIDERATION

8.1 Excavation Difficulties

In general, the encountered sub-surface material was identified to be in dense to very dense condition. Therefore, some excavation difficulties should be anticipated.

8.2 Over-Sized Partials

During the grading process, if "over-sized" particles encountered in excessive quantities, proper segregation should be conducted in order to make the excavated materials suitable for fill placement or remove them from the excavation area.

9.0 FOUNDATION DESIGN AND CONSTRUCTION

9.1 Shallow Foundation Parameters for the Building (Structural Fill)

1- An allowable Soil Bearing pressure of 2,000 (psf)
2- An allowable At-Rest pressure of 57.5 (psf) **USE 57** (psf)
3- An allowable Active pressure of 38.3 (psf) **USE 40** (psf)
4- An allowable passive pressure of 345.0 (psf) **USE 300** (psf)
5- Friction angle of 30 degree
6- The proposed footing dimension should be provided by the project structural engineer, however, at the minimum the proposed continuous and column pad footing should be embedded at least 36 and 24 inches into newly placed and compacted structural fill soil, respectively.
7- Soil Density 115.2 (psf)
8- Kh =0.25
9- (Delta)(KAE) =0.19
10- (seismic Increment) =21.5 (pcf)
11- Utilize 0.4 for recommended coefficient of friction for sliding

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9.2 Footing Reinforcement

The minimum longitudinal steel reinforcing within proposed wall and column pad footing should be performed by the project structural engineer. The Bearing suitability of the exposed subgrade within the footing excavation should be evaluated by a representative from this office prior to placement of the reinforcement.

9.3 Floor Slab Design and Construction for Commercial Building

Based on the recommended subgrade preparation and the anticipated live floor loading, a 7-inch-thick concrete slab over the newly placed and structural fill soil which have been moisture conditioned and compacted to 90 percent (with exception of the top 12-inch which should compacted to 95 percent). It is recommended that the Concrete control joints at 30 times slab thickness (per foot) be provided to lower the potential of concrete slab shrinkage.

9.4 Foundation Static Settlement

Most of the settlement will occur during the initial application of the load, which is during the construction of the new tilt-up building. Following completion of the tilt-up Construction, we expect no more than 1-inch total and ¾ -inch differential for the static settlement over span 100 feet.

9.5 Drainage

All the site drainage should be collected and transferred to the street in non-erosive drainage devices. The proposed tilt-up building should be provided with roof drainage as well.

Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation. The ground immediately adjacent to the foundation shall be sloped away from the new structure at a slope of not less than one-unit vertical in 20 units horizontal (5 percent slope) for a minimum distance of 10 feet of horizontal distance measured perpendicular to the face of the wall.

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If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation.

9.11 Grading and Foundation Plan Review

It is recommended that proposed grading and foundation plans be reviewed by this office prior to finalization to verify that the plans have been prepared in conformance with the geotechnical recommendations presented in this report and if necessary to provide additional analyses or recommendations.

10.0 RETAINING WALL DESIGN

10.1 Wall Design

For simplicity and ease of report interpretation the following chart had been prepared to show the at rest, active and passive lateral pressures for the proposed retaining walls up to 10 feet high. The design is based on the compacted soil parameters, assuming level-backfill.

ITEM	VALUE1
At-Rest Case	57.5psf/ft (use 58) psf/ft
Active Case	38.3 psf/ft (use 40) psf/ft
Passive Case	345.0 (use 300) psf/ft
*Note: The values are based on Compacted Soil.	

Retaining walls greater than 6 feet in height should be designed for seismic lateral earth pressures. The "**Total seismic earth pressure",** which is a combination of "static earth pressure' and "**incremental seismic pressure".** The pressure distribution may be considered to be a triangle with the maximum pressure at the bottom. The resultant of this force may be assumed to be at 1/3 the height of the wall from the bottom of the wall.

The **"incremental seismic pressure"** can be calculated as the difference of "total seismic earth pressure" and "static earth pressure. Note**, Any computed seismic increment of**

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lateral earth pressure should not be added to the static (at-rest) lateral earth pressures". The Seismic increment of 21.5 (pcf) should be used for design of the wall greater than 6 feet.

10.2 Retaining Wall Drainage

Retaining walls should be provided with a drainage system at the base of the walls. The drainage should consist of a 4-inch in diameter-perforated pipe, embedded within a 12-inch thick, clean gravel wrapped in a geosynthetic filtration fabric.

10.3 Retaining Wall Backfill

The following is our general guidelines for the backfill within all the proposed retaining wall (s) regardless of their heights. Following placement of the drainage system the on-site soils may be utilized as backfill material behind the proposed retaining walls. The backfill material should be free of any debris as well as the over-sized particles to satisfactory of the project geotechnical engineer.

If needed, the fill material should be moisture conditioned as necessary, placed in thin lifts (8-to-10 inches) and each lift should be compacted with grading equipment to 90 percent of its Maximum Laboratory Dry Density.

As an alternative, the proposed retaining walls may be backfilled with import material with low expansion (EI<20). The imported soil should be evaluated and confirmed by the Geotechnical engineer prior to usage.

11.0 PAVEMENT RECOMMENDATION

11.1 Asphalt Pavement

Based on these findings and assuming traffic index (TI=7) the following table presents the recommended thickness for the new flexible pavement structure consisting of asphaltic concrete over a granular base, along with the appropriate CALTRANS specifications for proper materials and placement procedures.

Preliminary Pavement Recommendations

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	Parking Spots (Light Traffic Area)	**Driveways and aprons (Heavy Traffic Areas)**
PCC Section: Portland Cement Concrete	6.0-Inch Thick PCC over 6.0-Inch thick Layer of Aggregate Base Course, which had been reinforced	8.0-Inch Thick over 6.0-inch Thick Layer of Aggregate Base Course, which had been reinforced
Asphalt Section Asphaltic Concrete	4-Inch Thick AC over 8-Inch thick layer of Aggregate Base Course	4-Inch Thick AC over 12-Inch Thick Layer of Aggregate Base Course

The underlying recently compacted subgrade should be scarified to depth of 6-inch, moisture conditioned as necessary and compacted to at least 90 percent of Maximum Laboratory Dry Density as Determined by (ASTM D-1557-12) Test Method.

The new Aggregate Base Course material should be moisture conditioned as necessary and compacted to at least 95 percent of the Maximum Laboratory Dry Density as determined by (ASTM D-1557-12) test method. Asphalt Concrete (AC) should be compacted to a minimum of 95 percent of the laboratory Marshall Density.

11.2 Exterior Concrete Flat Work

The preparation of the subgrade soils within the flat work area such as side walk is as follows, the upper 6-inch of pavement over subgrade soils, which had been scarified to depth of 12-inch, moisture conditioned as necessary and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) test method.

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12.0 EXPLORATION LIMITATIONS

The conclusions and recommendations presented in this report are based on the findings and observations in the field and the results of laboratory tests performed on representative samples. The soils encountered in the boreholes are believed to be representative of the investigated area; however, soil characteristics can vary throughout the site. Geo Environmental Resources Inc. should be notified if subsurface conditions are encountered which differ from those described in this report.

This report has not been prepared for use by parties or projects other than those named and described above. It may not contain sufficient information for other parties or other purposes.

The conclusions and recommendations presented in this report are professional opinions. These opinions have been derived in accordance with current standards of geotechnical engineering and engineering geology practice, field observations and laboratory test results. No other warranty is expressed or implied.

Samples secured for this investigation will be retained in our laboratory for a period of thirty (30) days from the date of this report and will be disposed after this period unless other arrangements are made.

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13.0 REFERENCES

a) United States Geologic Survey (USGS),

b) 2008b, National Seismic Hazards Maps-Fault Parameters

C) California Building Code (CBC) latest addition

d) Geologic Map of the Perris Quadrangle

e) Perris Quadrangle by (Thomas W. Dibblee, Jr., 2003)

f) California Geological Survey (Cgs Seismic Zonation)

g) County of Riverside Liquefaction susceptibility Map

h) Nearby Wells (Ground water Information)

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APPENDIX A

BORING LOGS

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty to medium Sand, trace roots, damp, loose	-1	S	10	3.1	
3	SM	Natural Soil: (Ns) Brown, Silty fine to medium Sand, trace Clay, damp, firm	-3	D	30	3.3	115.2
4.5							
5	SM/SC	Natural Soil: (Ns) Light brown, Silty to Clayey fine to coarse Sand, damp, dense	-5	D	38	3.6	116.9
7	SM/SC	Same	-7	S	43	4.2	
8.5							
9.5							
10	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-10	D	53	4.6	121.9
15	SM	Same	-15	D	4"/60	5.3	123.8
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, perris, CA

Date Drilled: 1-21-2024

Surface Elevation (ft): 100

Project No.: G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-20	D	62	5.9	127.9
24.5 25	SM	Light gray-brown, Silty fine to Course Sand with Caliche, damp to moist, very dense	-25	S	5"/69	5.2	
30		Terminated at depth of 30.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty fine to medium Sand, damp, loose	-1	S	8	2.9	
4	SM	Natural Soil: (Ns) Brown, Silty fine to coarse Sand, trace fine gravel, damp, dense	-4	D	36	3.4	118.2
7	SM	Same	-7	D	46	3.2	122.6
10	SM	Damp to moist, very dense	-10	D	4"/54	5.1	131.6
15	SM	Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-15	S	62	4.8	
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, perris, CA

Date Drilled: 1-21-2024

Surface Elevation (ft): 100

Project No.: G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: (Ns) Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-20	D	68	5.1	130.7
22.5		Terminated at depth of 22.5 feet. Groundwater not encountered. Boring backfilled on 1-21-2024.					
25							
30							
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-3

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1							
3	SM	Natural Soil: Light brown, Silty fine to medium Sand, with Clay, damp, firm	-3	D	27	3.6	115.6
6	SM	Dense	-6	S	47	3.9	
8		Same	-8	S	53	4.4	
11	SM	Natural Soil: Brown to orange-brown, Silty fine to coarse Sand, with Clay, damp, very dense	-11	D	65	4.7	122.6
15	SM	Light brown, Silty fine to coarse Sand with Caliche, damp to moist, very dense	-15	S	5"/59	5.2	
18	SM	Same	-18	S	3"/52	5.9	
19.5		Terminated at 19.5 feet					

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2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-4

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light brown, Silty fine to medium Sand, trace roots, moist, loose	-1	S	9	5.6	
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to coarse Sand with Clay, damp, dense	-3	D	34	3.6	112.9
5	SM	Same	-5	D	41	3.9	116.2
7	SM	Same	-7	S	48	3.4	
10	SM/SP	Natural Soil: Gray-brown, Silty fine to coarse Sand, trace fine gravel, damp to moist, very dense	-10	D	5"/60	5.1	123.1
15	SM/SP	Same	-15	D	54.0	4.4	
18	SM/SP	Same	-18	D	65	4.1	
19.5		Terminated at 19.5 feet					

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Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-5

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light gray-brown, Silty fine to medium Sand, trace roots, damp, loose	-1	S			
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to medium Sand trace Clay, damp, firm	-3	S			
5	SM	Light brown, Silty fine to Clayey fine to coarse Sand damp, dense	-5	S			
6.5							
7		Terminated at depth of 7.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
10							
15							

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Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate A-1

APPENDIX B

LABORATORY TESTING

Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.1

Location: Perris-23641 Placentia Avenue

Boring No: B-1

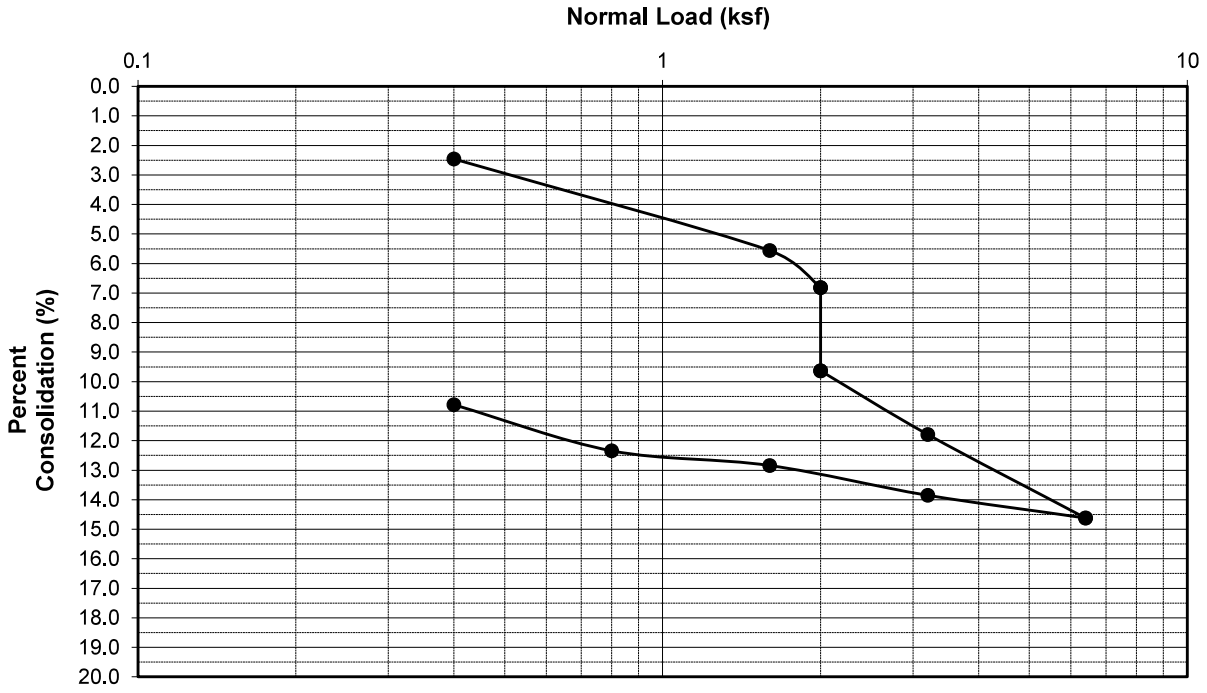
Soil Type: Brown Silty fine Sand, trace clay

Tested By: RK

Project No G-012424-1

Depth: 3feet

Date: 1/23/2024

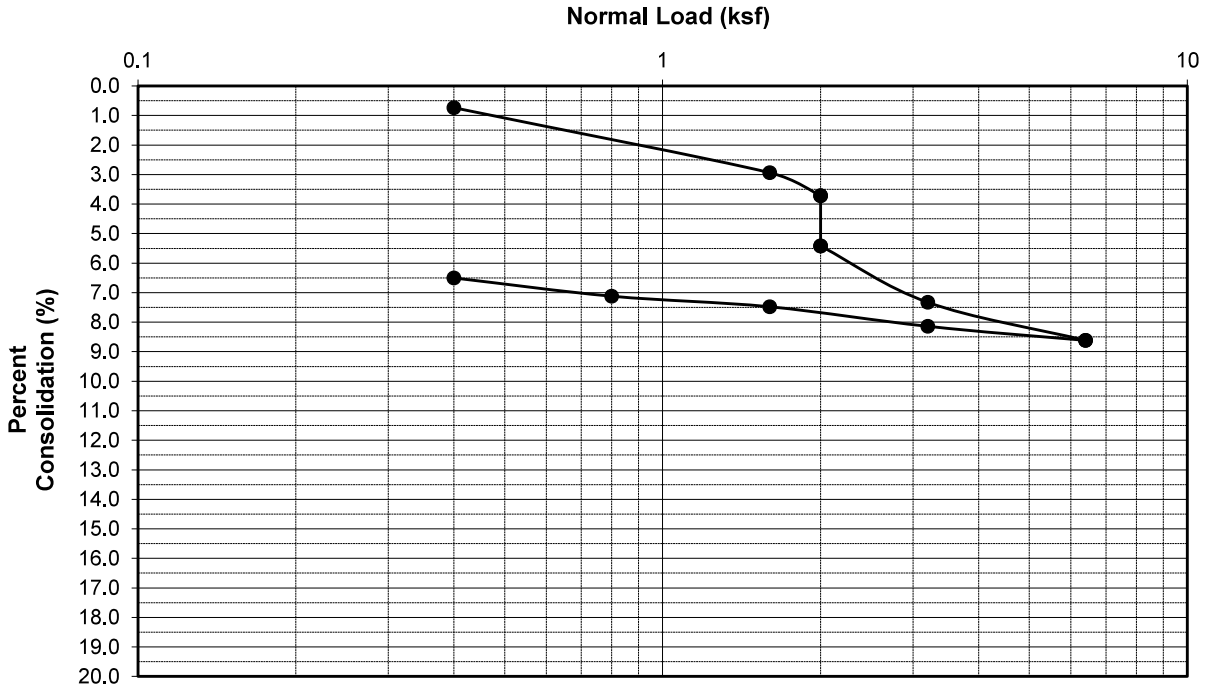


Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.3

Location: PERRIS-23641 Placentia Avenue
Boring No: B-2
Soil Type: Light brown Silty fine to coarse sand
Tested By: RK
Project No G-012224-1
Depth: Bulk (1-5feet)
Date: 1/25/2024

REMOLD SAMPLE



Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.2

Location: Perris-23628 Water Street

Boring No: B-3

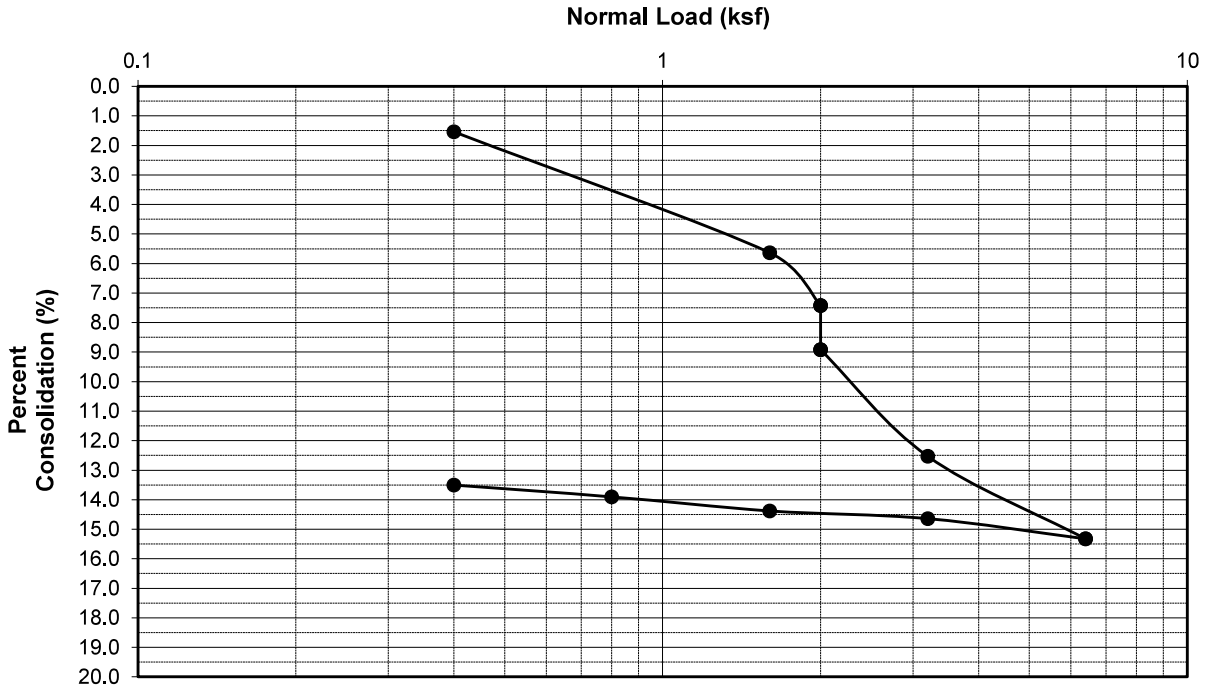
Soil Type: Dark to light brown Silty fine sand

Tested By: RK

Project No. G-012424-1

Depth: 5.0 feet

Date: 1/25/2024



Geo Environmental Resources Inc.

DIRECT SHEAR TEST

REMOLDED SAMPLE

Location : Perris-23641 Placentia Avenue

Boring No: B-2

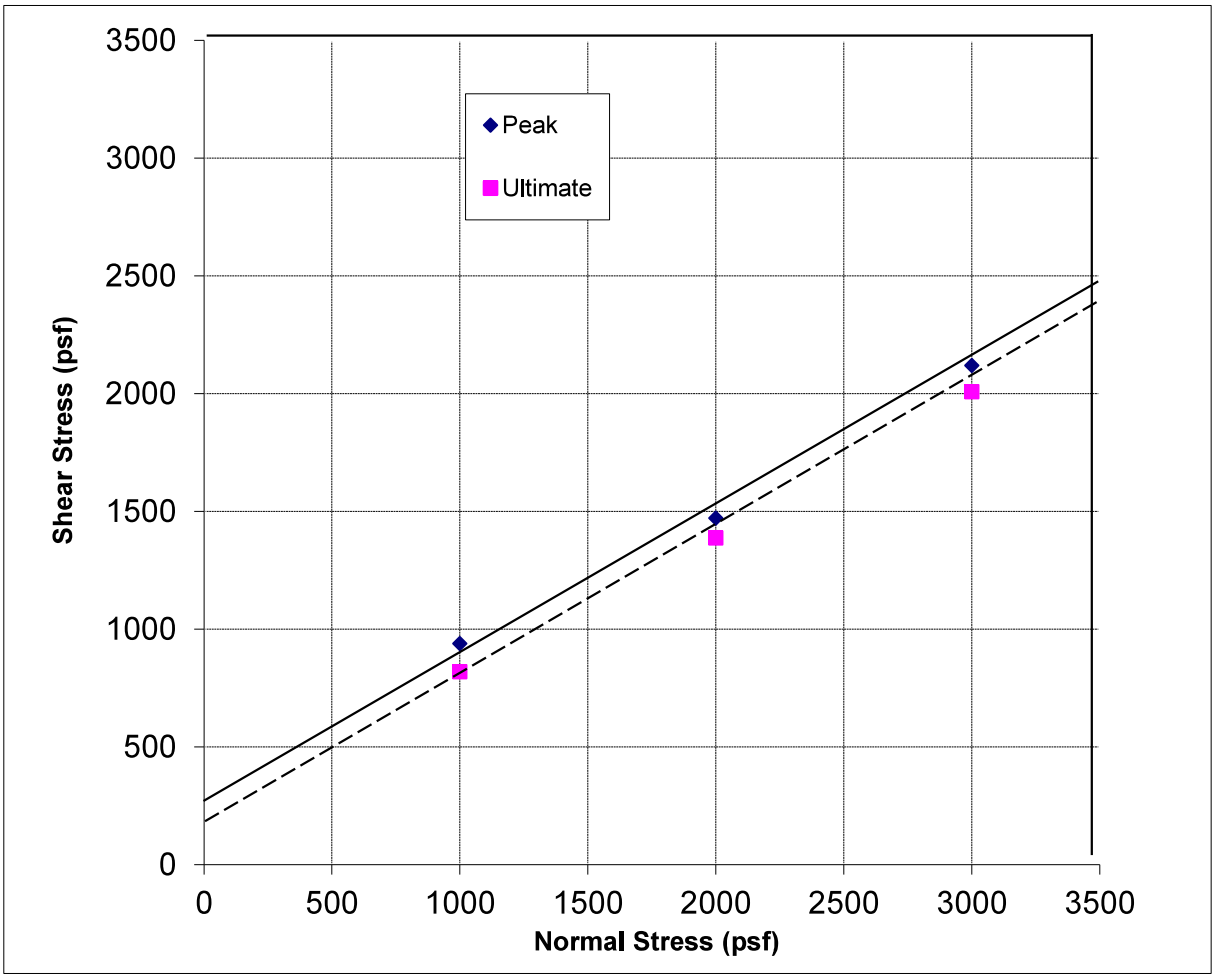
Soil Type: Brown silty fine to coarse sand

Tested by: MF

Project No: G-012424-1

Depth: (1- 5) feet

Date: 1/26/2024

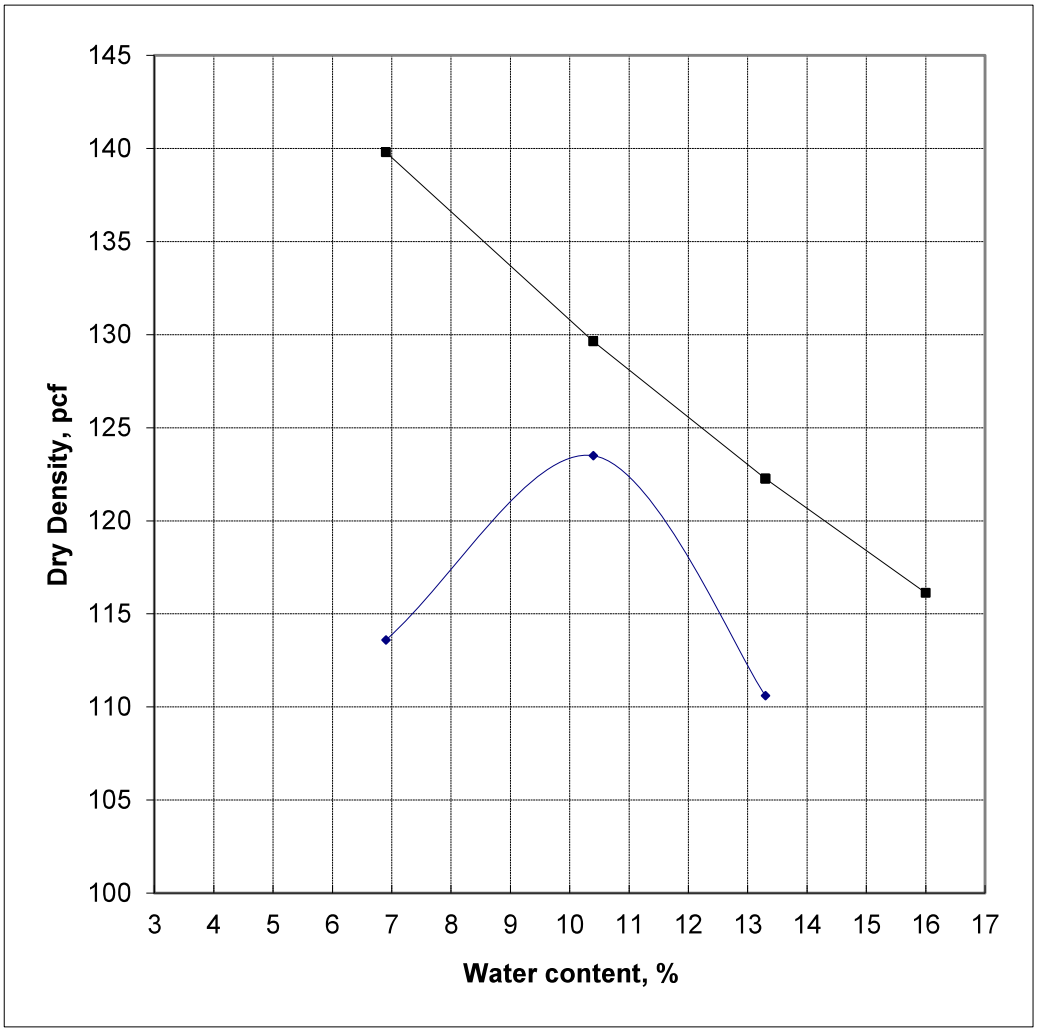


	Peak	Ultimate
Cohesion (psf)	280	180
Friction Angle (deg.)	30	30

Geo Environmental Resources Inc.

