



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT5
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT5
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
 Cork Line Level Crossings
 XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT6
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT7
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
 Cork Line Level Crossings
 XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT8
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
 Cork Line Level Crossings
 XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
 Cork Line Level Crossings
 XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020



Iarnród Éireann
Cork Line Level Crossings
XC215 (19-135-4)

	T.PIT9
	Trial Pit Photographs
Client:	Iarnród Éireann
Engineer:	Jacob's
Date:	February 2020

Appendix F

Indirect CBR Test Results

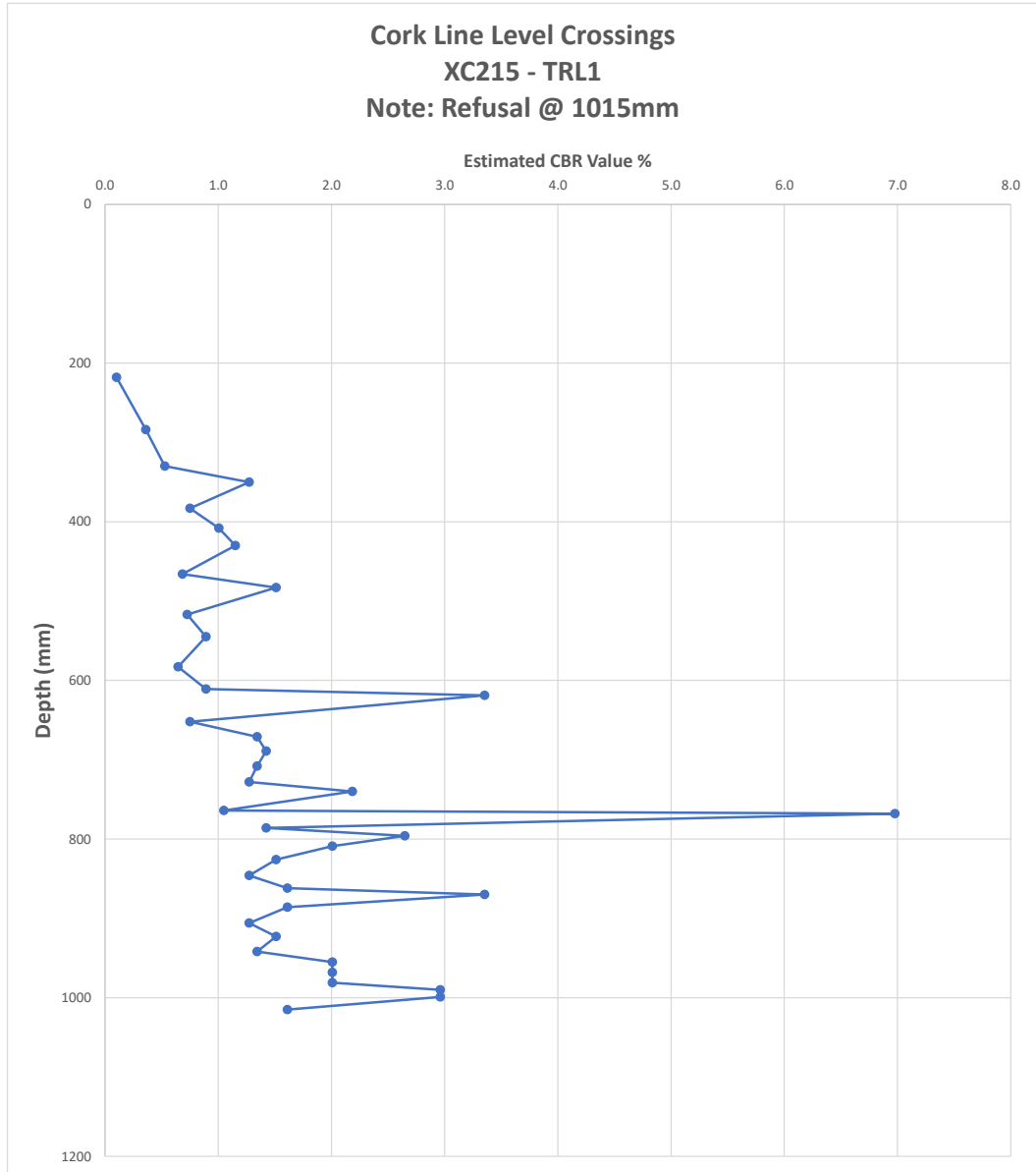
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL1	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553386.111	614490.802	90.542

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	932	218	218	0.1
2	866	66	284	0.4
3	820	46	330	0.5
4	800	20	350	1.3
5	767	33	383	0.7
6	742	25	408	1.0
7	720	22	430	1.2
8	684	36	466	0.7
9	667	17	483	1.5
10	633	34	517	0.7
11	605	28	545	0.9
12	567	38	583	0.6
13	539	28	611	0.9
14	531	8	619	3.4
15	498	33	652	0.7
16	479	19	671	1.3
17	461	18	689	1.4
18	442	19	708	1.3
19	422	20	728	1.3
20	410	12	740	2.2
21	386	24	764	1.0
22	382	4	768	7.0
23	364	18	786	1.4
24	354	10	796	2.6
25	341	13	809	2.0
26	324	17	826	1.5
27	304	20	846	1.3
28	288	16	862	1.6
29	280	8	870	3.4
30	264	16	886	1.6
31	244	20	906	1.3
32	227	17	923	1.5
33	208	19	942	1.3
34	195	13	955	2.0
35	182	13	968	2.0
36	169	13	981	2.0
37	160	9	990	3.0
38	151	9	999	3.0
39	135	16	1015	1.6
40				