MAXIMUM DENSITY TEST

Location : Perris-23841 Placentia Avenue
Boring No: B-4
Soil Type: Brown silty f-c sand
Tested by: MG
Project No: G-012424-1
Depth: Bulk (2-6) feet
Date: 1/25/2024
Proctor No.1 123.5 @ 10.5



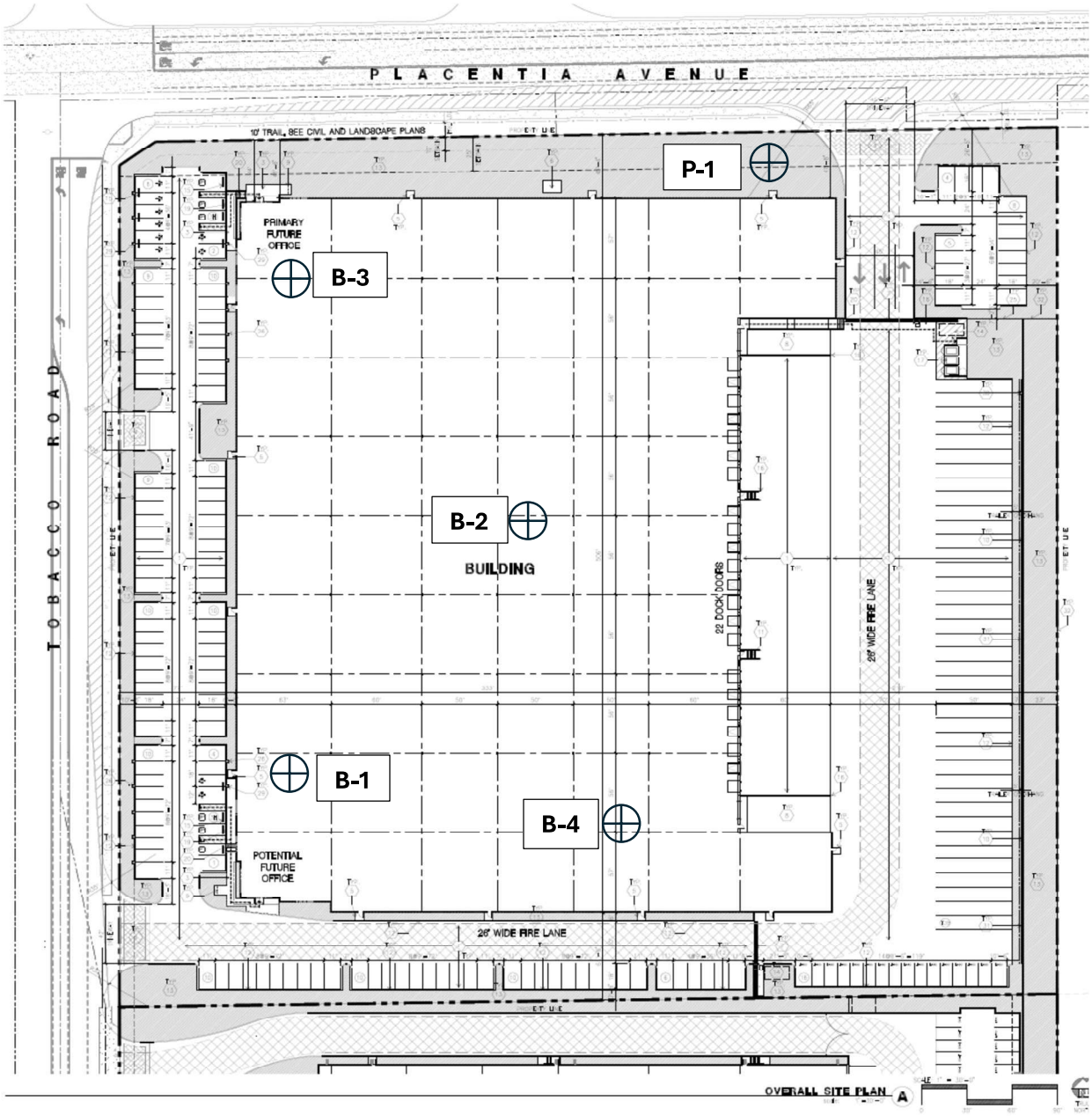
APPENDIX C

FIGURES

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

N



THIS SITE PLAN IS FOR GEOTECHNICAL REPORT ONLY. SITE PLAN PREPARED WITHOUT BENEFIT OF TITLE OPINION, DEED RESTRICTION, OR SURVEY. SITE SUBJECT TO CHANGE.

Boring Location ⊕

GERI	Geo Environmental Resources, Inc. 2511 West La Palma Ave., Suite E Anaheim, California 92801	SITE PLAN /Boring Location Project No. G-012424-1 **Figure 1**

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

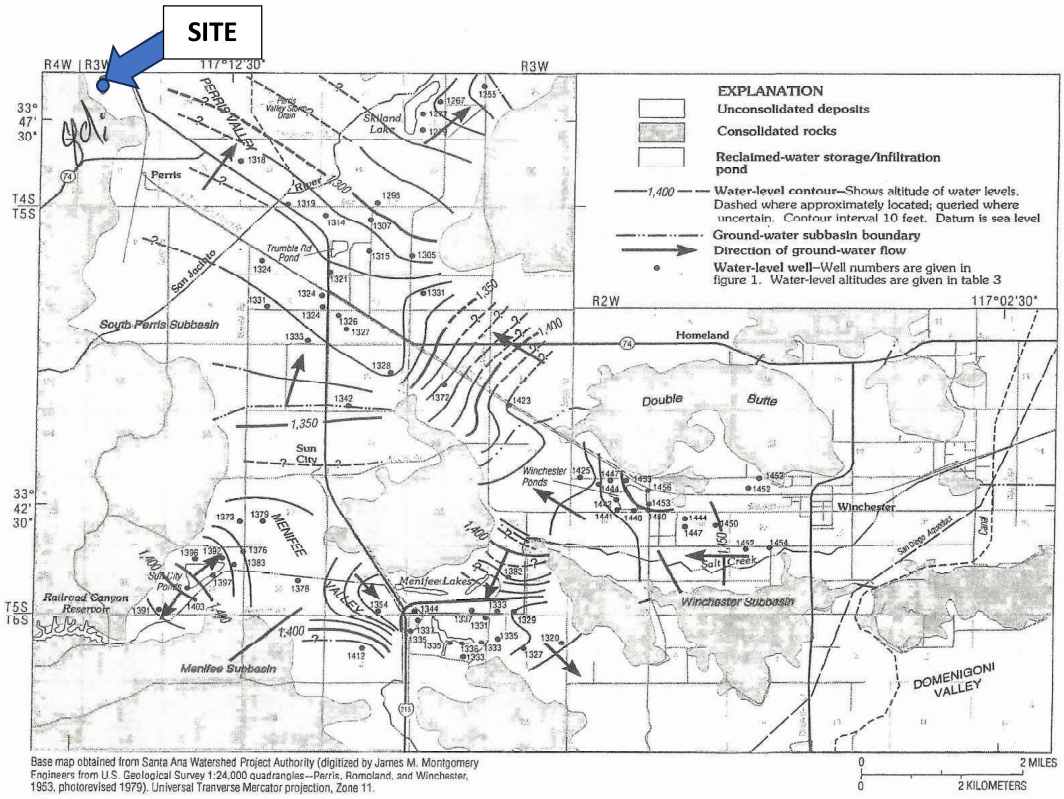
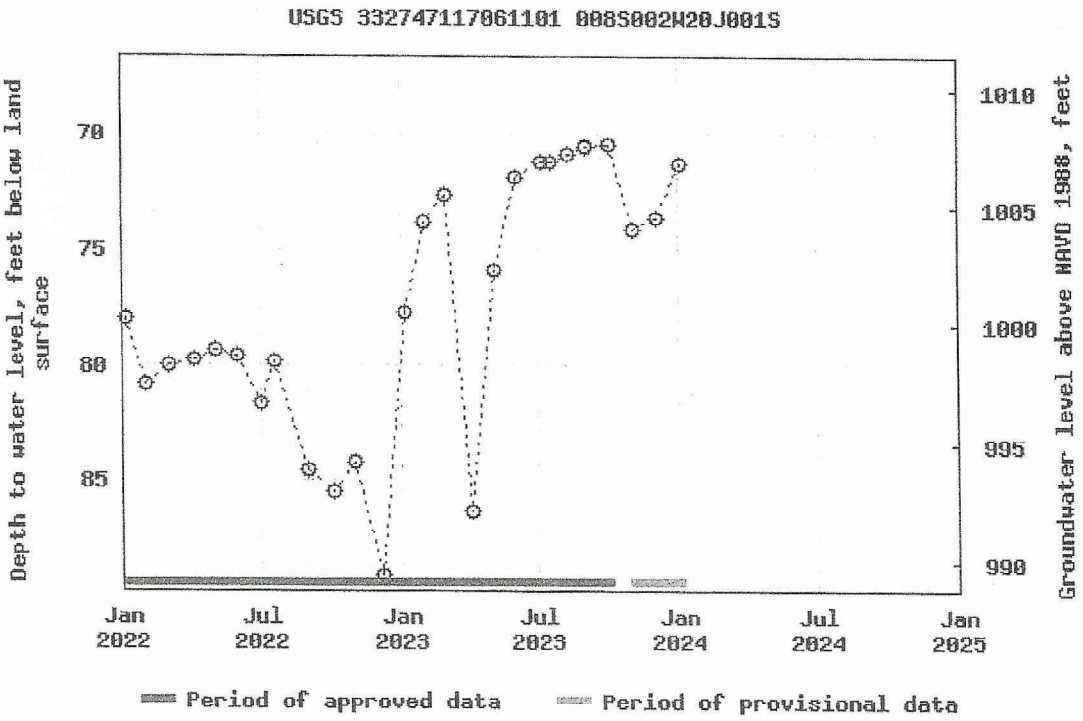


Figure 2. Water levels in the Winchester, Menifee, and south Perris ground-water subbasins, California, March 31 to June 6, 1995.



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

USGS 332747117061102 008S002W20J002S

Riverside County, California
Hydrologic Unit Code 18070302
Latitude 33°27'47.53", Longitude 117°06'15.58" NAD83
Land-surface elevation 1,078.36 feet above NAVD88
The depth of the well is 180 feet below land surface.
The depth of the hole is 590 feet below land surface.
This well is completed in the California Coastal Basin aquifers (N100CACSTL) national aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

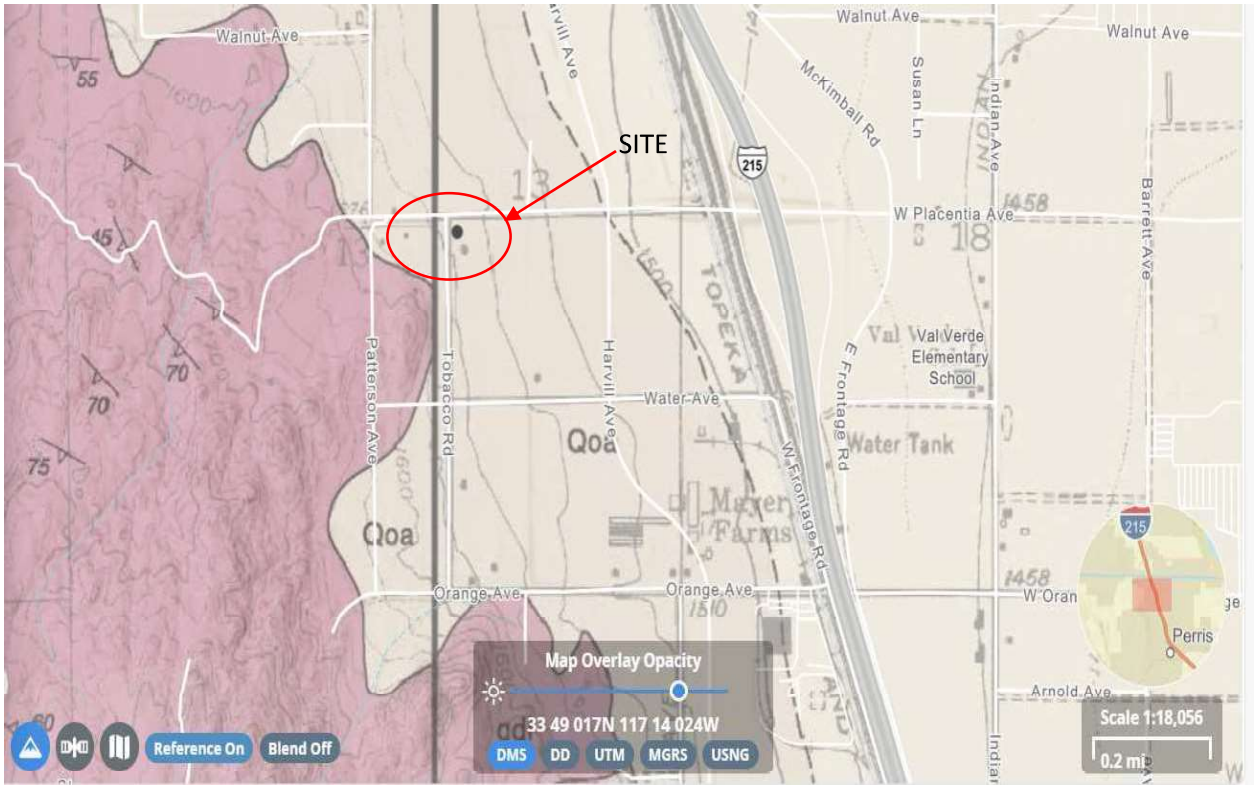


FIGURE NO. 4-USGS-NATIVE SOIL-ALLUVIAL FAN GRAVEL AND SAND (Qoa)

Project: Proposed Commercial Tilt-up Building

Project: Address: 23641 Placentia Avenue, Perris, CA

Project No.G-012224-1

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

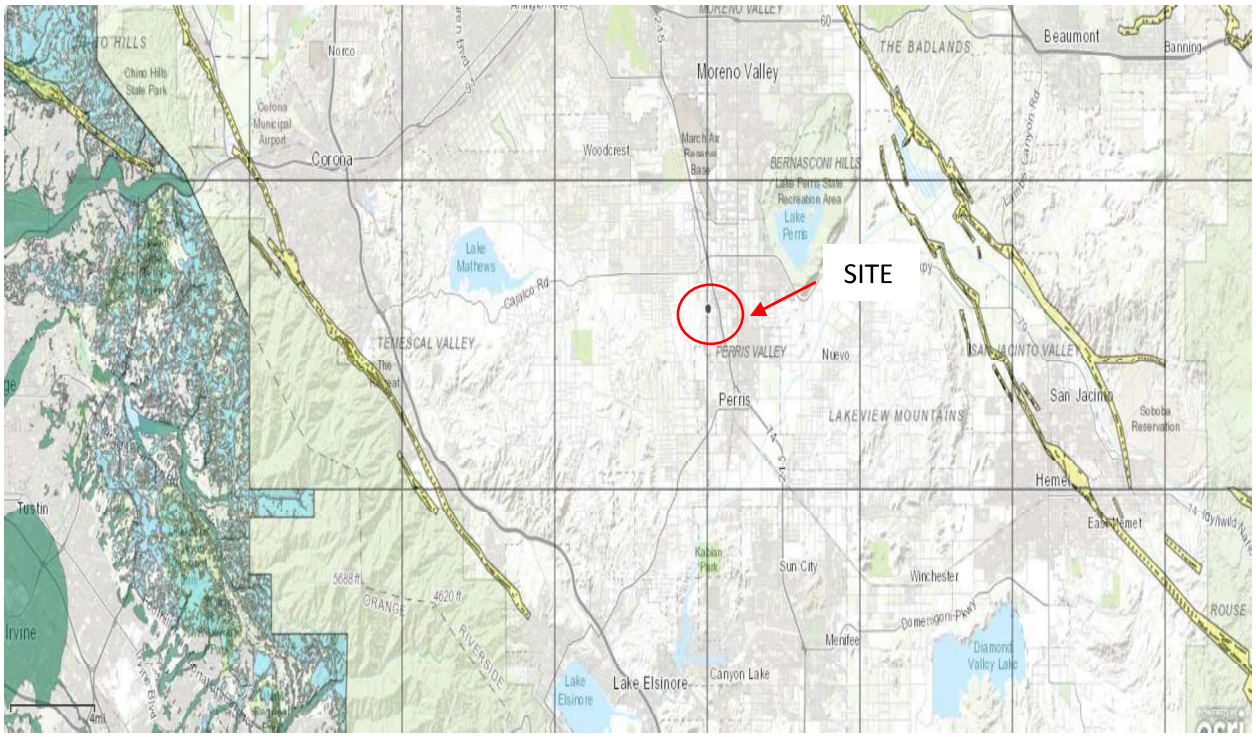


FIGURE NO. 5 -CGS-SEISMIC HAZARDS-ACTIVE FAULTS

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

FIGURE NO. 6 CGS-VICINITY MAP

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

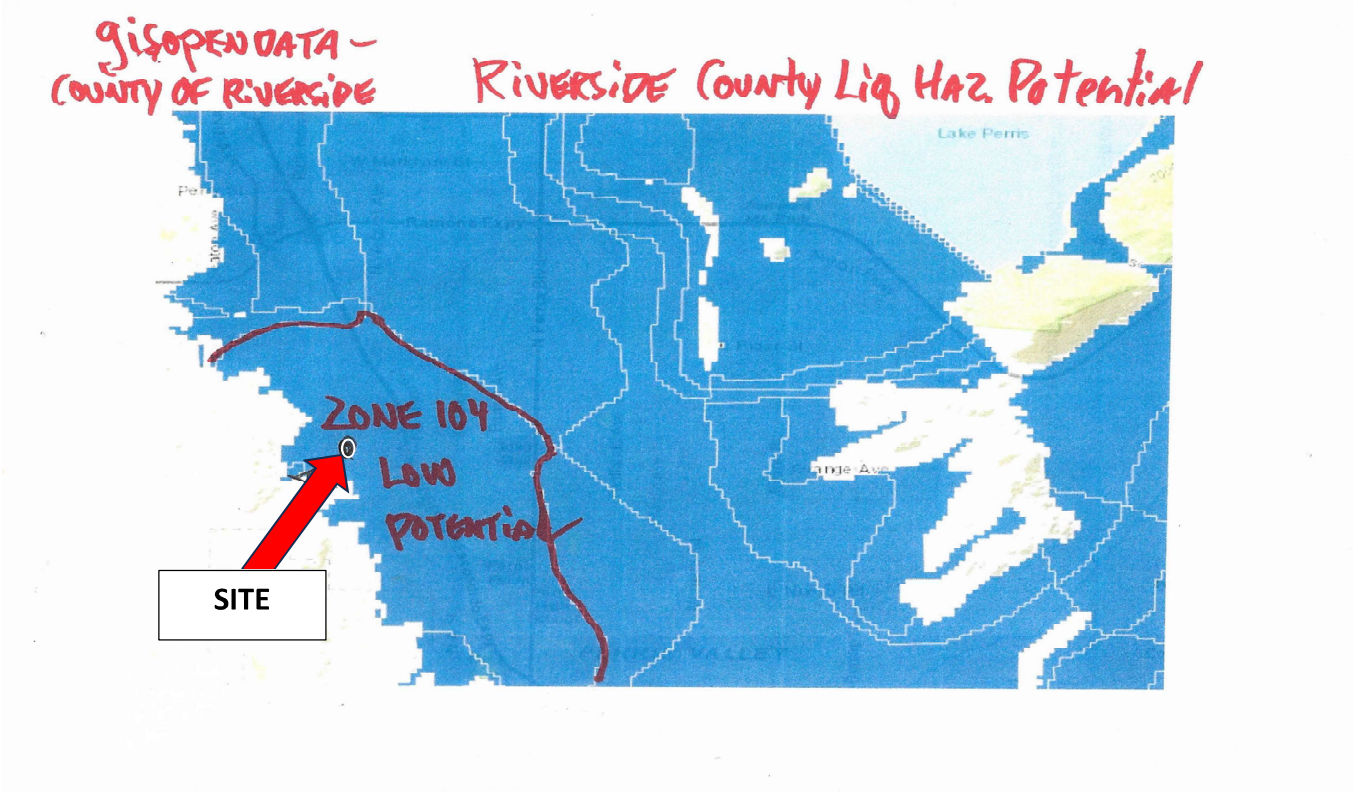


Figure No. 7 Liquefaction Susceptibility

APPENDIX D

General Notes

GENERAL NOTES

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 in and larger
Cobbles:	3 in to 8 in
Gravel:	coarse - ¾ to 3 in
	fine - No. 4 (4.76 mm) to ¾ in
Sand:	coarse - No. 4 (4.76 mm) to No. 10 (2.0 mm)
	medium - No. 10 (2.0 mm) to No. 40 (0.42 mm)
	fine - No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (Non-plastic)
Clay:	No. 200 (0.074 mm) and smaller (Plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance Correlated to Unconfined Compressive Strength, tsf
PID:	Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-units (BDL=Below Detection Limits)

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube - 3" O.D. (except where noted)
CS:	3" O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

N: Penetration Resistance per 6 inch interval, or fraction thereof, for a standard 2 inch O.D. (1⅜ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N values where plus sign is shown

Nc: Penetration Resistance per 1¾ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.

Nr: Penetration Resistance per 6 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0-2	0-0.25
Soft	3-4	0.25-0.50
Medium Stiff	5-8	0.50-1.00
Stiff	9-15	1.00-2.00
Very Stiff	16-30	2.00-4.00
Hard	31+	4.00+

DEGREE OF PLASTICITY	PI	DEGREE OF EXPANSIVE POTENTIAL	PI
None to Slight	0-4	Low	0-15
Slight	5-10	Medium	15-25
Medium	11-30	High	25+
High to Very High	31+		

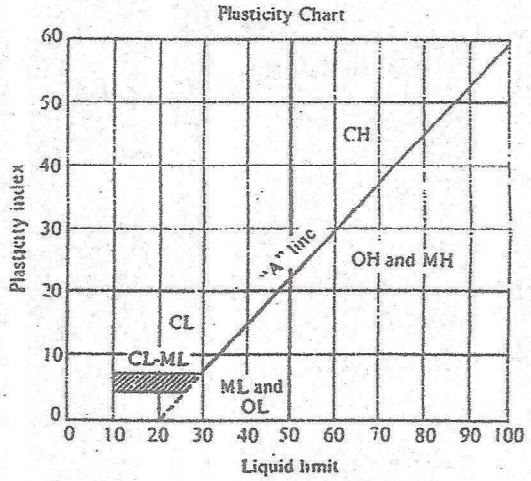
NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0-4
Loose	5-10
Firm	11-30
Dense	31-50
Very Dense	51+

UNIFIED SOIL CLASSIFICATION SYSTEM. (ASTM D-2487)

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM[a] d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM[a] d / u	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4 — Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
- Less than 5 per cent — GW, GP, SW, SP
- More than 12 per cent — GM, GC, SM, SC
- 5 to 12 per cent — *Borderline* cases requiring dual symbols[b]



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

CHARACTERISTICS AND RATINGS OF UNIFIED SOIL SYSTEM CLASSES FOR SOIL CONSTRUCTION *

Class	Compaction Characteristics	Max. Dry Density Standard Proctor (pcf)	Compressibility and Expansion	Drainage and Permeability	Value as an Embankment Material	Value as Subgrade When Not Subject to Frost	Value as Base Course	Value as Temporary Pavement	
								With Dust Palliative	With Bituminous Treatment
GW	Good: tractor, rubber-tired, steel wheel or vibratory roller	125-135	Almost none	Good drainage, pervious	Very stable	Excellent	Good	Fair to Poor	Excellent
GP	Good: tractor, rubber-tired, steel wheel or vibratory roller	115-125	Almost none	Good drainage, pervious	Reasonably stable	Excellent to good	Poor to fair	Poor	
GM	Good: rubber-tired or light sheepsfoot roller	120-135	Slight	Poor drainage, semipervious	Reasonably stable	Excellent to good	Fair to poor	Poor	Poor to fair
GC	Good to fair: rubber-tired or sheepsfoot roller	115-130	Slight	Poor drainage, impervious	Reasonably stable	Good	Good to fair **	Excellent	Excellent
SW	Good: tractor, rubber-tired or vibratory roller	110-130	Almost none	Good drainage, pervious	Very stable	Good	Fair to poor	Fair to poor	Good
SP	Good: tractor, rubber-tired or vibratory roller	100-120	Almost none	Good drainage, pervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SM	Good: rubber-tired or sheepsfoot roller	110-125	Slight	Poor drainage, impervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SC	Good to fair: rubber-tired or sheepsfoot roller	105-125	Slight to medium	Poor drainage, impervious	Reasonably stable	Good to fair	Fair to poor	Excellent	Excellent
ML	Good to poor: rubber-tired or sheepsfoot roller	95-120	Slight to medium	Poor drainage, impervious	Poor stability, high density required	Fair to poor	Not suitable	Poor	Poor
CL	Good to fair: sheepsfoot or rubber-tired roller	95-120	Medium	No drainage, impervious	Good stability	Fair to poor	Not suitable	Poor	Poor
OL	Fair to poor: sheepsfoot or rubber-tired roller	80-100	Medium to high	Poor drainage, impervious	Unstable, should not be used	Poor	Not suitable	Not suitable	Not suitable
MH	Fair to poor: sheepsfoot or rubber-tired roller	70-95	High	Poor drainage, impervious	Poor stability, should not be used	Poor	Not suitable	Very poor	Not suitable
CH	Fair to poor: sheepsfoot roller	80-105	Very high	No drainage, impervious	Fair stability, may soften on expansion	Poor to very poor	Not suitable	Very poor	Not suitable
OH	Fair to poor: sheepsfoot roller	65-100	High	No drainage, impervious	Unstable, should not be used	Very poor	Not suitable	Not suitable	Not suitable
Pt	Not suitable		Very high	Fair to poor drainage	Should not be used	Not suitable	Not suitable	Not suitable	Not suitable

* "The Unified Classification: Appendix A - Characteristics of Soil, Groups Pertaining to Roads and Airfields, and Appendix B - Characteristics of Soil Groups Pertaining to Embankments and Foundations," Technical Memorandum 357, U.S. Waterways Experiment Station, Vicksburg, 1953.

** Not suitable if subject to frost.

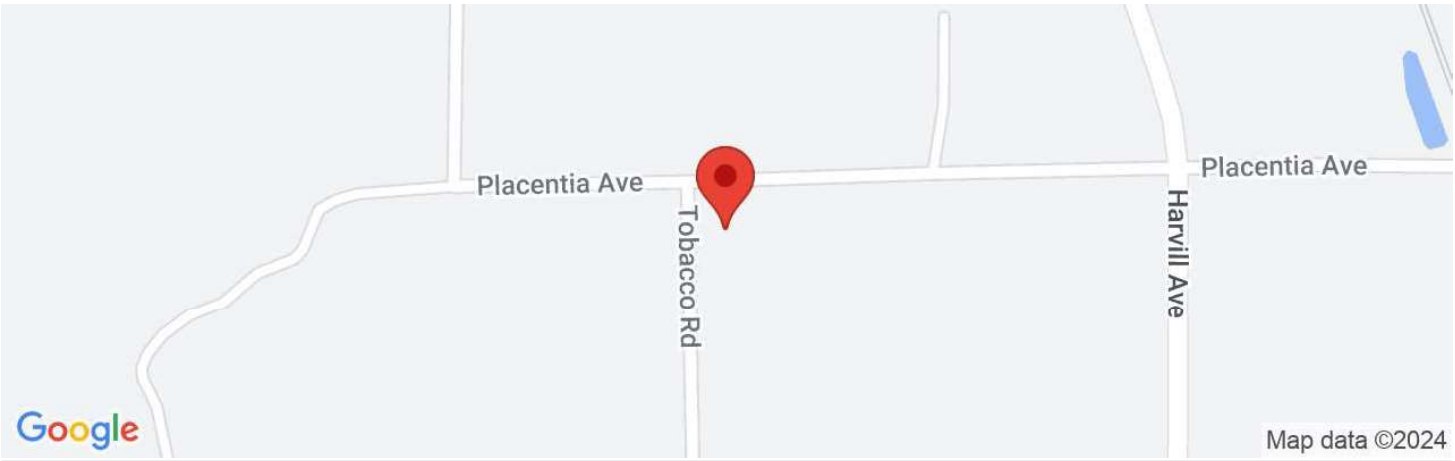
APPENDIX E

Seismic Design Parameters

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

23641 Placentia Ave, Perris, CA 92570, USA

Latitude, Longitude: 33.8226811, -117.2501986



Date	2/9/2024, 9:14:15 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.488	MCE_R ground motion. (for 0.2 second period)
S_1	0.551	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.488	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.992	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.55	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.488	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.587	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.551	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.601	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
PGA_{UH}	0.625	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.938	Mapped value of the risk coefficient at short periods
C_{R1}	0.918	Mapped value of the risk coefficient at a period of 1 s
C_V	1.398	Vertical coefficient

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APPENDIX E

Seismic Design Parameters

PERCOLATION TEST REPORT

Project Name:		Commercial Tilt-up Building			**Project No.:**		G-012424-1
Test Hole No.:		P-1			**Date Excavated:**		2/5/2024
Length of Test Pipe:			72.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			1.2	inches	**Presoak Date:**		2/4/2024
Depth of Test Hole:			70.8	inches	**Perc Test Date:**		2/5/2024
Check for Sandy Soil Criteria Tested by:				A.K	**Percolation Tested by:**		A.K
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:00 AM 8:25 AM	25	25	64.8	13.2	51.6	0.5
2	8:30 AM 8:55 AM	25	50	64.8	15.6	49.2	0.5
			Soil Criteria: Sandy				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:00 AM 9:30 AM	30	30	64.8	18.0	46.8	0.6
2	9:30 AM 10:00 AM	30	60	63.6	19.2	44.4	0.7
3	10:00 AM 10:30 AM	30	90	64.8	16.8	48.0	0.6
4	10:30 AM 11:00 AM	30	120	63.6	20.4	43.2	0.7
5	11:00 AM 11:30 AM	30	150	64.8	24.0	40.8	0.7
6	11:30 AM 12:00 PM	30	180	64.8	26.4	38.4	0.8
7	12:00 PM 12:30 PM	30	210	64.8	28.8	36.0	0.8
8	12:30 PM 1:00 PM	30	240	64.8	30.0	34.8	0.9
9	1:00 PM 1:30 PM	30	270	64.8	30.0	34.8	0.9
10	1:30 PM 2:00 PM	30	300	64.8	31.2	33.6	0.9
11	2:00 PM 2:30 PM	30	330	64.8	31.2	33.6	0.9
12	2:30 PM 3:00 PM	30	360	64.8	31.2	33.6	0.9

Radius of test hole (in):		4				
Average Head (in):		48.0				**A-1**
Infiltration Rate (in/hr):		2.7				

ADDITIONAL PERCOLATION DATA

PERCOLATION TESTING FOR PPT220047
(NEIGHBORING PROJECT TO THE SOUTH)

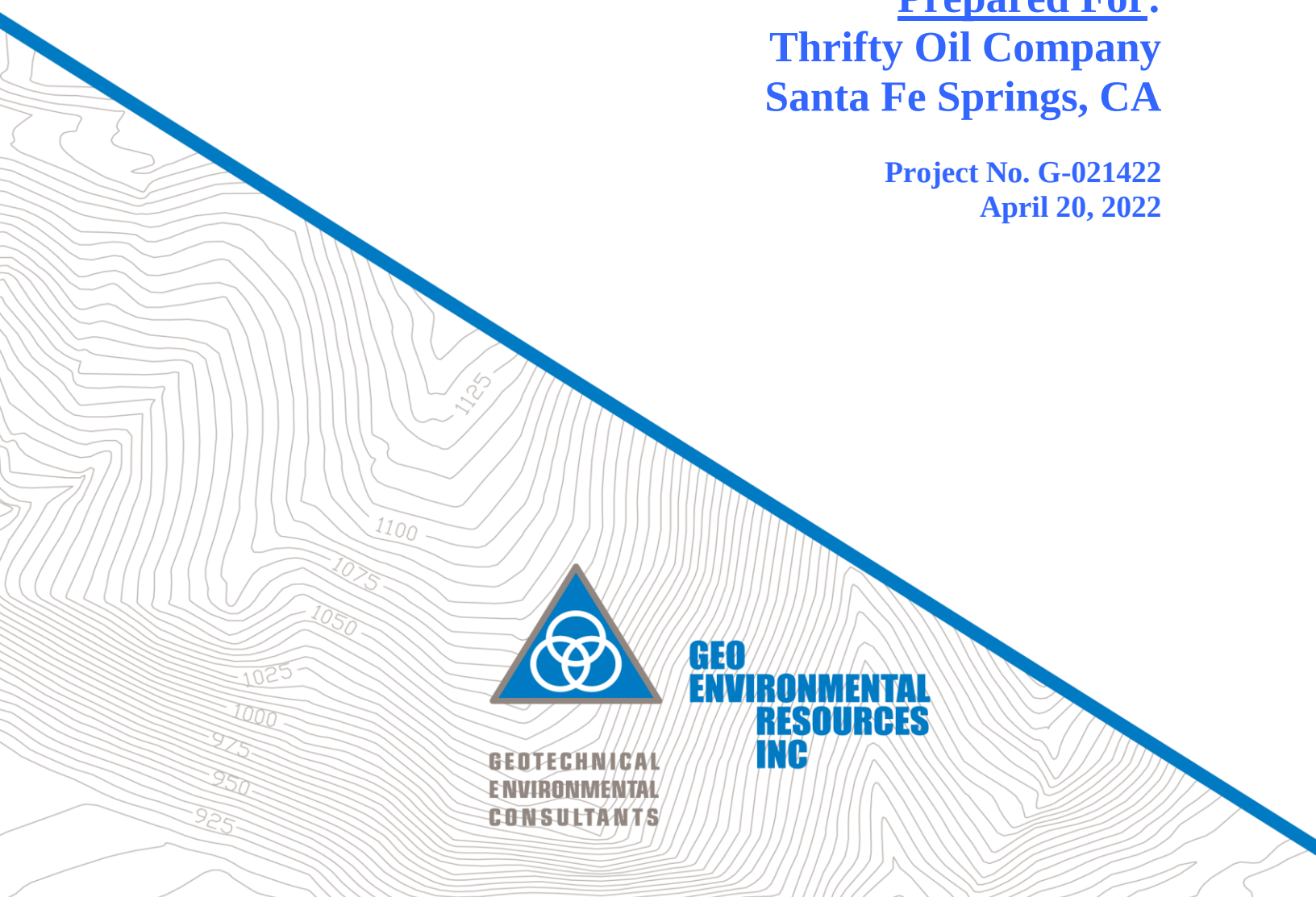
Geotechnical Engineering Exploration and Analysis

Percolation Feasibility Study Results

23628 Water Street, Perris, CA

Prepared For:
Thrifty Oil Company
Santa Fe Springs, CA

Project No. G-021422
April 20, 2022



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CONSULTANTS

GEO
ENVIRONMENTAL
RESOURCES
INC

1. PURPOSE AND SCOPE

This report provides the results of our recent percolation feasibility study for the proposed Tilt-up Commercial structure. The purpose of the study is to present the results of the field evaluation for the infiltration rate for the storm water runoff at the subject property.

Peculation test was conducted in accordance with **ASTM D 3385 "STANDARD TEST METHOD FOR INFILTRATION RATE OF SOILS IN FIELD USING DOUBLE-RING INFILTROMETER".** Two (2) locations have been designated to conduct the percolation test procedure. Please review the "Site Location Plan" Figure No.1 to review the approximate percolation tests location. The main purpose of multiple-locations is to obtain additional infiltration rates.

2. SUBSURFACE EXPLORATION

Percolation test No.1 was conducted next to Boring No.6 and Percolation No.2 was performed adjacent to the Boring No.5. For percolation, No.1 Test Pit No.1 was excavated to an approximate depth of 80 inches below the existing grade. Test pit Number 2, which was excavated for per was excavated to an approximate depth of 84 inches below the existing grade. Both two test pits were excavated with the help of backhoe and field equipment. The exposed subgrade within both locations were saturated 24-hours prior to actual percolation test.

3. SUBSURFACE CONDITION

The subsurface soil encountered in Test Pit No 1 (TP-1) consisted of Brown Silty Fine to Coarse Sand, Trace Clay Alluvial Deposits (Qof) Dry to damp to the depth of about 18 inches, which was underlain by Orange Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits (Qof) to the depth of 8 feet. The samples were obtain by the help of the hand auger and field equipment and it was obtained at the corner of test pit, where the percolation had been performed.

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In case of Test pit No 2 (TP-2), Soil classified as Brown Silty Fine to Coarse Sand, Trace Clay

Alluvial Deposits (Qof), Dry to damp and dense. This layer was continued to the depth of 3 feet. Then after that we observed Cemented soil with CALICHE, Alluvial Deposit (Qof) and moist which was very dense as well

Detailed geotechnical subsurface condition was originally discussed in our original geotechnical report (G-021422), which was prepared as Proposed Tilt up.

According to attached figure 6, the subject site is not located within a "Liquefaction Zone" based on the review of the liquefaction map of California (California Department of Conservation). Also there is no evidence of near-surface groundwater in our subsurface exploration. Within Test Pit No.1 and 2 there was no groundwater encountered to maximum explored depth.

4. GEOTECHNICAL CONSIDERATIONS

The followings were considered prior to test procedure. :

1. Water infiltration into the ground should be at least 10 feet above the groundwater table.
2. The distance between the infiltration facility and the adjacent private property lines should be at least 10 feet.
3. The minimum foundation set back should be at least 10 feet from the infiltration facility.

4. Test Procedure

The double ring infiltrometer test (ASTM D 3385) is a well recognized and documented technique for directly measuring the soil infiltration rate of a site. Double ring infiltration was developed in response to the fact that smaller (less than 40 inch diameter) single ring infiltrometers tend to overestimate vertical infiltration rates. This has been attributed to the fact that the flow of water beneath the cylinder is not purely vertical and diverges laterally.

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Double ring infiltrometers minimize the error associated with the single-ring method because the water level in the outer ring forces vertical infiltration of water in the inner ring. Care should be taken when driving the rings into the ground as there can be a poor connection between the ring wall and the soil. This poor connection can cause a leakage of water along the ring wall and an overestimation of the infiltration rate. Another potential source of error is attributed to the size of the cylinders. As such, the use of cylinder sizes less than those prescribed in ASTM D 3385 is not recommended by most codes.

Geo Environmental Resources, double ring infiltrometer consists of a 12-inch inner ring and a 24-inch outer ring. While there are two operational techniques used with the double-ring infiltrometer, the constant head method and the falling head method; ASTM D3385 mandates the use of the constant head method.

With the constant head method, water is consistently added to both the outer and inner rings to maintain a constant level throughout the testing. The volume of water needed to maintain the fixed level of the inner ring is measured. To help maintain a constant head, a variety of devices may be used. A hook gauge, steel tape or rule, or length of steel or plastic rod pointed on one end, can be used for measuring and controlling the depth of liquid (head) in the infiltrometer ring. If available, a graduated Mariotte tube or automatic flow control system may also be used.

On the other hand and with the falling head method, which has been used in this report, the falling level of the water is measured in each time interval and ultimately, as shown in following tables, a final report shall be provided and, based on the test results, an infiltration rate shall be recommended. The final number is average of previous 4-infiltration rate.

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5. FINDINGS AND CONCLUSIONS

Result of Percolation test **No.1 indicates 5.25 inch/hr.** with a percolation **No.2 indicating 4.7 inch/hr.** Attached please see percolation tables and graphs.

($\boldsymbol{Final\ Infiltration\ rate} = \frac{\boldsymbol{Infiltration\ rate\ from\ test}}{\boldsymbol{Factor\ of\ safety}}$) **The minimum recommended factor of safety will be two (2).** Therefore, the actual infiltration rate of subject property will be half of the obtained infiltration rate**.**

It is our opinion that due the variability within the near-surface soil, the lower infiltration rate (Infiltration No.2) should be considered to utilize in the design. Therefore, the recommended infiltration rate is 2.35 Inch/hr.

1. The infiltration of the storm water will not result in ground settlement that could affect adversely the proposed structure.
2. All results and findings are based on level (Horizontal) surface area. Effect of any slope or inclination shall be considered to evaluate the final Percolation rate.
3. The proposed infiltration facility should be designed in such way that in case of "Drainage Capacity Failure" overflow to street.

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Figure 20: Approximate location and depth of the test.

Figure 21: Using bentonite to seal the apparatus, Soil was firm and dry

Figure 22: Position of laser meter and method of reading level of the water.

Figure 23: Accuracy of Reading water level by laser meter. Test was done by reading level of the water at specific time intervals

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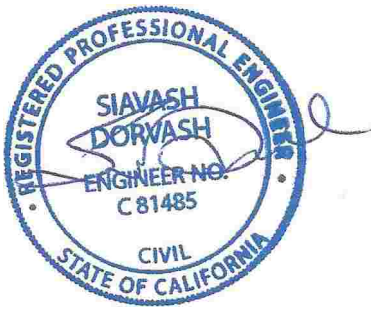
We appreciate the opportunity to be of service on this report. If we may be of additional Assistance, should Geotechnical Related problems occurs, please do not hesitate to contact us at Any time.

Very truly yours,

GEO ENVIRONMENTAL RESOURCES, INC.

Alexander A. Rastegar

Project Engineer



S. Dorvash, P.E.

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Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location 1 (TP-1)

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:30	0:15	5 3/16		6 4/16			-	-
1	End	9:45		7 2/16	1 15/16	8 9/16	2 5/16	64	-	-
	Start	10:00	0:15	9 3/16	2 1/16	11	2 7/16	64	-	-
2	End	10:15		11 4/16	2 1/16	13 7/16	2 7/16	64	-	-
	Start	10:30	0:15	13 5/16	2 1/16	Water (5 9/16))	2 8/16	64	9 11/16	**8 2/16**
3	End	10:45		15 5/16	2	8	2 7/16	64	9 13/16	**8 3/16**
	Start	11:00	0:15	Water(5 4/16)	2 1/16	10 6/16	2 6/16	64	9 12/16	**8 3/16**
4	End	11:15		7 5/16	2 1/16	12 12/16	2 6/16	65	9 10/16	**8 3/16**
	Start	11:30	0:15	9 5/16	2	15 1/16	2 5/16	65	9 7/16	**8 2/16**
5	End	11:45		11 4/16	1 15/16	Water (6 3/16))	2 7/16	65	9 7/16	**8 1/16**
	Start	12:00	0:15	13 3/16	1 15/16	8 10/16	2 7/16	65	9 8/16	**7 15/16**
6	End	12:15		15 1/16	1 14/16	10 15/16	2 5/16	65	9 8/16	**7 12/16**
	Start	12:30	0:15	Water(5 4/16)	2	13 5/16	2 6/16	66	9 9/16	**7 12/16**
7	End	12:45		7 4/16	2	15 10/16	2 5/16	66	9 7/16	**7 13/16**
	Start	13:00	0:15	9 2/16	1 14/16	(Water)5 3/16	2 7/16	66	9 7/16	**7 12/16**
8	End	13:15		10 14/16	1 12/16	7 8/16	2 5/16	66	9 7/16	**7 10/16**
	Start	13:30	0:15	12 8/16	1 10/16	9 13/16	2 5/16	66	9 6/16	**7 4/16**
9	End	13:45		14 1/16	1 9/16	12	2 3/16	70	9 4/16	**6 13/16**
	Start	14:00	0:15	Water(5 10/16)	1 14/16	14 1/16	2 1/16	70	8 14/16	**6 13/16**
10	End	14:15		7 4/16	1 10/16	(Water)5 3/16	2	70	8 9/16	**6 11/16**
	Start	14:30	0:15	8 13/16	1 9/16	7 5/16	2 2/16	70	8 6/16	**6 10/16**
11	End	14:45		10 6/16	1 9/16	9 5/16	2	70	8 3/16	**6 10/16**
	Start	15:00	0:15	11 14/16	1 8/16	11 3/16	1 14/16	70	8	**6 4/16**
12	End	15:15		13 5/16	1 7/16	13	1 13/16	72	7 13/16	**6 1/16**
	Start	15:30	0:15	14 11/16	1 6/16	(Water)5 7/16	1 12/16	72	7 8/16	**5 14/16**
13	End	15:45		Water(6 6/16)	1 7/16	7 2/16	1 13/16	72	7 5/16	**5 12/16**
	Start	16:00	0:15	7 12/16	1 6/16	8 12/16	1 10/16	72	7 1/16	**5 10/16**
14	End	16:15		9 1/16	1 5/16	10 4/16	1 8/16	73	6 8/16	**5 8/16**
	Start	16:30	0:15	10 6/16	1 5/16	11 12/16	1 8/16	74	6 5/16	**5 7/16**
15	End	16:45		11 11/16	1 5/16	13 4/16	1 8/16	75	6 2/16	**5 5/16**
	Start	17:00	0:15	13	1 5/16	14 12/16	1 8/16	76	6	**5 4/16**
16	End	17:15		14 5/16	1 5/16	16 4/16	1 8/16	77	6	**5 4/16**

Infiltration Rate (Inch/Hour): *5 5/16*

5.25

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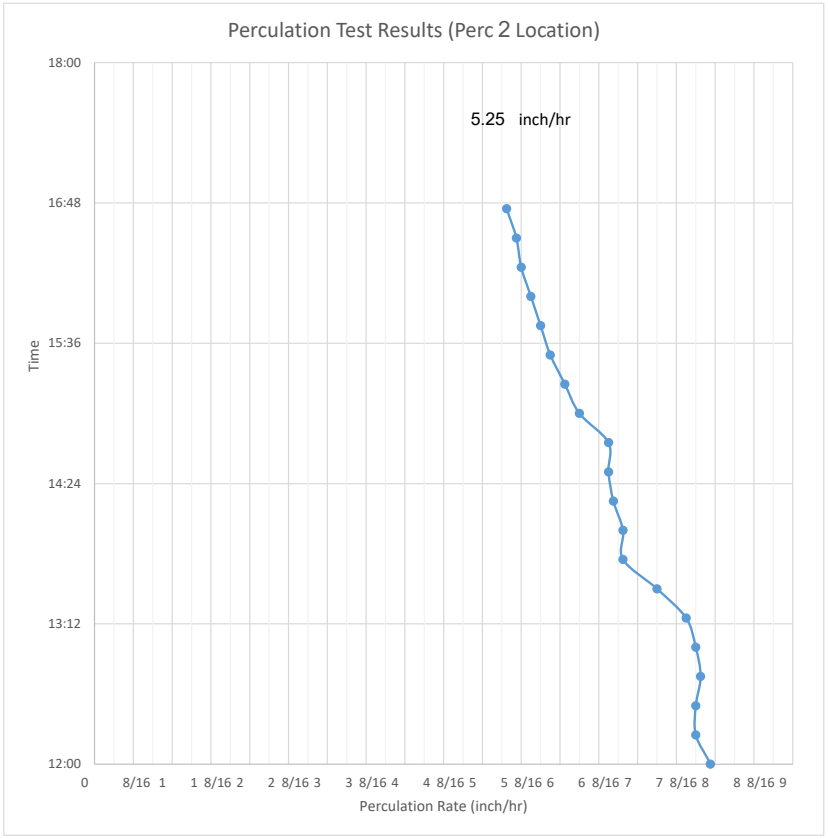
Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



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Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/15/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	67°-87° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location TP-2

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:00	0:15	5 14/16		5 11/16			-	-
1	End	9:15		8	2 2/16	7 15/16	2 4/16	64	-	-
	Start	9:30	0:15	10 4/16	2 4/16	10 6/16	2 7/16	64	-	-
2	End	9:45		12 6/16	2 2/16	12 11/16	2 5/16	64	-	-
	Start	10:00	0:15	14 8/16	2 2/16	Water (5 1/16)	2 4/16	64	9 4/16	**8 10/16**
3	End	10:15		16 8/16	2	7 7/16	2 6/16	64	9 6/16	**8 8/16**
	Start	10:30	0:15	Water(5 8/16)	2 2/16	9 10/16	2 3/16	64	9 2/16	**8 6/16**
4	End	10:45		7 8/16	2	11 14/16	2 4/16	65	8 15/16	**8 4/16**
	Start	11:00	0:15	9 9/16	2 1/16	14	2 2/16	65	8 13/16	**8 3/16**
5	End	11:15		11 9/16	2	Water (5 1/16))	2 3/16	65	8 10/16	**8 3/16**
	Start	11:30	0:15	13 8/16	1 15/16	7 5/16	2 4/16	65	8 11/16	**8**
6	End	11:45		15 7/16	1 15/16	9 6/16	2 1/16	65	8 10/16	**7 15/16**
	Start	12:00	0:15	Water(5 15/16)	1 14/16	11 6/16	2	66	8 8/16	**7 12/16**
7	End	12:15		7 15/16	2	13 4/16	1 14/16	66	8 3/16	**7 12/16**
	Start	12:30	0:15	9 13/16	1 14/16	15 2/16	1 14/16	66	7 13/16	**7 11/16**
8	End	12:45		11 9/16	1 12/16	Water(5 5/16)	1 12/16	66	7 8/16	**7 8/16**
	Start	13:00	0:15	13 5/16	1 12/16	7 2/16	1 12/16	66	7 4/16	**7 6/16**
9	End	13:15		15	1 11/16	8 13/16	1 11/16	70	7 1/16	**7 1/16**
	Start	13:30	0:15	Water(5 2/16)	1 11/16	9 8/16	11/16	70	5 14/16	**6 14/16**
10	End	13:45		6 15/16	1 13/16	11 2/16	1 10/16	70	5 12/16	**6 15/16**
	Start	14:00	0:15	8 8/16	1 9/16	12 11/16	1 9/16	70	5 9/16	**6 12/16**
11	End	14:15		10 1/16	1 9/16	14 3/16	1 8/16	70	5 6/16	**6 10/16**
	Start	14:30	0:15	11 8/16	1 7/16	Water (5 5/16)	1 8/16	70	6 3/16	**6 6/16**
12	End	14:45		12 13/16	1 5/16	6 15/16	1 10/16	72	6 3/16	**5 14/16**
	Start	15:00	0:15	14 1/16	1 4/16	8 6/16	1 7/16	72	5 14/16	**5 9/16**
13	End	15:15		Water(5 12/16)	1 3/16	9 10/16	1 4/16	72	5 10/16	**5 3/16**
	Start	15:30	0:15	7	1 4/16	10 15/16	1 5/16	72	5 7/16	**5**
14	End	15:45		8 3/16	1 3/16	12 3/16	1 4/16	73	5 5/16	**4 14/16**
	Start	16:00	0:15	9 5/16	1 2/16	13 7/16	1 4/16	74	5	**4 12/16**
15	End	16:15		10 7/16	1 2/16	14 11/16	1 4/16	75	5 1/16	**4 11/16**
	Start	16:30	0:15	11 9/16	1 2/16	15 15/16	1 4/16	76	5	**4 9/16**
16	End	16:45		12 11/16	1 2/16					

Infiltration Rate (Inch/Hour): ***4 11/16 =4.7***

GEO ENVIRONMENTAL RESOURCES INC
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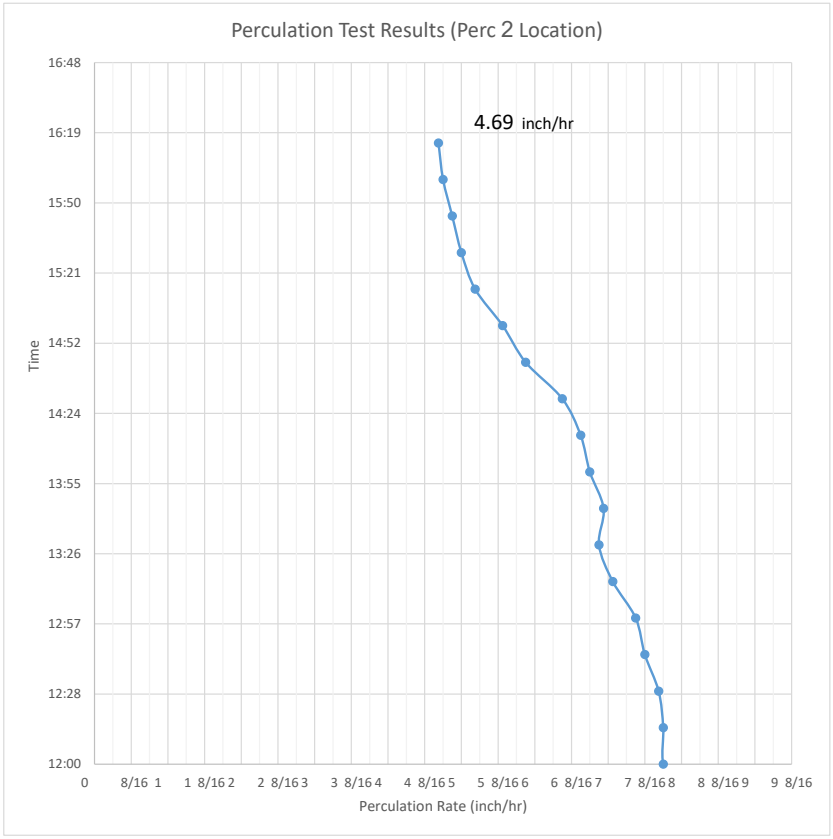
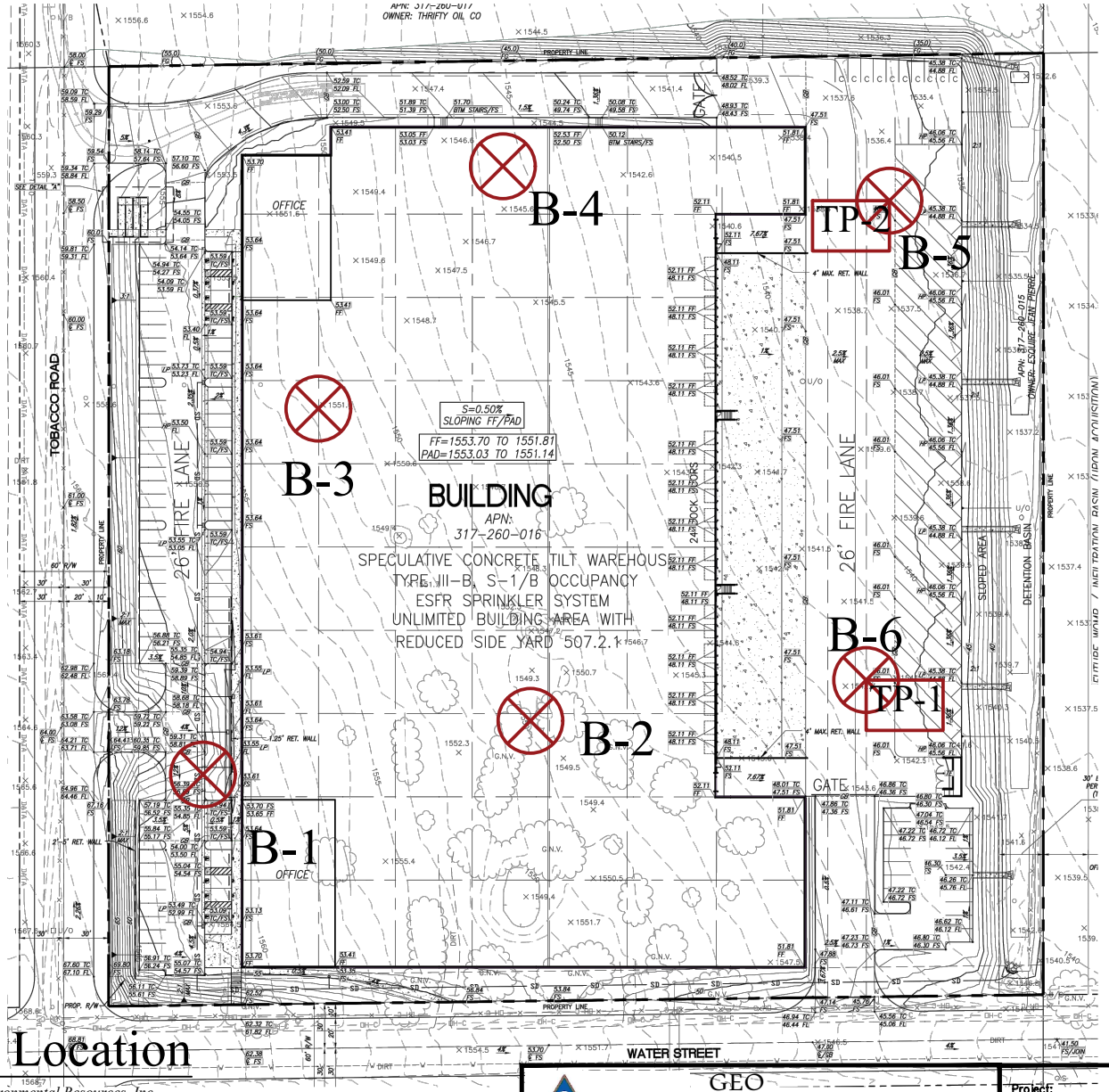
Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil





Plan & Boring Location

Based on the drawing that was sent to GEO Environmental Resources, Inc

B-1 *Approximate Boring Location*
P-1 *Approximate Percolation Test Location*

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS
GEO ENVIRONMENTAL RESOURCES, INC.
TEL: (714) 995-9001 FAX: (714) 995-9008

Project:		
Proposed Tiltup		
ADDRESS: 23628 Water Street, Perris		
Project NO: G-021422	SCALE: As Mentioned	FIG.:1

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

SITE LOCATION

DESIGN STORM
DEPTH = 0.59 IN

Santa Ana River Watershed

Santa Margarita Watershed

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | HEMET | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | MURRIETA | TEMECULA

N

Rain Gage Locations

R□□□R□□D□□□ □ □ □ □ □□□□□ □D
□ □ □ □R□ □□□□D□□□ □□□R
□□ □ □ □R□□□□□ □ □D□□□R□□□

Isohyetal Map for the 85th Percentile 24 hour Storm Event

□□□□2□□□

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: INFILTRATION TRENCH #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA A	*33,331*	*Mixed Surface Types*	*0.41*	*0.29*	*9511.2*			
	33331		***Total***		**9511.2**	**0.59**	***467.6***	***600***

Notes:

Infiltration Trench - Design Procedure	BMP ID: TRENCH	Legend:	Required Entries / Calculated Cells

Company Name:	ARSMTRONG & BROOKS	Date:	11/1/2024
Designed by:	ALEX GUTIERREZ	County/City Case No.:	

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t =	1	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP} =	468	ft^3

Calculate Maximium Depth of the Reservoir Layer

Enter Infiltration rate	I =	2.7	in/hr
Enter Factor of Safety, FS (unitless)	FS =	3	

Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook

	n =	40	%
Calculate D_1. $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$	D_1 =	13.50	ft

Enter depth to historic high groundwater mark (measured from finished grade)	45	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)	60	ft

D_2 is the smaller of:

Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	34.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX} =	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.00	ft

Calculate the design depth of water, d_W

Design d_W = (D_R) x (n/100)	Design d_W =	2.00	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	234	ft^2
Proposed Design Surface Area	A_D =	340	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.00	ft

Sediment Control Provided? (Use pulldown)	
Geotechnical report attached? (Use pulldown)	Yes

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: UNDERGROUND RETENTION CHAMBER #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA B	*316,213*	*Mixed Surface Types*	*0.95*	*0.81*	*255176.9*			
	316213		***Total***		***255176.9***	***0.59***	***12546.2***	***12,794***

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID CHAMBERS	Legend:	Required Entries / Calculated Cells

Company Name: ARMSTRONG & BROOKS — Date: 11/1/2024

Designed by: JOSHUA GROENHEIM — County/City Case No.:

Design Volume

a) Tributary area (BMP subarea)	A_T =	7.26	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	12,546	ft^3

Maximum Depth

a) Infiltration rate	I =	2.7	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	5.4	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		50	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		10	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	4.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	4.0	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	1	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	12546	ft^2
d) Proposed Design Surface Area	A_D =	33335	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	63	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =		ft
c) Forebay surface area (minimum)	Area =		ft^2
d) Full height notch-type weir	Width (W) =		in

Notes:

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CMP Detention and Infiltration

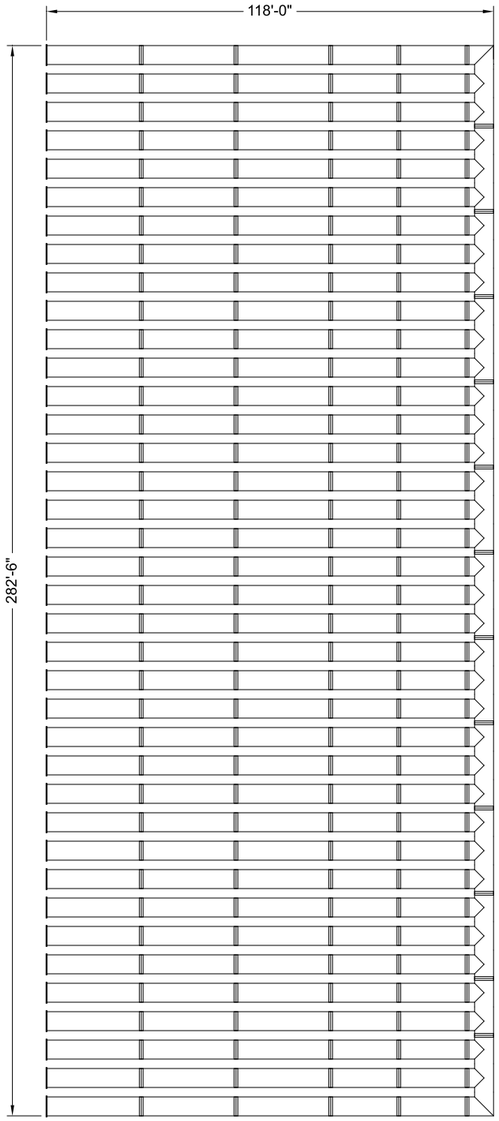
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 4,577 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 89,859 CF
- BACKFILL STORAGE VOLUME = 41,440 CF
- TOTAL STORAGE PROVIDED = 131,300 CF

PIPE DETAILS
- DIAMETER = 60"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 2"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 40'

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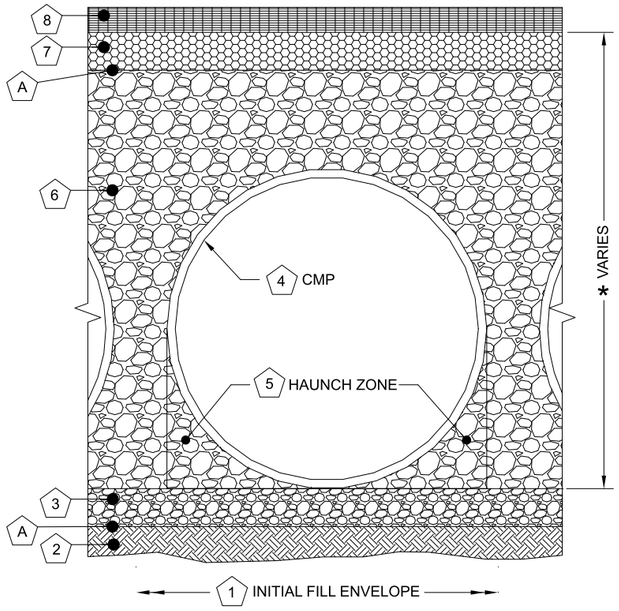
CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



	Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
	Material Location	Description	Material Designation	Designation
8	Rigid or Flexible Pavement (if applicable)			
7	Road Base (if applicable			
A	Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6	Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ½" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction"
3	Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A	Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
*	Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

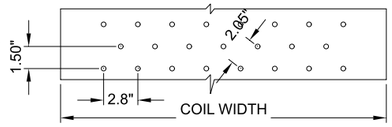
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

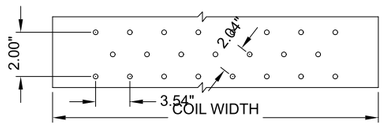
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



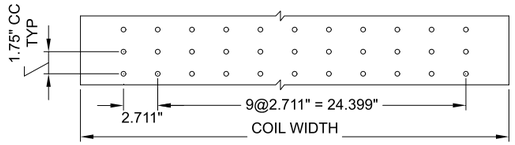
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



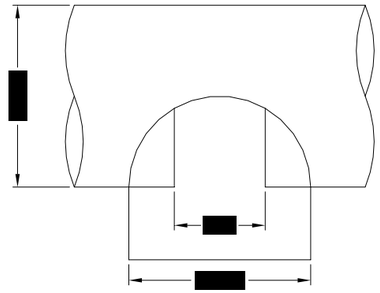
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

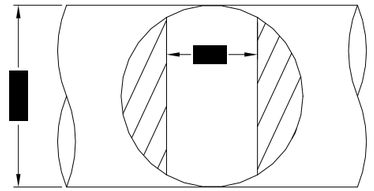
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

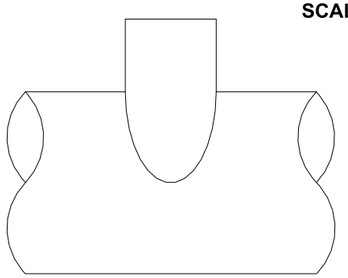


FRONT

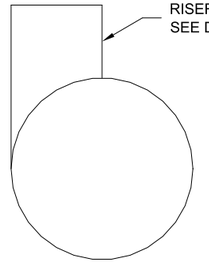
TYPICAL MANWAY DETAIL

SCALE: N.T.S.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.



ELEVATION

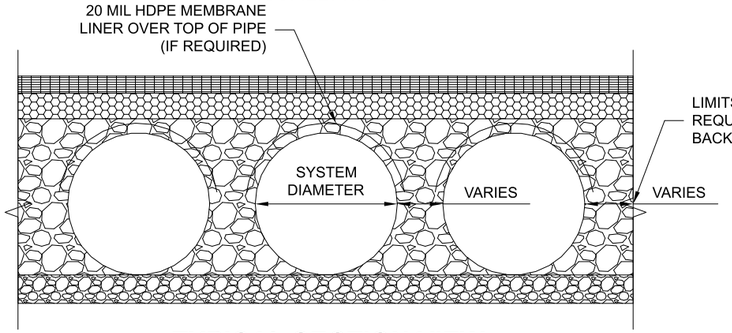


END

TYPICAL RISER DETAIL

SCALE: N.T.S.

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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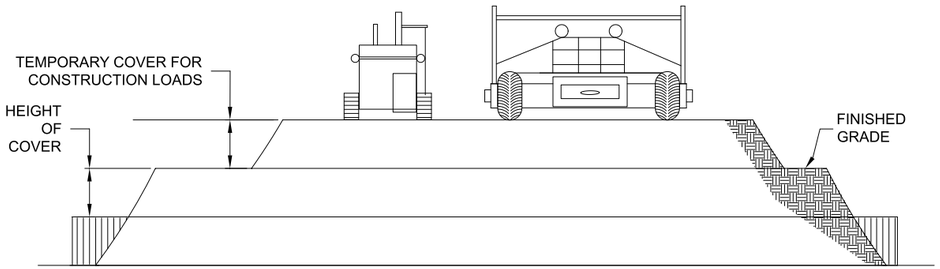

CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

NOTE:
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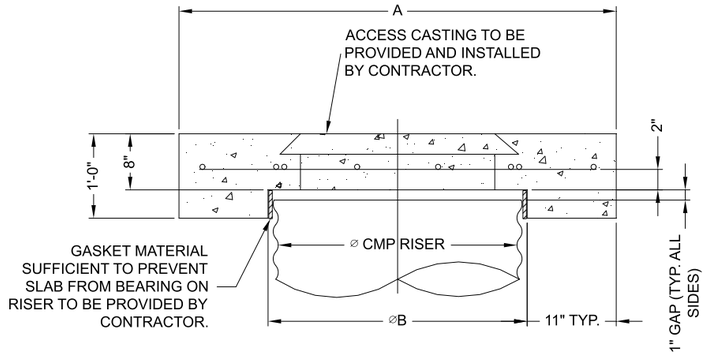
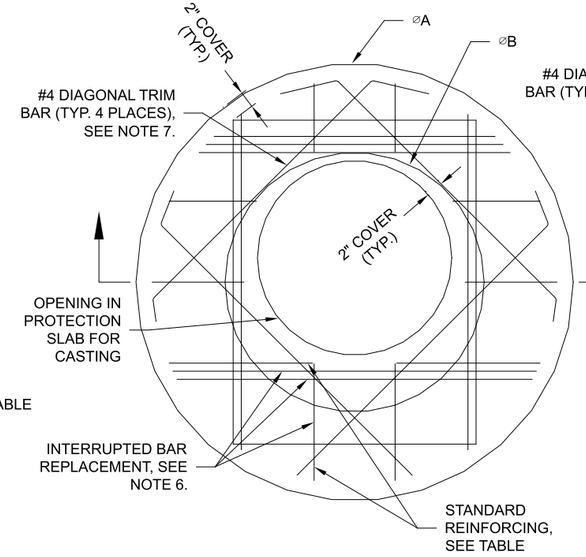


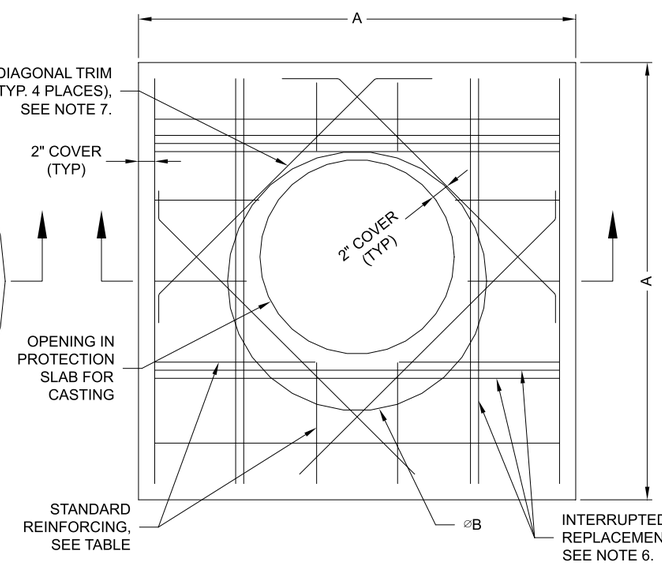
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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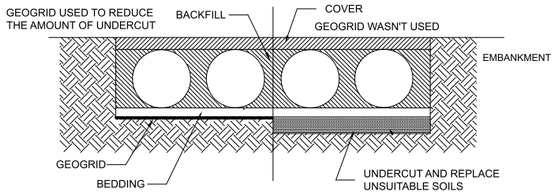
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

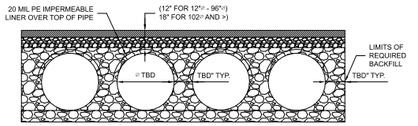


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

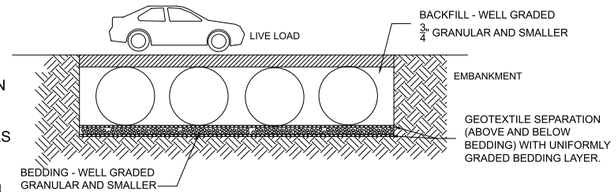
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

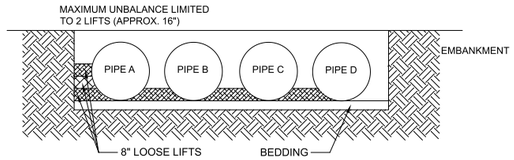
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



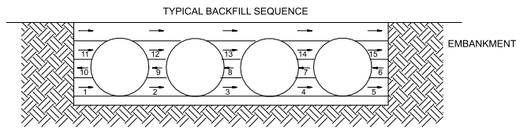
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

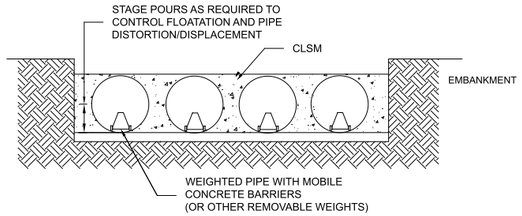


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

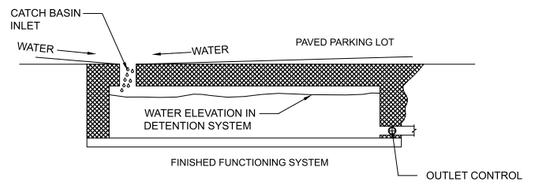


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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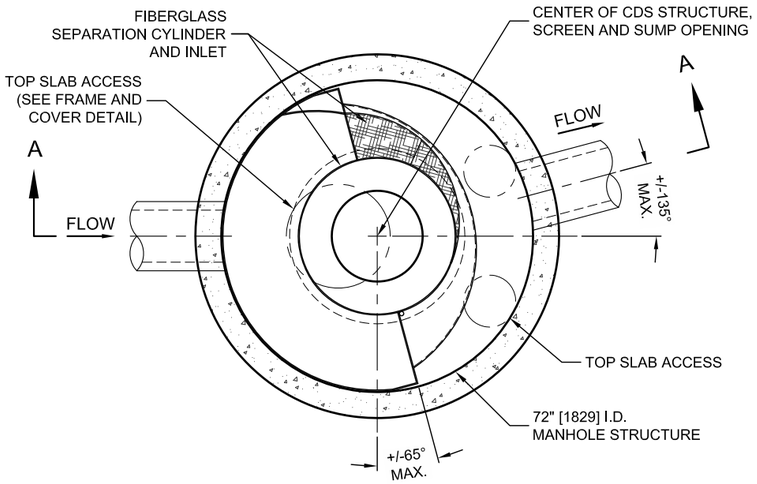
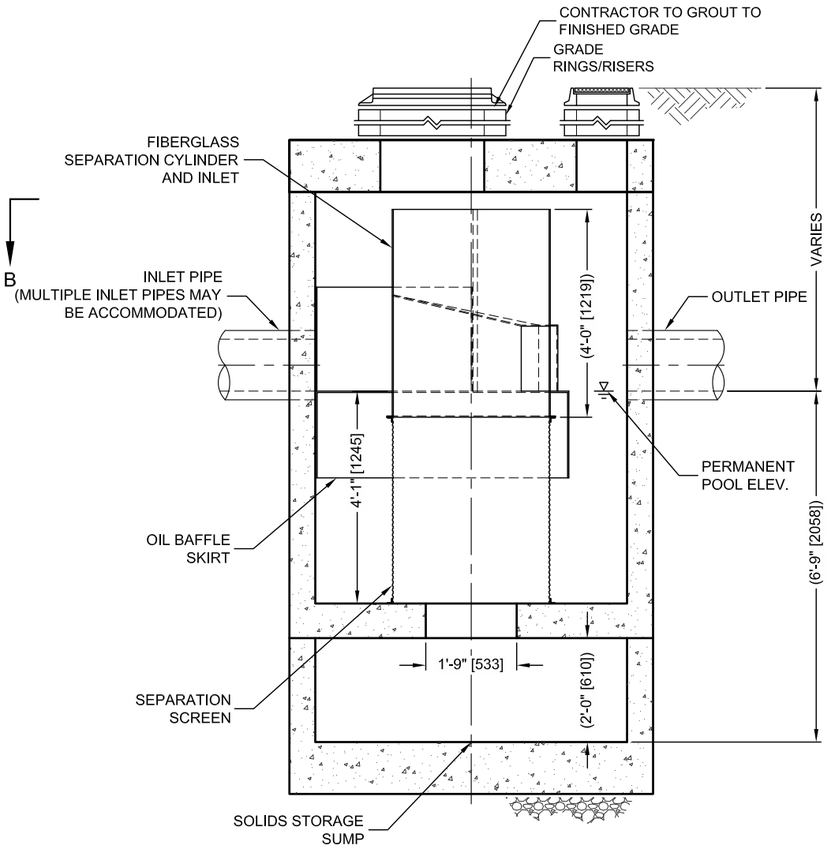
CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



PLAN VIEW B-B
N.T.S.



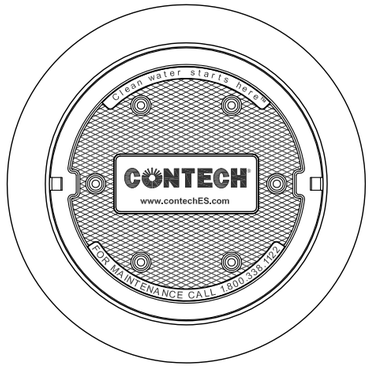
ELEVATION A-A
N.T.S.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS3035-6-C DESIGN NOTES

THE STANDARD CDS3035-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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CDS3035-6-C
INLINE CDS
STANDARD DETAIL

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Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: DRY WELL #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C	*14,478*	*Mixed Surface Types*	*0.88*	*0.70*	*10160.5*			
	14478		***Total***		**10160.5**	**0.59**	***499.6***	***1,770***

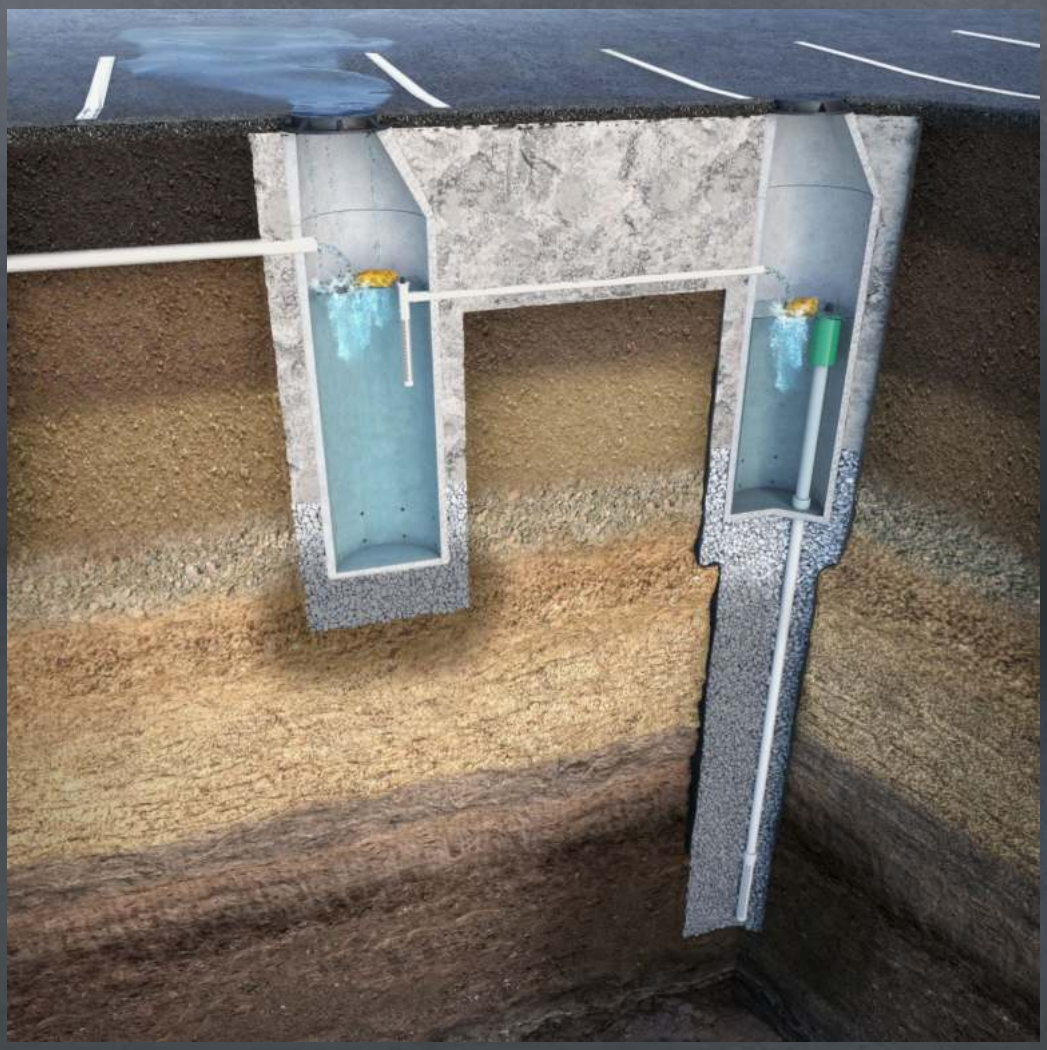
Notes:

Oldcastle Infrastructure
A CRH COMPANY

MaxWell®

Deep Infiltration System

Design Summary



PROJECT INFORMATION

PROJECT NAME: Perris North

PROJECT CITY: Perris

PROJECT STATE: California

COMPANY: The Orden Company

SITE TYPE: Industrial

SYSTEM DESIGN

Inputs

System Type	Name of Drainage Area	Measured Infiltration Rate	Factor of Safety	Water Quality Volume (or Flow Rate)	Required Drawdown Time	Min Depth to Infiltration	Depth to Groundwater	Depth to Deepest Inlet Below Rim	Cover Type
		(in/hr)		(cf) or (cfs)	(hrs)	(ft)	(ft)	(ft)	
Maxwell IV	DMA C	4.70	2.00	499.60	72.0	5.0	30.00	N/A	Grate Inlet

System Design

Name of Drainage Area	# of Drywells Needed	Total Drywell Depth	Chamber Depth	Infiltration Flow Rate per Drywell	Volume Provided Per Drywell	Total Flow Rate	Total Volume Provided	Total Volume Infiltrated within Drawdown Time
		(ft)	(ft)	(cfs)	(cf)	(cfs)	(cf)	(cf)
DMA C	1	20	15	0.00683	213.5	0.00683	213.5	1,770

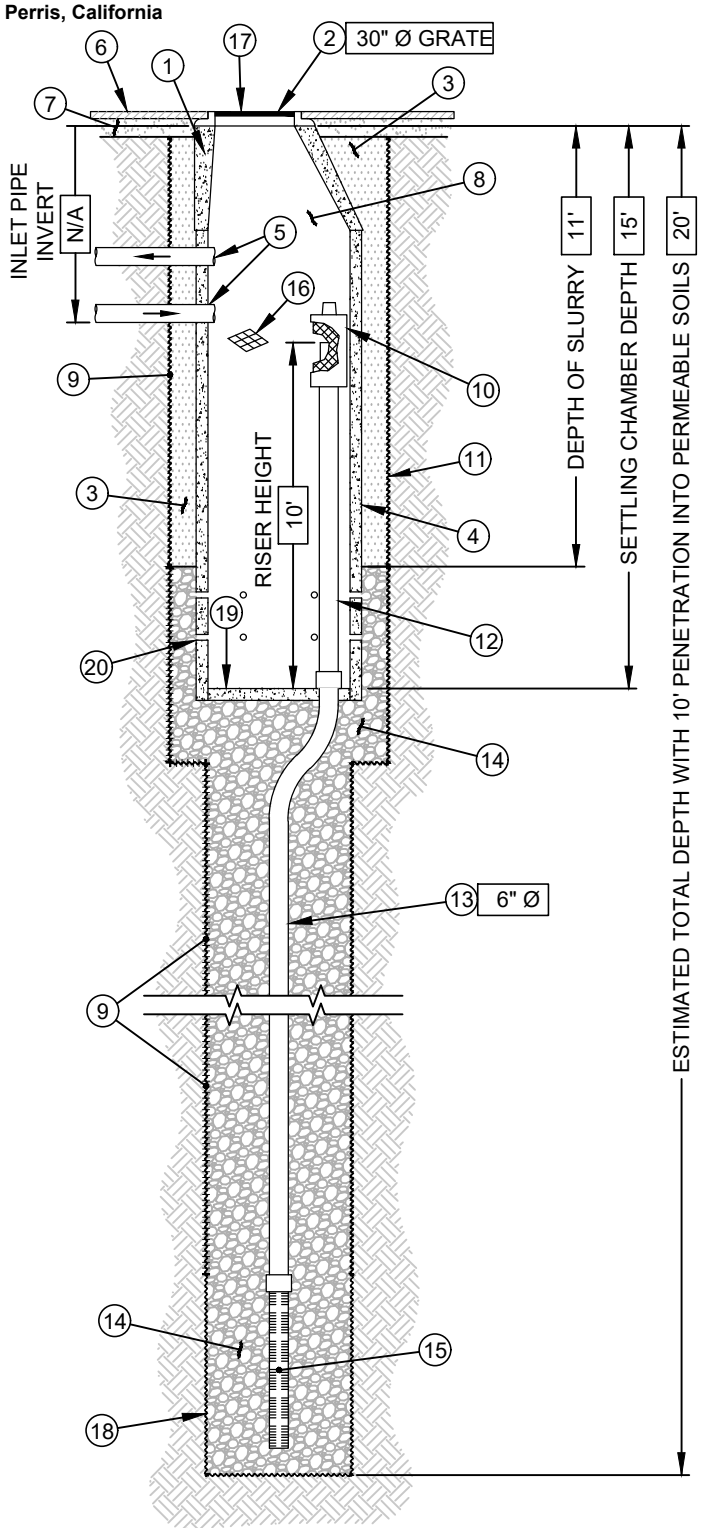
The MaxWell® IV

DRAINAGE SYSTEM DETAILS AND SPECIFICATIONS

Perris North:

Drainage Area 1 - DMA C

Perris, California



ITEM NUMBERS

1. **MANHOLE CONE** - MODIFIED FLAT BOTTOM.
2. **BOLTED RING & GRATE/COVER** - DIAMETER & TYPE AS SHOWN. CLEAN CAST IRON WITH WORDING **"STORM WATER ONLY"** IN RAISED LETTERS. **BOLTED IN 2 LOCATIONS** AND SECURED TO CONE WITH MORTAR. RIM ELEVATION ±0.02' OF PLANS.
3. **STABILIZED BACKFILL** - TWO-SACK SLURRY MIX.
4. **PRE-CAST LINER -** 4000 PSI CONCRETE 48" ID. X 54" OD. **CENTER IN HOLE** AND ALIGN SECTIONS **TO MAXIMIZE BEARING SURFACE.**
5. **NOT USED**
6. **GRADED BASIN OR PAVING** (BY OTHERS).
7. **COMPACTED BASE MATERIAL**, IF REQUIRED (BY OTHERS).
8. **FREEBOARD DEPTH VARIES** WITH INLET PIPE ELEVATION. INCREASE SETTLING CHAMBER DEPTH AS NEEDED TO MAINTAIN ALL INLET PIPE ELEVATIONS ABOVE RISER PIPE.
9. **NON-WOVEN GEOTEXTILE SLEEVE** - MIRAFI 140 NL. MIN. 6 FT Ø. HELD APPROX. 10 FEET OFF THE BOTTOM OF EXCAVATION.
10. **PUREFLO® DEBRIS SHIELD** - ROLLED 16 GA. STEEL X 24" LENGTH WITH VENTED ANTI-SIPHON AND INTERNAL 0.265" MAX. SWO FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. **FUSION BONDED EPOXY COATED**.
11. **MIN. 6' Ø DRILLED SHAFT.**
12. **RISER PIPE** - SCH. 40 PVC MATED TO DRAINAGE PIPE AT BASE SEAL.
13. **DRAINAGE PIPE** - ADS HIGHWAY GRADE OR SCH. 40 PVC WITH TRI-A COUPLER. SUSPEND PIPE DURING BACKFILL OPERATIONS. DIAMETER AS NOTED.
14. **ROCK** - WASHED, SIZED BETWEEN 3/8" AND 1-1/2".
15. **FLOFAST® DRAINAGE SCREEN** - SCH. 40 PVC 0.120" SLOTTED WELL SCREEN WITH 32 SLOTS PER ROW/FT. OVERALL LENGTH VARIES, UP TO 120" WITH TRI-B COUPLER.
16. **ABSORBENT** - HYDROPHOBIC PETROCHEMICAL SPONGE. MIN. 128 OZ. CAPACITY. TYPICAL, 2 PER CHAMBER.
17. **FABRIC SEAL** - U.V. RESISTANT GEOTEXTILE - **TO BE REMOVED BY CUSTOMER** AT PROJECT COMPLETION. GRATED ONLY.
18. **MIN 4' Ø DRILLED SHAFT.**
19. **BASE SEAL** - CONCRETE SLURRY
20. **6 PERFORATIONS MINIMUM PER FOOT, 2 ROWS MINIMUM.**

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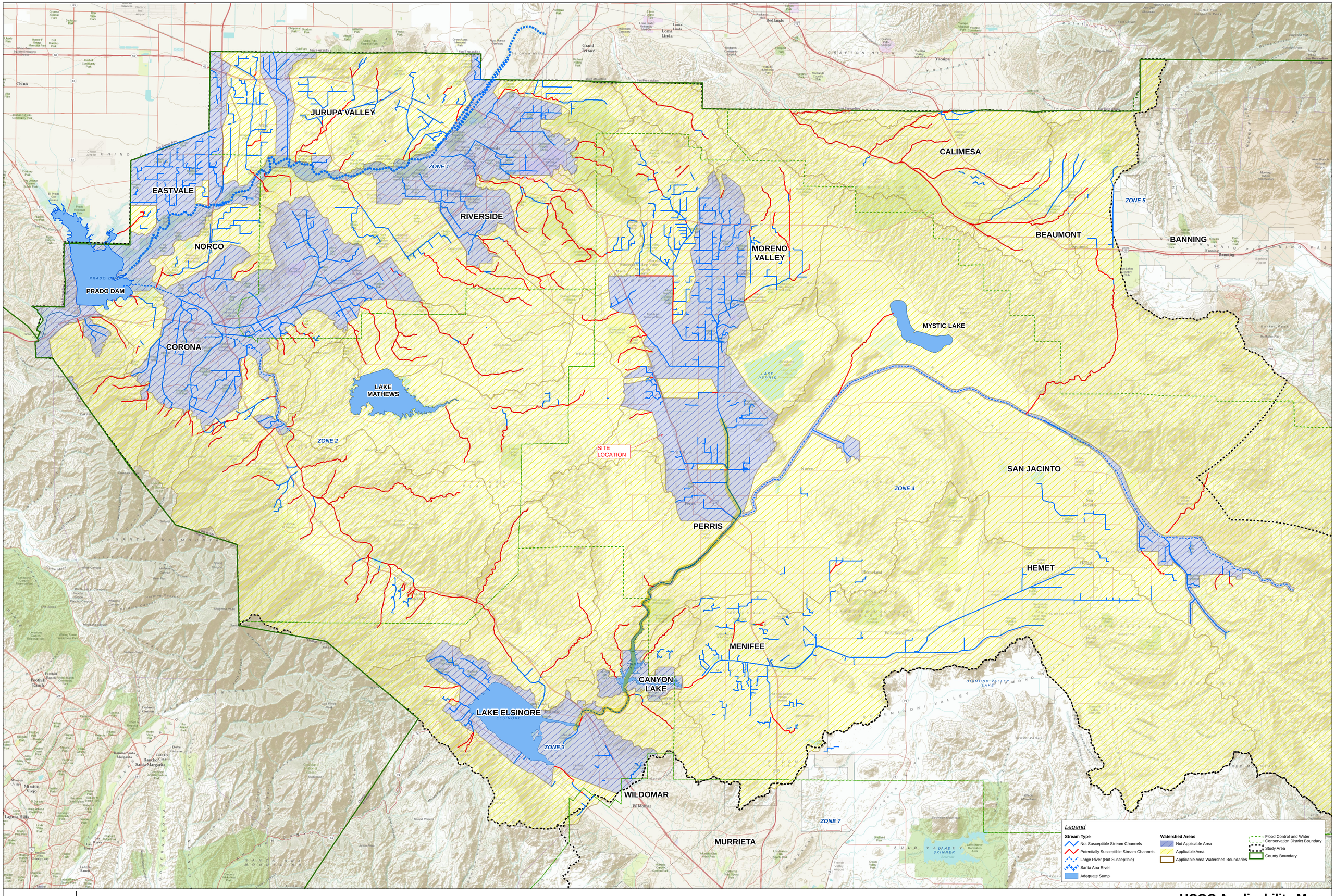
Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



RBF CONSULTING
GIS

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Map Document: (M:\Models\10\RDP\CP\HCO_HydromodModule_Large_5000.mxd mxd - RH) - 10/2/12

HCOC Applicability Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 2

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **A. On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☐ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ **B. Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ **C. Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **D1. Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ **D2. Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☐ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	☐**State that final landscape plans will accomplish all of the following.** ☐ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☐ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☐ **Consider using pest-resistant plants, especially adjacent to hardscape.** ☒ **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/Downloads/LandscapeGardenBrochure.pdf** ☐ **Provide IPM information to new owners, lessees and operators.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **E. Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/**
☐ **F. Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.**
☒ **G. Refuse areas**	☐ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☐ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☐ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	**State how the following will be implemented:** ☒ **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ H. Industrial processes.	☐ Show process area.	☐ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	☐ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	☐ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ☐ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ☐ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: • Hazardous Waste Generation • Hazardous Materials Release Response and Inventory • California Accidental Release (CalARP) • Aboveground Storage Tank • Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank www.cchealth.org/groups/hazmat/	☐ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **J. Vehicle and Equipment Cleaning**	☐ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shutoff to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	☐ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ☐ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/** ☐**Car dealerships and similar may rinse cars with water only.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **K. Vehicle/Equipment Repair and Maintenance**	☐ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ☐ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ☐ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	☐ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ☐ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ☐ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ☐ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ☐ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ☐ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **L. Fuel Dispensing Areas**	☐ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ☐ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		☐ **The property owner shall dry sweep the fueling area routinely.** ☐ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **M. Loading Docks**	☒ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☐ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ☐ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		☒ **Move loaded and unloaded items indoors as soon as possible.** ☒ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ N. Fire Sprinkler Test Water		☐ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☐ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
☐ O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☐ Roofing, gutters, and trim. ☐ Other sources		☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☐ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ☐ Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **P. Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Contech® CMP Detention Inspection and Maintenance Guide

Underground stormwater detention and infiltration systems must be inspected and maintained at regular intervals for purposes of performance and longevity.

Inspection

Inspection is the key to effective maintenance of CMP detention systems and is easily performed. Contech recommends ongoing, annual inspections. Sites with high trash load or small outlet control orifices may need more frequent inspections. The rate at which the system collects pollutants will depend more on-site specific activities rather than the size or configuration of the system.

Inspections should be performed more often in equipment washdown areas, in climates where sanding and/or salting operations take place, and in other various instances in which one would expect higher accumulations of sediment or abrasive/corrosive conditions. A record of each inspection is to be maintained for the life of the system.

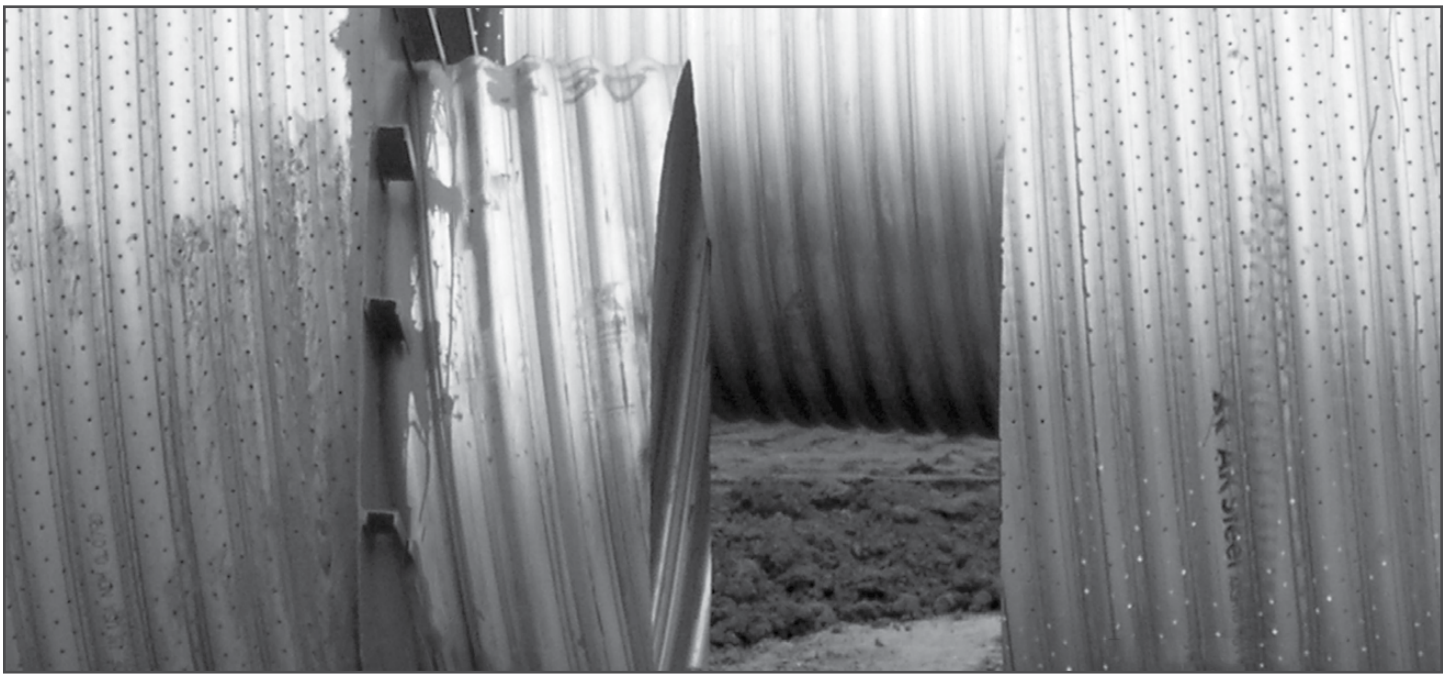
Maintenance

CMP detention systems should be cleaned when an inspection reveals accumulated sediment or trash is clogging the discharge orifice. Accumulated sediment and trash can typically be evacuated through the manhole over the outlet orifice. If maintenance is not performed as recommended, sediment and trash may accumulate in front of the outlet orifice. Manhole covers should be securely seated following cleaning activities. Contech suggests that all systems be designed with an access/inspection manhole situated at or near the inlet and the outlet orifice. Should it be necessary to get inside the system to perform maintenance activities, all appropriate precautions regarding confined space entry and OSHA regulations should be followed.

Annual inspections are best practice for all underground systems. During this inspection if evidence of salting/de-icing agents is observed within the system, it is best practice for the system to be rinsed, including above the spring line soon after the spring thaw as part of the maintenance program for the system.

Maintaining an underground detention or infiltration system is easiest when there is no flow entering the system. For this reason, it is a good idea to schedule the cleanout during dry weather.

The foregoing inspection and maintenance efforts help ensure underground pipe systems used for stormwater storage continue to function as intended by identifying recommended regular inspection and maintenance practices. Inspection and maintenance related to the structural integrity of the pipe or the soundness of pipe joint connections is beyond the scope of this guide.



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CMP DETENTION SYSTEMS

CONTECH®
ENGINEERED SOLUTIONS

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Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

CONTECH®
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CMP Detention and Infiltration Installation Guide

CMP Detention and Infiltration Installation Guide

Proper installation of a flexible underground detention system will ensure long-term performance. The configuration of these systems often requires special construction practices that differ from conventional flexible pipe construction. Contech recommends scheduling a preconstruction meeting with your local Contech Representative to determine if additional measures, not covered in this guide, are appropriate for your site.

Preconstruction Meeting

It is a best practice to have a pre-construction meeting with the installation contractor and Contech personnel. Included at the end of this guide is a preconstruction checklist to review prior to installation.

Proper Pipe Unloading, Handling and Placement

The pipe should be unloaded off the flatbed trailer with a fork lift, excavator, crane or other piece of construction equipment. The pipe should never be dropped or rolled off the flatbed trailer. Nylon slings or lifting lugs should be used to lift the pipe into place.

Normally the header row pipe section is placed on the downstream end. For detention systems with a single header row on one end and pipe with bulkheads on the other end; it is a best practice to start pipe placement on the header row end.

Lifting CMP off the flatbed with a front end loader and forks.

Lifting ALT2 CMP with nylon slings.

Lowering the header pipe section into place first.

Lifting polymer-coated CMP into place with nylon slings.

Foundation and Pipe Bedding

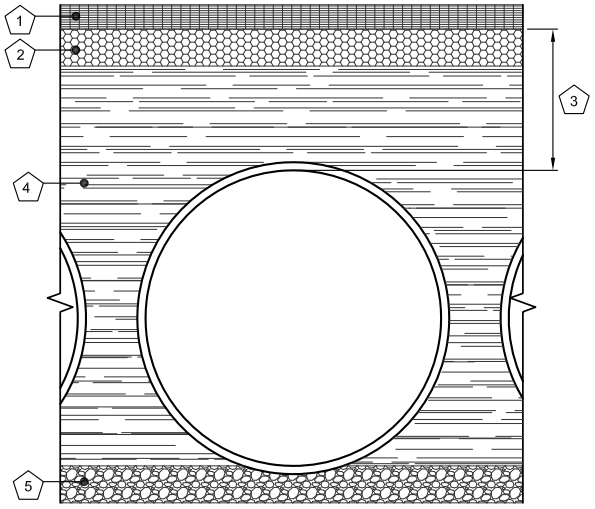
Construct a foundation that can support the design loading applied by the pipe and adjacent backfill weight as well as maintain its integrity during construction. If soft or unsuitable soils are encountered, remove the poor soils to a suitable depth and then replace with a competent granular material to the appropriate elevation. The granular material gradation should not allow the migration of fines, which can cause settlement of the detention system or pavement above. If the structural fill material is not compatible with the underlying soils a geotextile fabric should be used as a separator.

Grade the foundation subgrade to a uniform or slightly sloping grade. If the subgrade is clay or relatively non-porous and the construction sequence will last for an extended period of time, it is best to slope the grade to one end of the system. This will allow excess water to drain quickly, preventing saturation of the subgrade.

A 4" – 6" thick, well-graded granular material is preferred pipe bedding. If the existing foundation is made up of a course sand or other suitable granular material, imported bedding material will not be required.

Site conditions may require 4" – 6" of imported granular material as pipe bedding.

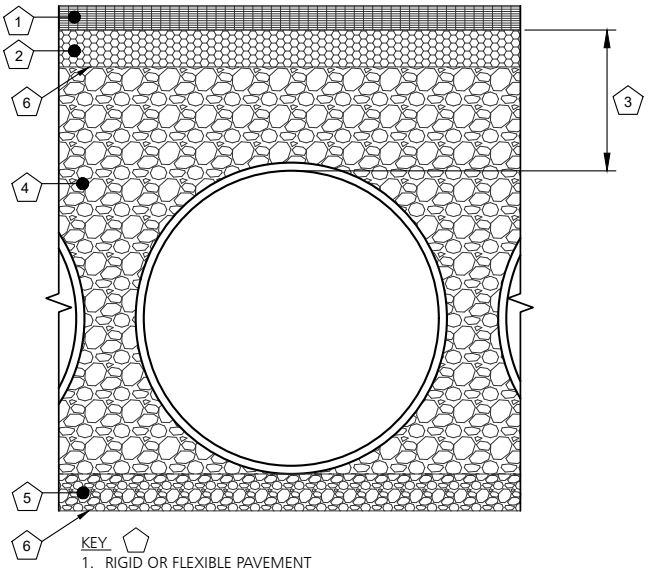
SOLIDWALL BACKFILL DETAIL



KEY

1. RIGID OR FLEXIBLE PAVEMENT
2. GRANULAR ROAD BASE
3. 12" MIN. FOR DIAMETERS THROUGH 96"
   18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
4. SELECT GRANULAR FILL PER AASHTO M145 A1, A2 OR A3 OR APPROVED EQUAL. PLACED IN 8" LIFTS (COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T99)
5. GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" TO 6" IN DEPTH.

PERFORATED BACKFILL DETAIL



KEY

1. RIGID OR FLEXIBLE PAVEMENT
2. GRANULAR ROAD BASE
3. 12" MIN. FOR DIAMETERS THROUGH 96"
   18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
4. FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" MIN. PARTICLE SIZE.
5. GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" TO 6" IN DEPTH.
6. NON WOVEN GEOTEXTILE (IF REQUIRED), WRAPPING TRENCH ONLY. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

Connecting Bands

There are various types of connecting bands for connecting CMP. Hugger and corrugated bands are the most common. Flat gaskets or O-ring gaskets can also be used in conjunction with connecting bands to reduce leakage in the joints.

Installing a Hugger band on a perforated pipe.

Tightening bolts on a corrugated band.

Installation of band with flat neoprene gasket.

Some jobs may require special bands, such as rod and lug connection, flat bands, or dimple bands.

Geomembrane Barrier

An HDPE membrane liner will be placed on the crown of each pipe to provide an impermeable barrier against environmental changes that may adversely affect the system over time. The liner should extend beyond the 8 and 4 o'clock positions (crown) of the pipe. The HDPE liner is intended to help protect the pipe system from the potential adverse effects of de-icing salts, agricultural chemicals, including premature corrosion.

An HDPE liner is rolled out over the crown of the pipe prior to backfilling around the pipe.

For large diameter pipes, the liner is shipped in rolls that are folded in half. The liner is rolled out over the crown of the pipe, unfolded, and covered over the pipe from the nine and three o'clock position.

In-Situ Trench Wall

If excavation is required, the trench wall needs to be capable of supporting the load that the pipe sheds as the system is loaded. If soils are not capable of supporting these loads, the pipe can deflect. Perform a simple soil pressure check using the applied loads to determine the limits of excavation beyond the spring line of the outer most pipes.

In most cases, the requirements for a safe work environment and proper backfill placement and compaction take care of the concern. The contractor is responsible for the safety of his/her employees and agents.

Safe practices on construction work as outlined in the latest edition of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors, shall be used as a guide and observed. The contractor shall comply with all applicable city, state, and federal safety codes in effect in the area where work is being performed. This conformance shall include the provisions of the current issue of the "OSHA Safety and Health Standards (29 CFR 1926/1910)" as published by the U.S. Department of Labor.

Backfill Material

Corrugated Steel Pipe is a flexible pipe. All buried flexible pipes are dependent on a quality backfill material for structural support. AASHTO refers to these pipe systems as, "Soil-Corrugated Metal Structure Interaction Systems". The best backfill material is an angular, well-graded, granular fill meeting the requirements of AASHTO A-1, A-2, or A-3. Aggregate materials that are free draining and compact easily such as crushed aggregate, crushed aggregate with fines, gravely sand, and coarse sand make good backfill. The aggregate particle size shall not exceed 3" in diameter.

For solid pipe, well graded or open graded granular material can be used as backfill. Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded stone, with a particle size of ½" – 2 ½" diameter is recommended for backfill around perforated pipe.

Backfill using controlled low-strength material (CLSM, "flash fill", or "flowable fill") when the spacing between the pipes will not allow for placement and adequate compaction of the backfill.

EXAMPLES OF ACCEPTABLE BACKFILL MATERIAL

Course Sand

Crushed Limestone

Crushed Granite

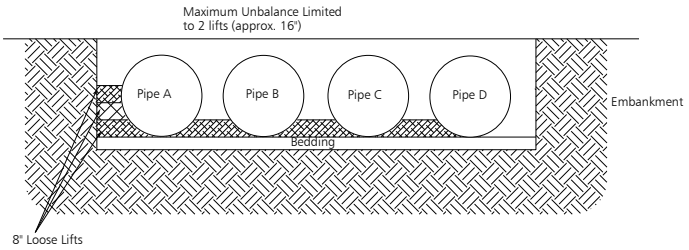
Crushed River Gravel

Backfill Placement

The backfill shall be placed in 8" +/- loose lifts and compacted to 90% AASHTO T99 standard proctor density. Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, vibratory packer, or other effective methods. If AASHTO T99 procedures are determined infeasible by the geotechnical engineer of record, compaction is considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the geotechnical engineer of record (or representative thereof) is satisfied with the level of compaction.

For large systems, conveyor systems, backhoes with long reaches may be used to place backfill. Once minimum cover for the construction loading across the entire width of the system is reached, advance the equipment to the end of the recently placed fill, and begin the sequence again until the system is completely backfilled. This type of construction sequence provides room for stockpiled backfill directly behind the backhoe, as well as the movement of construction traffic.

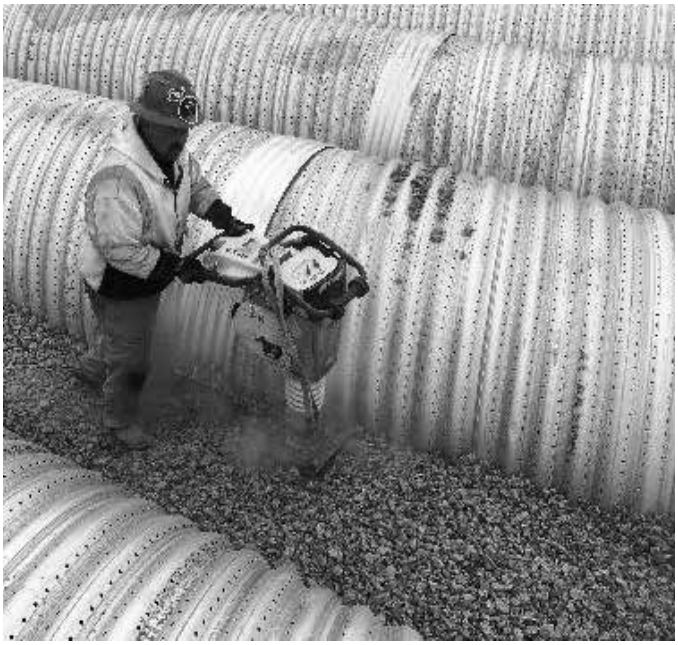
It is important to keep the elevation of backfill between pipes and side embankment evenly. As a rule of thumb, do not allow for backfill to exceed the elevation of one side of pipe to another pipe or one side of pipe to the outside trench/embankment by more than 24".



Material stockpiles on top of the backfilled detention system should be limited to 9' +/- high and must provide balanced loading across all barrels. To determine the proper minimum cover over the pipes to allow the movement of construction equipment, contact your local Contech Sales Engineer.

If CLSM or "flowable fill" is used as backfill, pipe flotation needs to be prevented. Typically, small lifts are placed between the pipes and then allowed to set-up prior to the placement of the next lift. The allowable thickness of the CLSM lift is a function of a proper balance between the uplift force of the CLSM, the opposing weight of the pipe, and the effect of other restraining measures. Your local Sales Engineer can help determine an appropriate lift thickness.

Placing backfill with a conveyor.



Compaction with vibratory equipment.

Final Cover Placement and Construction Loading

The minimum cover specified for a project normally assumes H-20 highway live loading. Backfill must be placed and fully compacted to the minimum cover level over the structure before the pipe is subjected to design loads. The minimum cover for AASHTO H-20 Live Loading per design section 12, is span of the pipe divided by eight plus asphalt pavement.

Construction loads often exceed design highway loading. During construction, keep heavy construction equipment that exceeds legal highway loads off the pipe. Light construction equipment on tracks such as a D-3 dozer (or lighter weight) may cross over the pipe when a minimum of 12" of compacted backfill is over pipe. Since construction equipment varies from job to job, it is best to address equipment specific minimum cover requirements with your local Contech Sales Engineer during your pre-construction meeting.

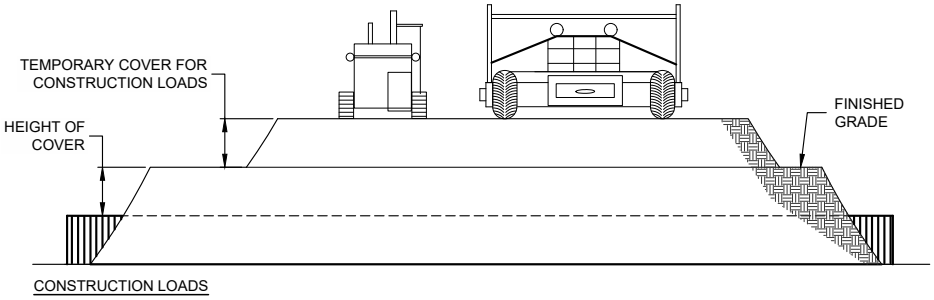
Minimum Height of Cover Requirements for Tracked Equipment
HEL-COR® Corrugated Steel Pipe[1]

Diameter (inches)	Minimum Cover (Ft)	Track Width (inches) Maximum Track Pressure at Surface (psi)			
		12	18	24	30
12 – 42	1.0	29	22	18	17
	1.5	58	41	34	30
	2.0	95	65	51	44
	2.5	138	91	70	59
	3.0	189	120	91	75
	4.0	321	195	143	115
48 – 66	1.0	10.6	8.0	6.9	6.2
	1.5	24	17	14.0	12.2
	2.0	39	26	21	18
	2.5	56	37	28	24
	3.0	77	49	37	30
	4.0	132	80	59	47
72 – 96	1.0	3.2	2.5	2.1	1.9
	1.5	8.8	6.2	5.0	4.4
	2.0	16	11.1	8.8	7.5
	2.5	24	15.0	12.0	10.1
	3.0	32	20	15	12.9
	4.0	56	34	25	20
102 – 120	1.0	2.8	2.1	1.7	1.6
	1.5	6.9	4.9	3.9	3.4
	2.0	14.8	10.1	8.0	6.7
	2.5	21	14.2	10.9	9.1
	3.0	29	18	14.1	11.6
	4.0	51	31	22	18
126 – 144	1.0	2.8	2.1	1.7	1.5
	1.5	6.0	4.3	3.5	3.0
	2.0	12.0	8.0	6.4	5.4
	2.5	21	14.0	10.6	8.9
	3.0	29	18	13.9	11.4
	4.0	50	30	22	18

1 *The values in this table represent the maximum ground pressure permitted when performing reasonable work over the pipes, using the manufacture's published equipment specifications. (Ground pressure for track equipment is the vehicle operating weight divided by the total ground contact area for both tracks.) This table is to be used as a guide. Talk to your Contech representative if you have questions about the equipment you plan on operating over the pipes. Care should be taken to maintain adequate cover depth during construction activities.*

Examples of light, tracked, construction equipment used to place final cover over the pipe system.

Examples of heavy construction equipment that may require additional minimal cover. Contech can help evaluate minimum cover for the installation contractor for all the equipment on the site.



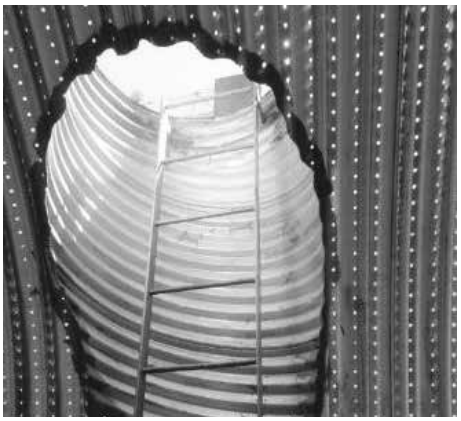
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

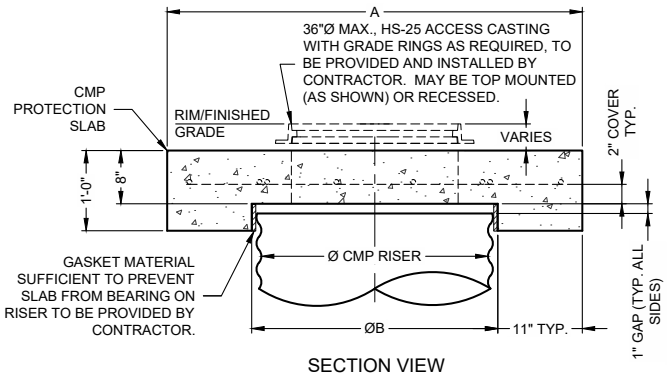
Minimum Height of Cover Requirements for Rubber-Tired Equipment Over HEL-COR® CSP

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

CMP Manhole Risers

CMP manhole risers allow easy access for future maintenance of the system. If the system is installed under a parking lot or road way subject to live loads, care must be taken to ensure loads are not applied directly to the riser structure. A pre-cast or cast-in-place slab should be installed above the riser. The manhole lid and frame should not rest directly on the CMP riser.



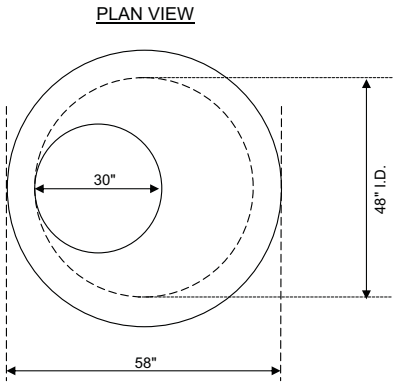


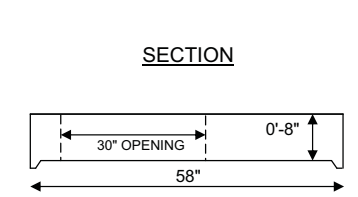
SECTION VIEW

Reinforcing Table				
Ø CMP Riser	A	ØB	Reinforcing	Bearing Pressure** (psf)
24	4′Ø 4′ x 4′	26″	#5 @ 10″ OCEW #5 @ 10″ OCEW	2,540 1,900
30″	4′-6″Ø 4′-6″ x 4′-6″	32″	#5 @ 10″ OCEW #5 @ 9″ OCEW	2,260 1,670
36″	5′Ø 5′ x 5′	38″	#5 @ 9″ OCEW #5 @ 8″ OCEW	2,060 1,500
42″	5′-6″Ø 5′-6″ x 5′-6″	44″	#5 @ 8″ OCEW #5 @ 8″ OCEW	1,490 1,370
48″	6′Ø 6′ x 6′	50″	#5 @ 7″ OCEW #5 @ 7″ OCEW	1,210 1,270

*** Assumed soil bearing capacity.*

Precast Option for Manhole Riser Caps





NOTES:

A.) 4000 P.S.I. CONCRETE

B.) GRADE 60 REINFORCING PER ASTM A-615

C.) BUTYL SEALANT IN JOINTS

Additional Considerations

Because most systems are constructed below-grade, rainfall can rapidly fill the excavation; potentially causing floatation and movement of the previously placed pipes. To help mitigate potential problems, it is best to start the installation at the downstream end with the outlet already constructed to allow a route for the water to escape. Temporary diversion measures may be required for high flows due to the restricted nature of the outlet pipe.

CMP Preconstruction Checklist

Contech Field Contact and Phone: _____

Contech Plant Contact and Phone: _____

Contractor Contact and Phone: _____

Project Name: _____

Site Address: _____

Pre-con Attendees: _____

Topics to Review:

- ☐ Truck access and pipe storage availability/expectation
- ☐ Pipe unloading and handling safety, equipment and procedures
- ☐ System layout and shop drawing review
- ☐ Shipping schedule and installation sequence
- ☐ Joint configuration and assembly
- ☐ Connection with unlike storm sewer materials
- ☐ Backfill material selection and placement strategy
- ☐ Backfill sequence, lift thickness and balanced loading
- ☐ Compaction requirement (90%) and equipment
- ☐ Additional cover requirements for heavy construction loads
- ☐ CMP riser concrete cap installation

Notes: _____

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SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

CMP Detention Install Guide 11/23

Outdoor Loading/Unloading SC-30

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by wind, stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- ☐ Limit exposure of material to rainfall whenever possible.
- ☐ Prevent stormwater run-on.
- ☐ Check equipment regularly for leaks.

Good Housekeeping

- ☐ Develop an operations plan that describes procedures for loading and/or unloading.
- ☐ Conduct loading and unloading in dry weather if possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains inlets in the area.
- Grade and/or berm the loading/unloading area with drainage to sump; regularly remove materials accumulated in sump.

Spill Response and Prevention Procedures

- Keep your spill prevention and control plan up-to-date or have an emergency spill cleanup plan readily available, as applicable.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all employees.
- Ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.

Material Handling and Waste Management

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

- Do not put used or leftover cleaning solutions, solvents, and automotive fluids in the storm drain or sanitary sewer.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - ✓ Install a roof over the waste receptacle area.
  - ✓ Install a low containment berm around the waste receptacle area.
  - ✓ Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.
- Perform work area clean-up and dry sweep after daily operations.

Employee Training Program

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.

Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document activities performed, quantities of materials removed, and improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.
- Keep accurate logs of daily clean-up operations.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
  - ✓ Designate specific areas for outdoor loading and unloading.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.
- It may not be possible to conduct transfers only during dry weather.
  - ✓ Limit materials and equipment rainfall exposure to all extents practicable.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

Many facilities will already have indoor or covered areas where loading/unloading takes place and will require no additional capital expenditures.

If outdoor activities are required, construction of berms or other means to retain spills and leaks may require appropriate constructed systems for containment. These containment areas may require significant new capital investment.

Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

Most of the operations and maintenance activities associated with implementing this BMP are integrally linked to routine operations as previously described. Therefore additional O&M is not required.

- Conduct regular inspections and make repairs and improvements as necessary.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area. Do not wash with water.

Supplemental Information

Loading and Unloading of Liquids

- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer,

treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - ✓ The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - ✓ The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - ✓ The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
  - ✓ Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.
  - ✓ Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

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Sacramento County Environmental Management Stormwater Program: *Best Management Practices*. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/.

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.

Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

- ☐ Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- ☐ Cover the area with a permanent roof if feasible.
- ☐ Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- ☐ Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- ☐ Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- ☐ Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- ☐ Repair leaking equipment including valves, lines, seals, or pumps promptly.

Spill Response and Prevention Procedures

- ☐ Keep your spill prevention and plan up-to-date.
- ☐ Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- ☐ Collect all spilled liquids and properly dispose of them.
- ☐ Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- ☐ Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.

Material Handling and Waste Management

Litter Control

- ☐ Post "No Littering" signs and enforce anti-litter laws.
- ☐ Provide a sufficient number of litter receptacles for the facility.
- ☐ Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- ☐ Keep waste collection areas clean.

- ☐ Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- ☐ Secure solid waste containers; containers must be closed tightly when not in use.
- ☐ Do not fill waste containers with washout water or any other liquid.
- ☐ Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- ☐ Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- ☐ Select designated hazardous waste collection areas on-site.
- ☐ Store hazardous materials and wastes in covered containers and protect them from vandalism.
- ☐ Place hazardous waste containers in secondary containment.
- ☐ Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- ☐ Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.

Employee Training Program

- ☐ Educate employees about pollution prevention measures and goals.
- ☐ Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- ☐ Train employees and subcontractors in proper hazardous waste management.
- ☐ Use a training log or similar method to document training.
- ☐ Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

Quality Assurance and Record Keeping

- ☐ Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- ☐ Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

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Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

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- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

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Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
▪ *Cover*
▪ *Contain*
▪ *Educate*
▪ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

□ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

□ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

□ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.

□ Establish a system for tracking incidents. The system should be designed to identify the following:

- ✓ Illegal dumping hot spots;
- ✓ Types and quantities (in some cases) of wastes;
- ✓ Patterns in time of occurrence (time of day/night, month, or year);
- ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
- ✓ Responsible parties.

□ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.

□ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Preventative Maintenance

Catch Basins/Inlet Structures

□ Staff should regularly inspect facilities to ensure compliance with the following:

- ✓ Immediate repair of any deterioration threatening structural integrity.
- ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

- ☐ Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- ☐ Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- ☐ Keep accurate logs of the number of catch basins cleaned.
- ☐ Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- ☐ Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- ☐ Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- ☐ Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- ☐ Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- ☐ Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- ☐ Conduct routine maintenance at each pump station.
- ☐ Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- ☐ Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- ☐ Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.

Spill Response and Prevention Procedures

- ☐ Keep your spill prevention control plan up-to-date.

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.

Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  ✓ Do not dump illegal materials anywhere onsite.

  ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

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Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

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Thrifty Oil Warehouse

(PPT230048, PDA8407, OAPL2300972)

NOISE AND VIBRATION ANALYSIS

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
MARB/IPA	March Air Reserve Base/Inland Port Airport
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Thrifty Oil Warehouse
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Thrifty Oil Warehouse development ("Project"). The Project site is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in unincorporated County of Riverside. The proposed Project includes the development of a 186,695-square-foot warehouse building which includes 171,695 square feet of warehousing use and 15,000 square feet of office space (7,500 square feet on first and second floors). This noise study has been prepared to satisfy applicable County of Riverside noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Project Construction Noise	10	*Less Than Significant*	-
Nighttime Concrete Pour		*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Thrifty Oil Warehouse ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

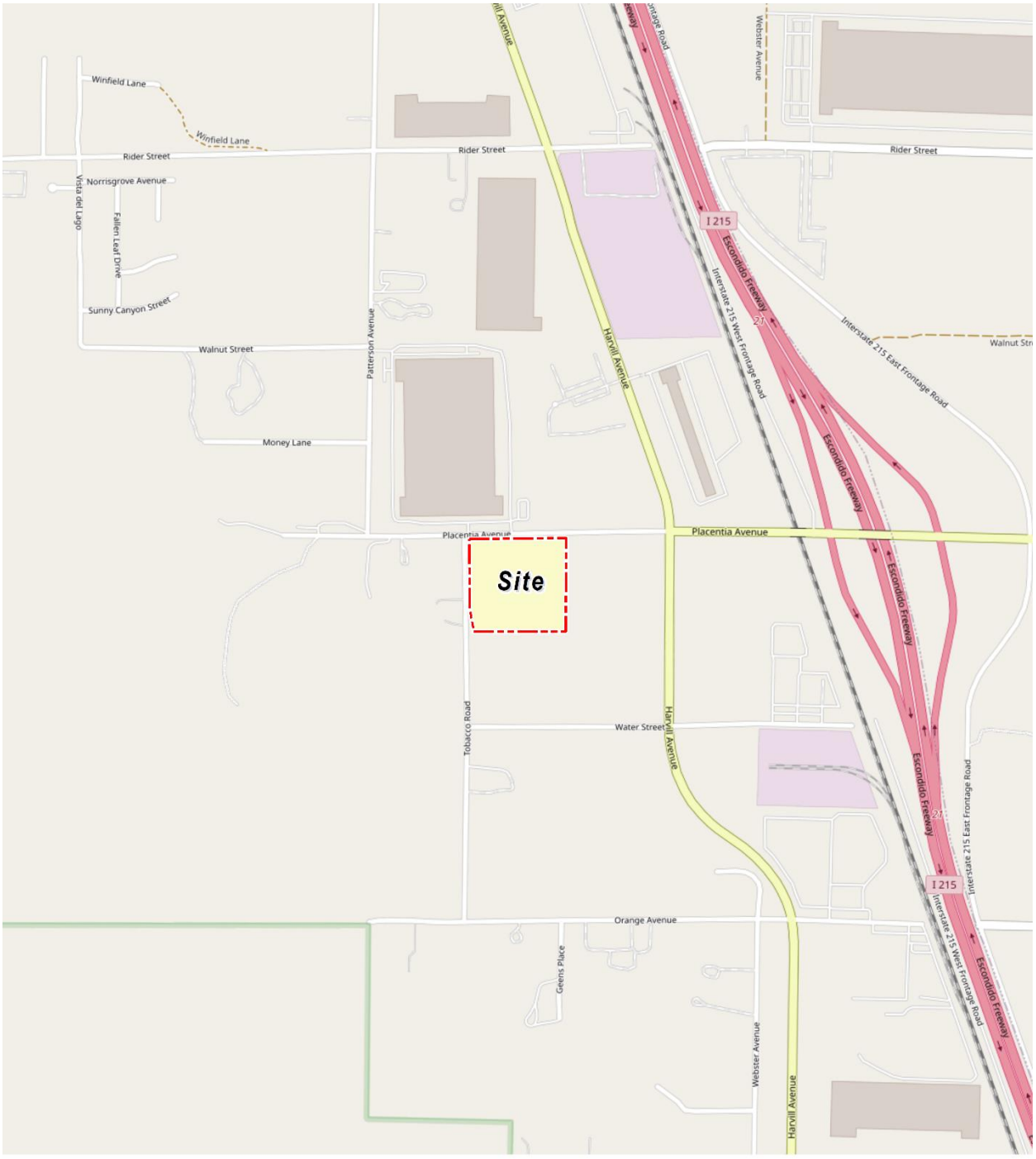
The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in unincorporated County of Riverside, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The proposed Project includes the development of a 186,695-square-foot warehouse building which includes 171,695 square feet of warehousing use and 15,000 square feet of office space (7,500 square feet on first and second floors). A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026

The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements. This noise analysis is intended to describe the noise level impacts associated with the expected typical operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

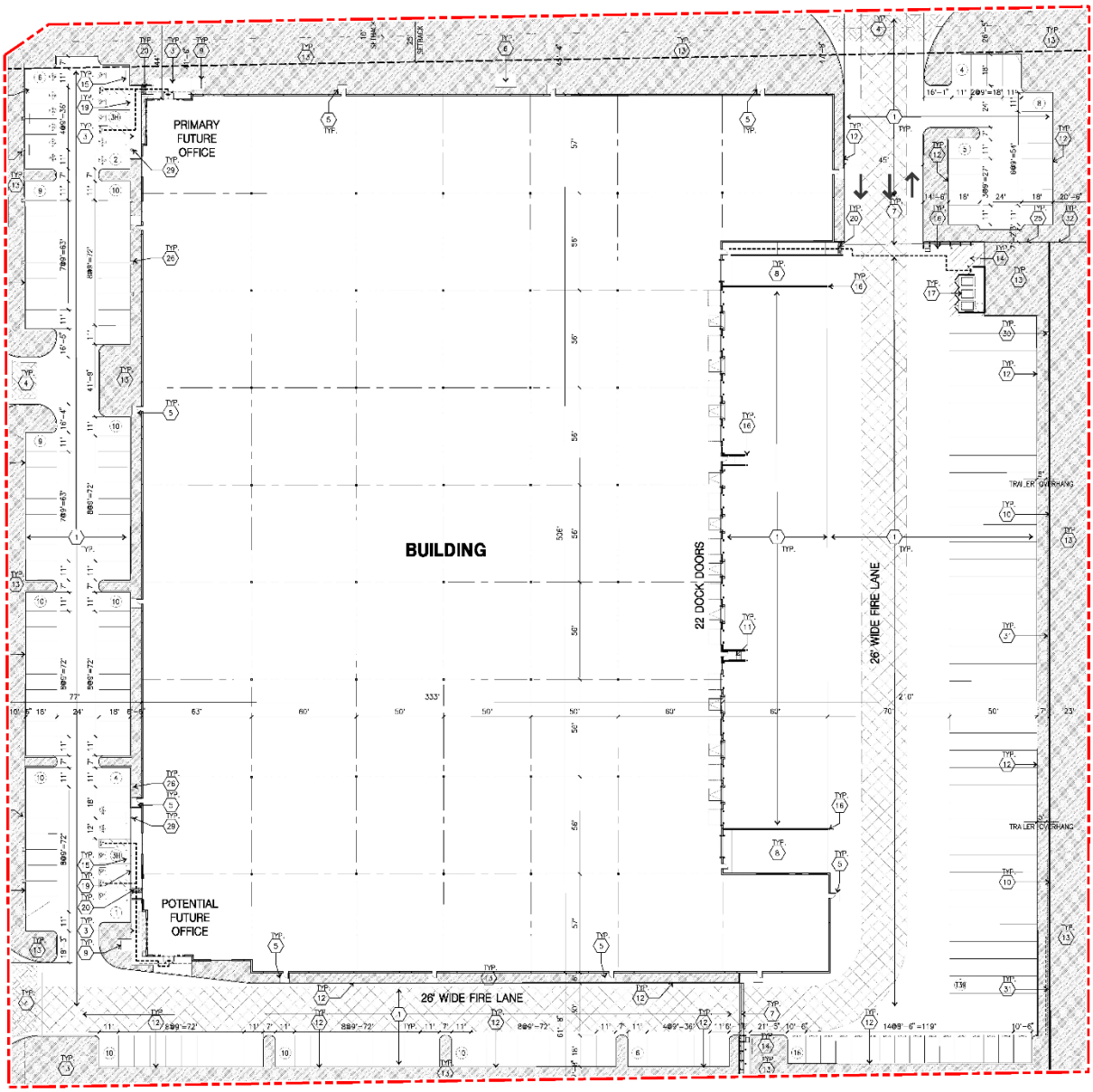


LEGEND:

N

Site Boundary

EXHIBIT 1-B: PRELIMINARY SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as *unwanted sound*. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The County of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of-sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

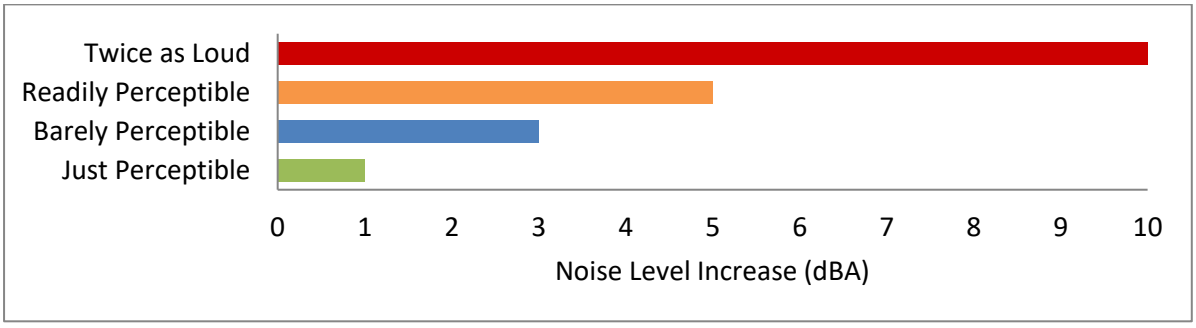
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



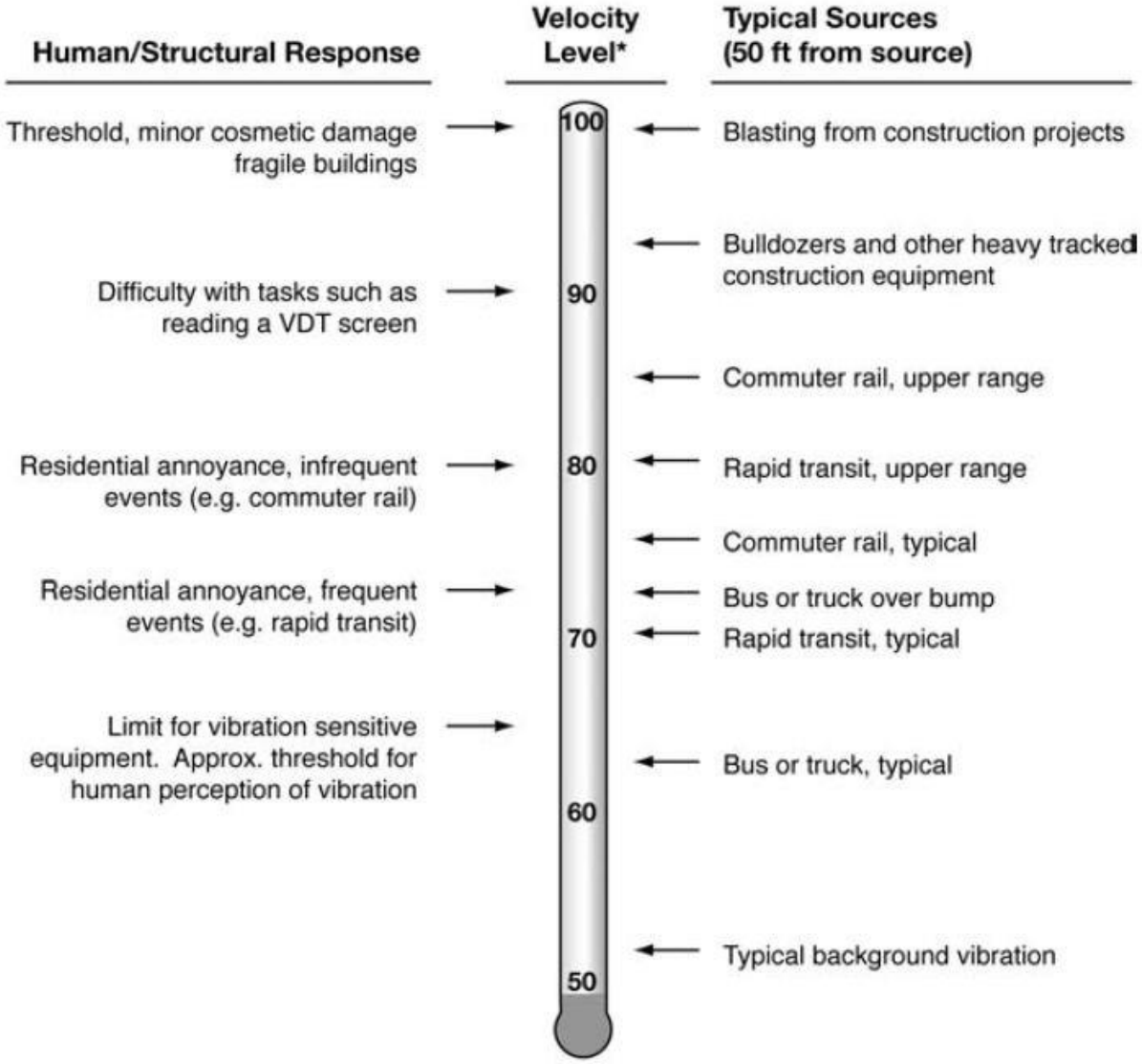
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (8). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (8). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal (8). The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body (8). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (9). Thus, either can be used in the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits. (8) Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels. As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) OPR identifies suggested land use noise compatibility levels as part of its General Plan Guidelines. These suggested guidelines provide planners with a tool to gauge the compatibility of land uses relative to existing and future noise levels. The guidelines identify normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land uses. The land use compatibility guidelines are intended to be an advisory resource when considering changes in land use and policies, such as zoning modifications. In addition, the State through the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the County of Riverside from excessive exposure to noise. (11) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- *Schools*

- *Hospitals*
- *Rest Homes*
- *Long Term Care Facilities*
- *Mental Care Facilities*
- *Residential Uses*
- *Libraries*
- *Passive Recreation Uses*
- *Places of Worship*

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:

a. 45 dBA 9-minute L_{eq} between 10:00 p.m. and 7:00 a.m.;

b. 65 dBA 9-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the [County] for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

i. Temporary noise attenuation fences;

ii. Preferential location and equipment; and

iii. Use of current noise suppression technology and equipment.

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 dBA CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts for its residents (N 1.5), County of Riverside requires exterior noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. In addition, the County of Riverside had adopted an interior noise level limit of 45 dBA CNEL (N 14.1).

Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit to not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. (11)

3.2.1 LAND USE COMPATIBILITY GUIDELINES

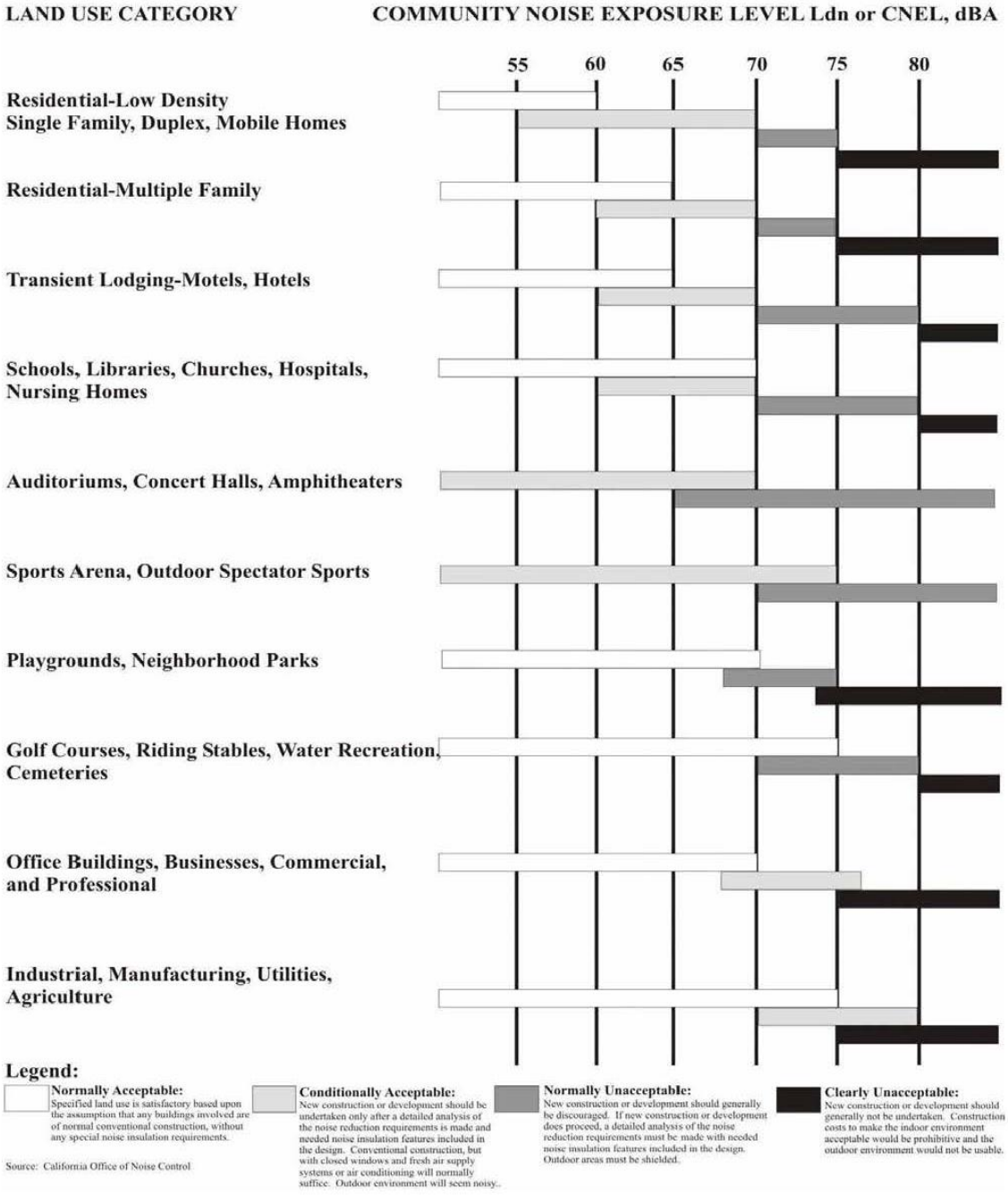
The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. Non-noise sensitive light industrial use of the Project is considered *normally acceptable* with unmitigated exterior noise levels of less than 75 dBA CNEL based on the *Industrial, Manufacturing, Utilities, Agriculture* land use compatibility criteria shown on Exhibit 3-A. Noise sensitive residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. (11)

3.3.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

The County of Riverside has set stationary-source hourly average L_{eq} exterior noise limits to control loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements associated with the development of the proposed Thrifty Oil Warehouse. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library or nursing home*, must not exceed the following worst-case noise levels. Policy N 4.1 of the County of Riverside General Plan Noise Element sets a stationary-source average L_{eq} exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. (11)

The County of Riverside County Code Section 9.52.040 *General sound level standards* (included in Appendix 3.1) summarizing Ordinance No. 847 *Regulating Noise* identify lower, more restrictive exterior noise level standards, which for the purpose of this report, are used to evaluate potential Project-related operational noise level limits instead of the higher General Plan exterior noise level standards previously identified. The County of Riverside County Code identifies residential exterior noise level limits of 55 dBA L_{eq} during the daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m., commercial exterior noise level limits of 65 dBA L_{eq} during the daytime hours, and 55 dBA L_{eq} during the noise-sensitive nighttime hours, and public facility exterior noise level limits of 65 dBA L_{eq} during the daytime hours, and 45 dBA L_{eq} during the noise-sensitive nighttime hours. (12).

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



Source: County of Riverside General Plan Noise Element, Table N-1.

Based on several discussions with the County of Riverside Department of Environmental Health (DEH), Office of Industrial Hygiene (OIH), it is important to recognize that the County of Riverside County Code noise level standards, incorrectly identify maximum noise level (L_{max}) standards that should instead reflect the average L_{eq} noise levels. Moreover, the County of Riverside DEH OIH's April 15th, 2015, *Requirements for determining and mitigating, non-transportation noise source impacts to residential properties* also identifies operational (stationary-source) noise level limits using the L_{eq} metric, consistent with the direction of the County of Riverside General Plan guidelines and standards provided in the Noise Element. Therefore, this report has been prepared consistent with direction of the County of Riverside DEH OIH guidelines and standards using the average L_{eq} noise level metric for stationary-source (operational) noise level evaluation.

3.3 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the County of Riverside has established limits to the hours of construction activities. Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]) indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (12) Neither the County's General Plan nor County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use with a nighttime exterior construction noise level of 70 dBA L_{eq}. (8 p. 179)

3.4 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the operation and construction of the Thrifty Oil Warehouse, vibration-generating activities are appropriately evaluated against standards established under the Municipal Code if such standards exist.

However, the County of Riverside does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (9 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

3.5 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 2.9 miles northeast of the Project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP) includes the policies for determining the land use compatibility of the Project. Policy 4.1.5 *Noise Exposure for Other Land Uses* of the RC ALUCP requires that land uses demonstrate compatibility with the acceptable noise levels on Table 2B. The Table 2B *Supporting Compatibility Criteria: Noise* matrix is shown on Exhibit 3-B and indicates that the Project's industrial land uses experience *clearly acceptable* exterior noise levels below 60 dBA CNEL. *Normally acceptable* noise levels for industrial land use range from 60 to 65 dBA CNEL. *Marginally acceptable* noise levels at industrial land uses range from 65 to 70 dBA CNEL. (14)

The 70, 65 and 60 dBA CNEL noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Figure 6-9 of the *March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study* and are presented on Exhibit 3-C of this report. (15) Based on the 2018 noise level contours for the MARB/IPA, the Project development area is located outside the 60 dBA CNEL noise level contour boundaries and the Project's industrial land uses are considered *clearly acceptable.*

EXHIBIT 3-B: RC ALUCP SUPPORTING COMPATIBILITY CRITERIA: NOISE

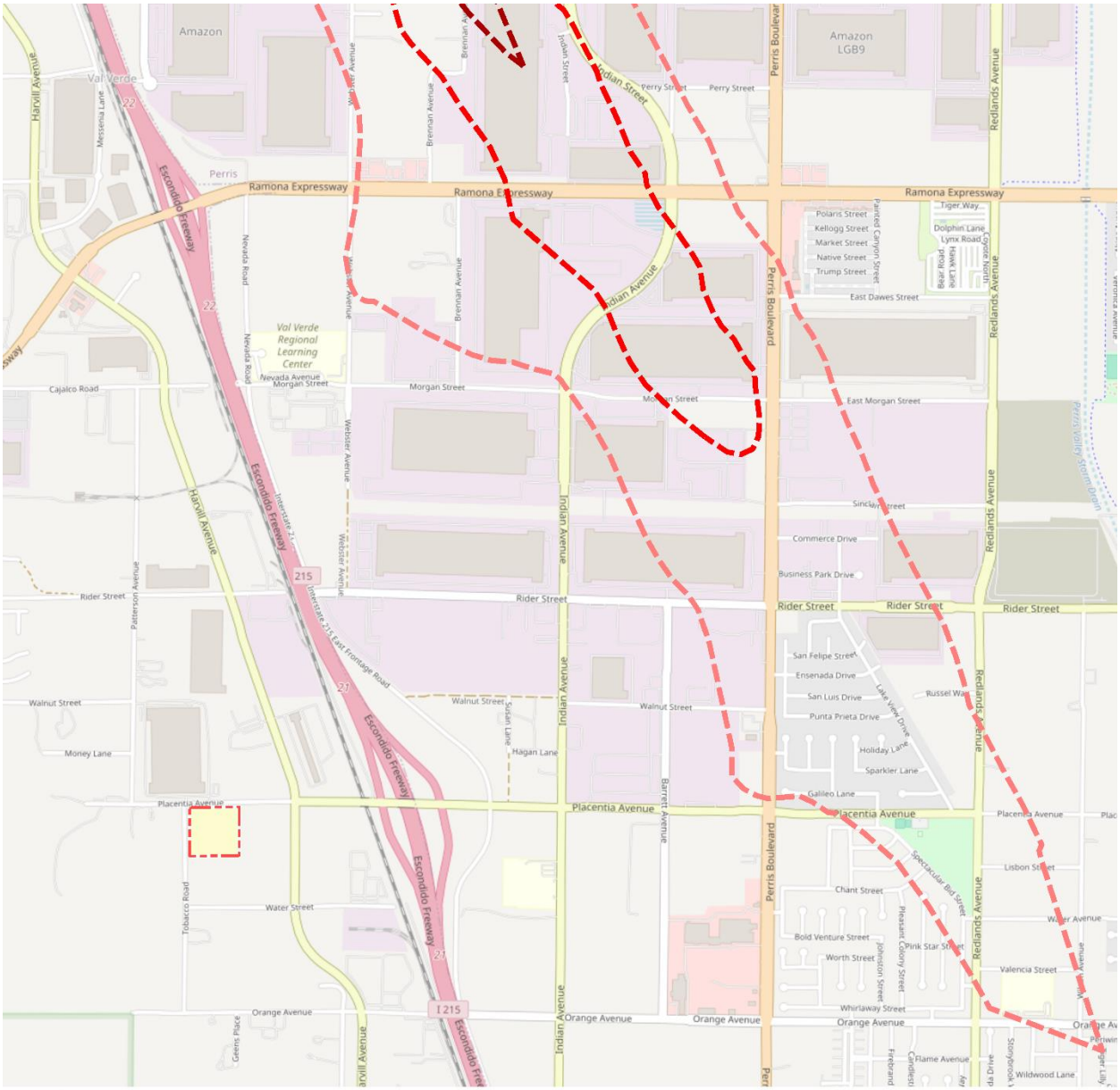
Land Use Category	CNEL (dB) 50–55	55–60	60–65	65–70	70–75
Residential *					
single-family, nursing homes, mobile homes	++	o	–	– –	– –
multi-family, apartments, condominiums	++	+	o	– –	– –
Public					
schools, libraries, hospitals	+	o	–	– –	– –
churches, auditoriums, concert halls	+	o	o	–	– –
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
offices, retail trade	++	+	o	o	–
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	–
parks, playgrounds, zoos	++	+	+	o	–
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	–
amphitheaters	+	o	–	– –	– –

Land Use Acceptability		Interpretation/Comments
++	*Clearly Acceptable*	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	*Normally Acceptable*	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o	*Marginally Acceptable*	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
–	*Normally Unacceptable*	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
– –	*Clearly Unacceptable*	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

* Subtract 5 dB for low-activity outlying airports (Chiriaco Summit and Desert Center)

Source: Riverside County Airport Land Use Compatibility Plan, Table 2B.

EXHIBIT 3-C: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

Unmitigated MARB Noise Level Contour Boundaries

Project Site Boundary

70 dBA CNEL

60 dBA CNEL

65 dBA CNEL

Source: Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders a noise impact significant.* (16) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

4.1.1 NOISE-SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (17) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (16) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels

range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance at noise sensitive receiver locations are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (18 p. 2_48).

In addition to the FICON criteria, this analysis relies on the Caltrans *substantial* noise level increase threshold of 12 dBA to account for conditions where an existing unimproved roadway segment experiences an off-site traffic noise level increase due to a lack of existing traffic volumes. According to Caltrans, a traffic impact occurs when the future noise levels *substantially* exceed the existing noise level. In California a substantial noise increase is considered to occur when the project's predicted noise level exceeds the existing noise level by 12 dBA or more. The use of 12 dB was established in California many years ago and is based on the concept that a 10 dB increase generally is perceived as a doubling of loudness. (18 pp. 3-2)

4.1.2 NON-NOISE-SENSITIVE RECEIVERS

The County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land use is 75 dBA CNEL. Noise levels greater than 75 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Exposure*. (11)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 75 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure normally acceptable* 75 dBA CNEL exterior noise level criteria.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.4, the vibration impacts originating from the construction of Thrifty Oil Warehouse, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The closest airport which would require additional noise analysis under CEQA Appendix G Guideline C is the MARB/IPA. As previously indicated in Section 3.5, the noise contour boundaries of MARB/IPA presented on Exhibit 3-C of this report show that the Project's industrial land use are considered *normally acceptable* since the development area is located outside the 60 dBA CNEL contour. Therefore, the Project impacts are considered *less than significant,* and no further noise analysis is provided under CEQA Significance Criteria C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	If ambient is > 75 dBA CNEL	≥ 3 dBA CNEL Project increase	
	All	Unimproved Roadway[3]	≥ 12 dBA CNEL Project increase	
Operational	Noise-Sensitive	Exterior Noise Level Standards[4]	55 dBA L_{eq}	45 dBA L_{eq}
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[5]	80 dBA L_{eq}	70 dBA L_{eq}
		Vibration Level Threshold[6]	0.3 PPV (in/sec)	

[1] FICON, 1992.
[2] County of Riverside General Plan Noise Element, Table N-1.
[3] Caltrans Traffic Noise Analysis Protocol, April 2020.
[4] County of Riverside General Plan Municipal Code, Section 9.52.040.
[5] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[6] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at three locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, long-term noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, January 24, 2024. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing equivalent hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting noise level measurements at the nearby sensitive receiver

locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise increase due to the Project's contribution to the ambient noise levels. This approach is necessary to calculate the temporary or permanent increase in *ambient* noise levels as required by the CEQA Guidelines Environmental Checklist.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the energy average hourly sound levels (L_{eq}) to describe the existing *ambient* conditions. The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located west of the site near the residence at 20601 Tobacco Rd.	53.0	51.5	68.6
L2	Located west of the site near the residence at 23551 Placentia Av.	57.7	52.5	60.3
L3	Located south of the site near the residence at 20800 Tobacco Rd.	53.0	47.9	56.0

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future transportation related noise environment. Consistent with County of Riverside Noise Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (20) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (21) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (22)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the three off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the County of Riverside General Plan Circulation Element, and the vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on the *Thrifty Oil Warehouse Focused Traffic Assessment*, prepared by Urban Crossroads, Inc. for the following traffic scenarios (22).

- Existing (E)
- Existing plus Project (E+P)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic analysis. The Project is anticipated to generate a net total of 322 two-way trips per day (actual vehicles) that includes 114 truck trips.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Receiving Land Use[2]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Tobacco Rd.	s/o Placentia Av.	Collector	Sensitive	37'	40
2	Placentia Av.	w/o Tobacco Rd.	Secondary	Sensitive	50'	40
3	Placentia Av.	e/o Tobacco Rd.	Secondary	Sensitive	50'	40

[1] Thrifty Oil Warehouse Focused Traffic Assessment, Urban Crossroads, Inc.
[2] Based on a review of existing aerial imagery.
[3] Distance to receiving land use is based upon the right-of-way distances.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing (2023)		EAC (2026)		HY (2045)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Tobacco Rd.	s/o Placentia Av.	91	335	21	265	41	285
2	Placentia Av.	w/o Tobacco Rd.	762	866	22	126	42	146
3	Placentia Av.	e/o Tobacco Rd.	991	1,131	23	163	43	183

[1] Thrifty Oil Warehouse Focused Traffic Assessment, Urban Crossroads, Inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Thrifty Oil Warehouse Focused Traffic Assessment*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Table 6-5 shows the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	75.50%	14.00%	10.50%	100.00%
Medium Trucks	48.00%	2.00%	50.00%	100.00%
Heavy Trucks	48.00%	2.00%	50.00%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth. Vehicle mix percentage values rounded to the nearest one-hundredth. "Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	92.00%	3.00%	5.00%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth. Vehicle mix percentage values rounded to the nearest one-hundredth.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Tobacco Rd.	s/o Placentia Av.	80.82%	3.80%	15.38%	100.00%
2	Placentia Av.	w/o Tobacco Rd.	92.96%	2.64%	4.40%	100.00%
3	Placentia Av.	e/o Tobacco Rd.	87.95%	3.51%	8.54%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *the Thrifty Oil Warehouse Focused Traffic Assessment* prepared by Urban Crossroads, Inc. (22) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at receiving land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels without barrier attenuation for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets for each traffic condition.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	53.9	56	122	262
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.5	RW	111	240
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	62.7	RW	75	161

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	63.6	RW	RW	65
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.6	RW	RW	64
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	65.1	RW	51	110

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2026 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 53.9 to 62.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 61.6 to 65.1 dBA CNEL. Table 7-3 shows that the Project off-site traffic noise level increases range from 0.1 to 9.7 dBA CNEL on the study area roadway segments.

7.3 PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

The off-site traffic noise analysis recognizes that the Project would generate a noise level increase of up to 9.7 dBA CNEL on the existing and unimproved Tobacco Road. This noise level increase affects two existing residences located at 23551, 20601 Tobacco Road and is largely due to the lack of existing traffic volume on the unimproved roadway segment. The existing traffic noise levels on this segment are calculated at 53.9 dBA CNEL. The addition of near-term Project traffic is expected to increase the off-site traffic noise levels to 63.6 dBA CNEL resulting in a project incremental traffic noise level increase of 9.7 dBA CNEL. According to Caltrans, a traffic impact occurs when the future noise level substantially exceeds the existing noise level. In California a substantial noise increase is considered to occur when the project's predicted noise level exceeds the existing noise level by 12 dBA or more. The use of 12 dB was established in California many years ago and is based on the concept that a 10 dB increase generally is perceived as a doubling of loudness. (23 pp. 3-2)

While the relative incremental increase due to the off-site Project traffic noise on Tobacco Road may be considered a doubling of the existing traffic noise levels, it does not exceed the Caltrans 12 dB substantial noise level increase threshold or the County of Riverside General Plan Noise Element Policy N 1.3 exterior noise level criteria of 65 dBA CNEL for noise sensitive residential land uses. (10) Further, the thresholds of significance do not specifically identify what portion of the residential land use that is considered "noise sensitive." Noise-sensitive land use is generally limited to private outdoor living areas since it is unlikely that humans will be frequently occupying the front yard areas abutting the right-of-way boundary of Tobacco Road. This assumption is supported based upon analyses undertaken by other agencies. According to FHWA guidance, outdoor living areas are generally limited to outdoor living areas of frequent human use (e.g., private backyards of single-family homes). Therefore, front and side yards of residences adjacent to off-site roadway segments do not represent noise sensitive areas of frequent human use that require exterior noise mitigation.

TABLE 7-3: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				Without Project	With Project	Project Addition	Limit	Exceeded?
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	53.9	63.6	9.7	12.0	No
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.5	61.6	0.1	3.0	No
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	62.7	65.1	2.4	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

In addition, the ambient noise level measurements presented on Table 5-1 show that the existing residences adjacent to Tobacco Road already experience exterior noise levels ranging from 60.3 to 68.6 dBA CNEL. Since the existing ambient noise levels far exceed the calculated existing without Project traffic noise levels, likely due to background traffic noise from the I-215 Freeway and aircraft noise from the MARB/IPA, it expected that the noise sensitive land uses adjacent to the Tobacco Road will not perceive a significant off-site incremental traffic noise level increase due to the Project traffic. Therefore, this analysis demonstrates that the land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project traffic.

8 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing residence at 20601 Tobacco Road, approximately 188 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing residence at 23551 Placentia Avenue, approximately 115 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R2 is placed at the building façade. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residence at 20800 Tobacco Road, approximately 1,011 feet south of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS

9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Thrifty Oil Warehouse Project. Exhibit 9-A of the Noise Study includes over 27 individual noise sources to fully describe the potential reasonable worst-case noise environment.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed building, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements.

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the reasonable worst-case noise environment with the typical noise sources operating at the same time. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

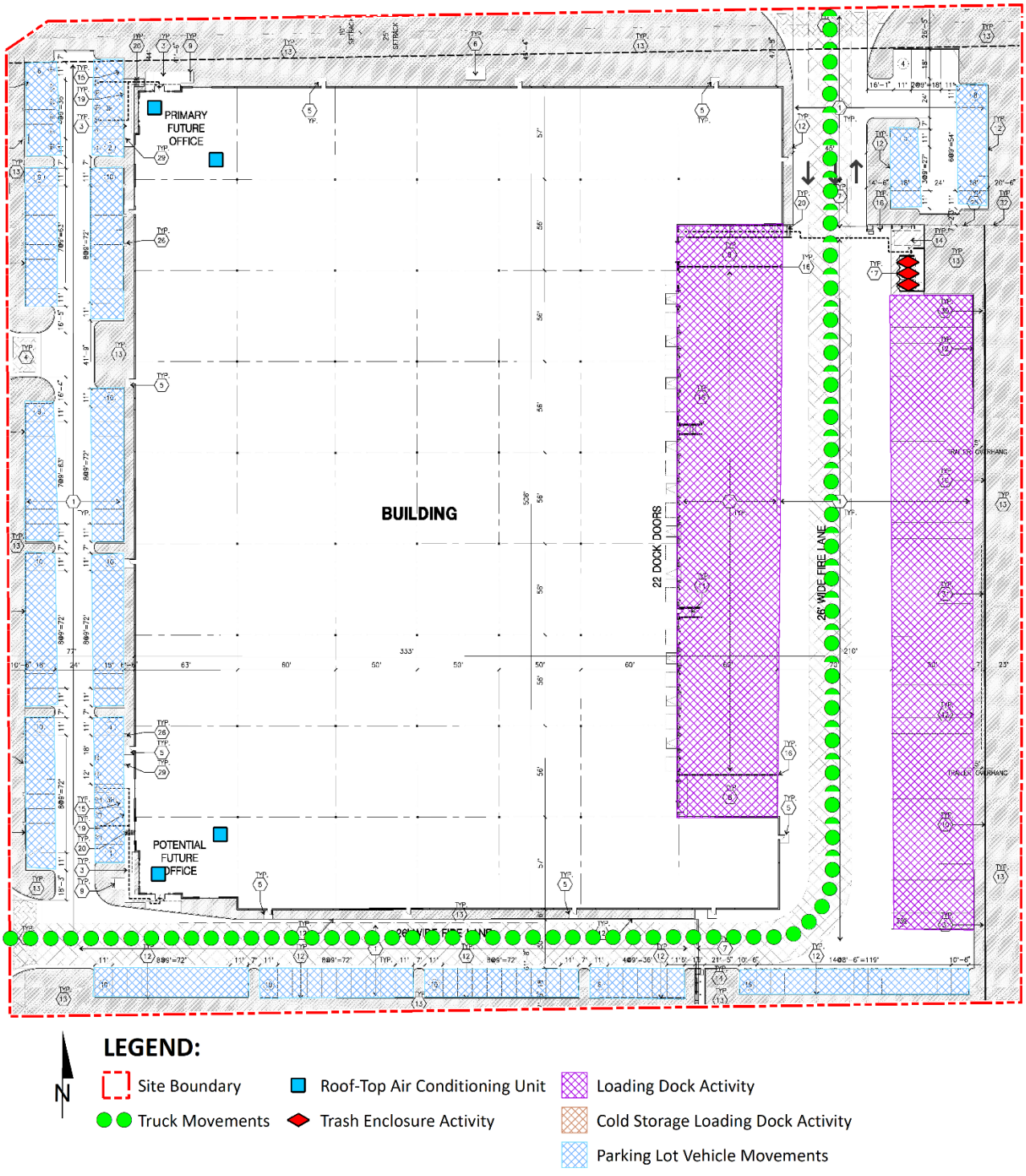

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Loading Dock Activity	8'	60	60	62.8	103.4
Parking Lot Vehicle Movements	5'	60	60	52.6	81.1
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	30	57.3	89.0
Truck Movements	8'	60	60	59.8	93.2

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

9.2.2 LOADING DOCK ACTIVITY

The reference dry goods loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck. Loading dock activity is estimated during all the daytime, evening, and nighttime hours.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise level is 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.4 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term reference noise level measurement was collected in the center of activity within the staff parking lot of a warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 52.6 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due to cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.5 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represent multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources.

While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute

value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs including the planned screenwall used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements, Urban Crossroads, Inc. calculated the unmitigated operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 39.4 to 45.0 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	27.5	27.6	38.3
Parking Lot Vehicle Movements	39.0	41.8	27.6
Roof-Top Air Conditioning Units	39.7	41.8	28.3
Trash Enclosure Activity	14.2	15.0	19.2
Truck Movements	36.3	26.6	28.4
Total (All Noise Sources)	**43.4**	**45.0**	**39.4**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Table 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 39.3 to 44.0 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	27.5	27.6	38.3
Parking Lot Vehicle Movements	39.0	41.8	27.6
Roof-Top Air Conditioning Units	37.3	39.4	25.9
Trash Enclosure Activity	10.2	11.0	15.2
Truck Movements	36.3	26.6	28.4
Total (All Noise Sources)	**42.6**	**44.0**	**39.3**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the mitigated Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of Riverside exterior noise level standards at the existing nearby noise-sensitive receiver locations. Table 9-4 shows that the mitigated operational noise levels associated with Project will not exceed the County of Riverside daytime and nighttime exterior noise level standards at the existing nearby noise-sensitive receiver locations. Therefore, the mitigated operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	43.4	42.6	55	45	No	No
R2	45.0	44.0	55	45	No	No
R3	39.4	39.3	55	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project unmitigated operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations that may be potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively. As indicated on Table 9-5, the Project will generate a daytime operational noise level increase ranging from 0.2 to 0.5 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime operational noise level increase ranging from 0.5 to 0.6 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will not exceed the operational noise level increase significance criteria presented in Table 4-1. Therefore, Project related operational noise level increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.4	L1	53.0	53.5	0.5	5.0	No
R2	45.0	L2	57.7	57.9	0.2	5.0	No
R3	39.4	L3	53.0	53.2	0.2	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project mitigated daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	42.6	L1	51.5	52.0	0.5	5.0	No
R2	44.0	L2	52.5	53.1	0.6	5.0	No
R3	39.3	L3	47.9	48.5	0.6	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime mitigated operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the on-site construction noise source activity including the off-site roadway and utility improvements in relation to the nearest sensitive receiver locations previously described in Section 8. According to Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (12)

10.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (24) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

10.3 ON-SITE CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for detailed construction noise assessment, Table 10-1 presents the combined noise levels for the loudest construction equipment, assuming all equipment operates at the same time. To account for the dynamic nature of construction activities, the CadnaA construction noise analysis evaluates the equipment as multiple moving point sources within the construction area (Project site boundary). Construction impacts are based on the highest noise level calculated at each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 50.6 to 77.2 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Equipmnet[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Composite Reference Noise Level (dBA L_{eq})[2]	Reference Power Level (dBA L_w)[3]
Site Preparation	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Grading	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
Building Construction	Crane	73	80.6	112.2
	Generator	78		
	Front End Loader	75		
Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
Architectural Coating	Man Lift	68	76.2	107.8
	Compressor (air)	74		
	Generator (<25kVA)	70		

[1] FHWA Road Construction Noise Model.
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

TABLE 10-2: ON-SITE CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	67.3	66.6	63.9	61.2	59.5	70.1
R2	68.9	68.2	65.5	62.8	61.1	71.7
R3	58.4	57.7	55.0	52.3	50.6	61.2

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 10-3: PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	70.1	80	No
R2	71.7	80	No
R3	61.2	80	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area. Since the nighttime concrete pours will take place outside the permitted by Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), the Project Applicant will be required to obtain authorization for nighttime work from the County of Riverside. Any nighttime construction noise activities are evaluated against the FTA nighttime exterior construction noise level threshold of 70 dBA L_{eq} for noise sensitive residential land use. (8 p. 179)

10.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

To estimate the noise levels due to nighttime concrete pouring activities, sample reference noise level measurements were taken during a nighttime concrete pouring at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling. To describe the nighttime concrete pour noise levels associated with the construction of the Thrifty Oil Warehouse, this analysis relies on reference sound pressure level of 67.7 dBA L_{eq} at 50 feet representing a sound power level of 100.3 dBA L_w. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA L_w is used to describe the expected Project nighttime concrete pour noise activities.

10.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 43.1 to 53.6 dBA L_{eq} at the existing noise sensitive receiver locations. The analysis shows that the unmitigated nighttime concrete pour activities will not exceed the FTA 70 dBA L_{eq} nighttime residential noise level threshold at all the nearest noise sensitive receiver locations. Therefore, the noise impacts due to Project construction nighttime concrete pour noise activity are considered *less than significant* at all receiver locations with prior authorization for nighttime work from the County of Riverside. Appendix 10.3 includes the CadnaA nighttime concrete pour noise model inputs.

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Concrete Pour Construction Noise Levels (dBA L_{eq})		
	Exterior Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	52.0	70	No
R2	53.6	70	No
R3	43.1	70	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Nighttime Concrete Pour noise model inputs are included in Appendix 10.2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground

vibration levels associated with various types of construction equipment are summarized on Table 10-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To calculate the vibration levles, the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 115 to 1,011 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.001 to 0.021 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

TABLE 10-6: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	115'	0.000	0.004	0.008	0.009	0.021	0.021	0.3	No
R2	188'	0.000	0.002	0.004	0.004	0.010	0.010	0.3	No
R3	1,011'	0.000	0.000	0.000	0.000	0.001	0.001	0.3	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

11 REFERENCES

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2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
4. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
5. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
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7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123.* September 2018.
9. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
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11. **County of Riverside.** *General Plan Noise Element.* December 2015.
12. —. *Municipal Code, Chapter 9.52 Noise Regulation.*
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15. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
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19. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
20. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.

21. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
22. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
23. **Urban Crossroads, Inc.** *Thrifty Oil Warehouse Focused Traffic Assessment.* February 2024.
24. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Thrifty Oil Warehouse Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018
Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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Chapter 9.52 NOISE REGULATION

Sections:

9.52.010 Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

9.52.020 Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

   1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and

   2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws.

(Ord. 847 § 2, 2006)

9.52.030 Definitions.

As used in this chapter, the following terms shall have the following meanings:

"Audio equipment" means a television, stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Decibel (dB)" means a unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately one hundred thirty (130) decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. "A-weighting (dBA)" means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.

2. "Maximum sound level (L_{max})" means the maximum sound level measured on a sound level meter.

"Governmental agency" means the United States, the state of California, Riverside County, any city within Riverside County, any special district within Riverside County or any combination of these agencies.

"Land use permit" means a discretionary permit issued by Riverside County pursuant to Riverside County Ordinance No. 348.

"Motor vehicle" means a vehicle that is self-propelled.

"Motor vehicle sound system" means a stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Noise" means any loud, discordant or disagreeable sound.

"Occupied property" means property upon which is located a residence, business or industrial or manufacturing use.

"Off-highway vehicle" means a motor vehicle designed to travel over any terrain.

"Public or private school" means an institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

"Public property" means property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Sensitive receptor" means a land use that is identified as sensitive to noise in the noise element of the Riverside County general plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

"Sound-amplifying equipment" means a loudspeaker, microphone, megaphone or other similar device.

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

(Ord. 847 § 3, 2006)

9.52.040 General sound level standards.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1

Sound Level Standards (Db L_{max})

GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7 am—10 pm	10 pm—7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
	MDR	Medium Density Residential	2—5	55	45
	MHDR	Medium High Density Residential	5—8	55	45
	HDR	High Density Residential	8—14	55	45
	VHDR	Very High Density Residential	14—20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45

		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
Rural	RR	Rural Residential	5 AC	45	45
	RM	Rural Mountainous	10 AC	45	45
	RD	Rural Desert	10 AC	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45
	MR	Mineral Resources		75	45

(Ord. 847 § 4, 2006)

9.52.050 Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.52.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

(Ord. 847 § 5, 2006)

9.52.060 Special sound sources standards.

The general sound level standards set forth in Section 9.52.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than ninety-six (96) dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than one hundred one (101) dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of twenty (20) inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of ten p.m. and eight a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than one hundred (100) feet from the vehicle.

B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of ten p.m. and eight a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.

C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of ten p.m. and eight a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than one hundred (100) feet from the equipment.

D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between the hours of ten p.m. and eight a.m.

2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than two hundred (200) feet from the equipment or music.

(Ord. 847 § 6, 2006)

9.52.070 Exceptions.

Exceptions may be requested from the standards set forth in Section 9.52.040 or 9.52.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

A. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the director of building and safety on forms provided by the building and safety department and shall be accompanied by the appropriate filing fee. No public hearing is required.

2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. No public hearing is required.

3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the planning director shall set the matter for public hearing before the planning commission, notice of which shall be given as provided in Section 18.26c of Riverside County Ordinance No. 348. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

B. Requirements for Approval. The appropriate decisionmaking body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decisionmaking body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

C. Appeals. The director of building and safety's decision on an application for a construction-related exception is considered final. The planning director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decisionmaking body or officer shall mail notice of the decision to the applicant. Within ten (10) calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the board of supervisors. Upon receipt of an appeal and payment of the appropriate appeal fee, the clerk of the board shall set the matter for hearing not less than five days nor more than thirty (30) days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The board of supervisors shall render its decision within thirty (30) days after the appeal hearing is closed.

D. Effect of a Pending Continuous-Events Exception Application. For a period of one hundred eighty (180) days from the effective date of this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to sanction the sound and if a decision on the application is pending.

(Ord. 847 § 7, 2006)

9.52.080 Enforcement.

The Riverside County sheriff and code enforcement shall have the primary responsibility for enforcing this chapter; provided, however, the sheriff and code enforcement may be assisted by the public health department. Violations shall be prosecuted as described in Section 9.52.100 of this chapter, but nothing in this chapter shall

prevent the sheriff, code enforcement or the department of public health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs.

(Ord. 847.1 § 1, 2007: Ord. 847 § 8, 2006)

9.52.090 Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.52.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter.

(Ord. 847 § 9, 2006)

9.52.100 Violations and penalties.

Any person who violates any provision of this chapter once or twice within a one hundred eighty (180) day period shall be guilty of an infraction. Any person who violates any provision of this chapter more than twice within a one hundred eighty (180) day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts:

A. For the first violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be five hundred dollars ($500.00).

B. For the second violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be seven hundred fifty dollars ($750.00).

C. For any further violations within a one hundred eighty (180) day period, the minimum mandatory fine shall be one thousand dollars ($1,000.00) or imprisonment in the county jail for a period not exceeding six months, or both.

(Ord. 847 § 10, 2006)

ORDINANCE NO. 847
(AS AMENDED THROUGH 847.1)
AN ORDINANCE OF THE COUNTY OF RIVERSIDE AMENDING
ORDINANCE NO. 847 REGULATING NOISE

The Board of Supervisors of the County of Riverside, State of California, ordains as follows:

Section 1. Findings. The Board of Supervisors finds that the unnecessary, excessive and annoying noises from various sources within the unincorporated territory of the County of Riverside control the health, safety and welfare of the residents of the County and that a comprehensive noise control ordinance is necessary to protect the public health, safety and welfare. The Board of Supervisors further finds that the provisions of this ordinance are not more restrictive than necessary for the protection of the public health, safety and welfare.

Section 2. Amendment. Ordinance No. 847 is amended to read as follows:

Section 1. Purpose. The purpose of this ordinance is to establish standards and procedures for the control of noise in order to protect the public health, safety and welfare.

Section 2. Definitions. For the purpose of this ordinance, the following words and phrases shall have the meanings respectively ascribed to them by this section.

a. "Ambient noise level" means the all-encompassing noise level associated with a given environment, being usually a composite of sounds from many sources near and far, but not including noises generated by the operation of a noise source which is the object of a measurement or investigation.

b. "Commercial property" means any property primarily used for the sale of goods and services.

c. "Construction" means any site preparation, assembly, erection, substantial repair, alteration, or similar action, but excluding demolition, of public or private rights-of-way, structures, utilities or similar property.

d. "Decibel" means a unit for measuring the amplitude of a sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (20 micronewtons per square meter). The abbreviation of decibel is dB. The abbreviation of A-weighted decibel is dBA. The abbreviation of C-weighted decibel is dBC. The abbreviation of unweighted decibel is dB. All sound level measurements shall be made with a sound level meter using the A-weighted scale, except where otherwise specified, and the meter shall be set to the slow response mode, except where otherwise specified.

e. "Disturbing, excessive or offensive noise" means any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans, as determined by any reasonable person.

f. "Emergency" means any occurrence or circumstance involving actual or imminent physical trauma or property damage which demands immediate action.

g. "Emergency work" means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

h. "Fixed noise source" means a stationary device which creates sounds while fixed or motionless, including but not limited to residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners and refrigeration equipment.

i. "Grading" means any excavating or filling of earth material or any combination thereof, conducted at a site in preparation for construction or development, including the hauling of earth material on, over or off the site.

j. "Impulsive noise" means a noise characterized by brief excursions of sound pressure, the duration of which is less than one second.

k. "Industrial property" means any property primarily used for manufacturing, processing or assembling any product or commodity.

l. "Mobile noise source" means any noise source other than a fixed noise source.

m. "Motor vehicle" means any vehicle which is self-propelled.

n. "Multiple-family residential property" means any property primarily used for residential purposes by more than one family, including but not limited to duplexes, apartments, boarding houses, dormitories, condominiums and townhouses.

o. "Noise level" means the A-weighted sound pressure level.

p. "Noise sensitive area" means any area designated pursuant to Section 5 of this ordinance.

q. "Noise sensitive property" means property which is used for residential, farming or ranching, religious, educational or health care purposes, or any property within a noise sensitive area.

r. "Person" means any person, firm, association, partnership, corporation, limited liability company, or any agency or subdivision of the federal government, the State, any public district, or any agency or subdivision of the County or any other political subdivision.

s. "Public property" means any property owned by a governmental entity.

t. "Public right-of-way" means any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

u. "Residential property" means any property primarily used for human habitation, including but not limited to single-family dwellings, multiple-family dwellings, mobile homes, and recreational vehicles.

v. "Sound level meter" means an instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, output meter, and weighting networks used to measure sound pressure levels.

w. "Vibration perception threshold" means the minimum ground- or structure-borne vibration motion that can be perceived by the human body or by a sensitive instrument. For the purpose of this ordinance, the vibration perception threshold shall be a motion velocity of 0.01 inches per second over the frequency range of one to one thousand Hertz.

Section 3. Exemptions. The following activities shall be exempt from the provisions of this ordinance:

a. Activities conducted in public parks, public playgrounds and public or private school grounds, including but not limited to school athletic and school entertainment events.

b. Any activity to the extent regulation thereof has been preempted by state or federal law.

c. Emergency work.

d. Noise sensitive activities which occur between sunrise and sunset, including but not limited to the operation of motorized equipment used in farming or ranching, and the use of explosives, firearms, or blasting devices, provided that the operation of such equipment does not cause the noise level at the boundary line of the noise sensitive property to exceed the ambient noise level by more than 10 dBA.

e. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not increase by more than 5 dBA over the noise levels existing on the effective date of this ordinance.

f. Activities conducted on or in connection with a motor vehicle racetrack with a noise mitigation program approved by the Board of Supervisors, provided that the noise level does not exceed the noise limits established by the program.

g. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

h. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

i. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

j. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

k. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

l. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

m. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

n. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

o. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

p. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

q. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

r. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

s. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

t. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

u. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

v. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

w. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

x. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.

y. Activities conducted on or in connection with a motor vehicle racetrack which is in existence on the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the Board of Supervisors.

z. Activities conducted on or in connection with a motor vehicle racetrack for which a conditional use permit is issued after the effective date of this ordinance, provided that the noise level does not exceed the noise limits established by the conditional use permit.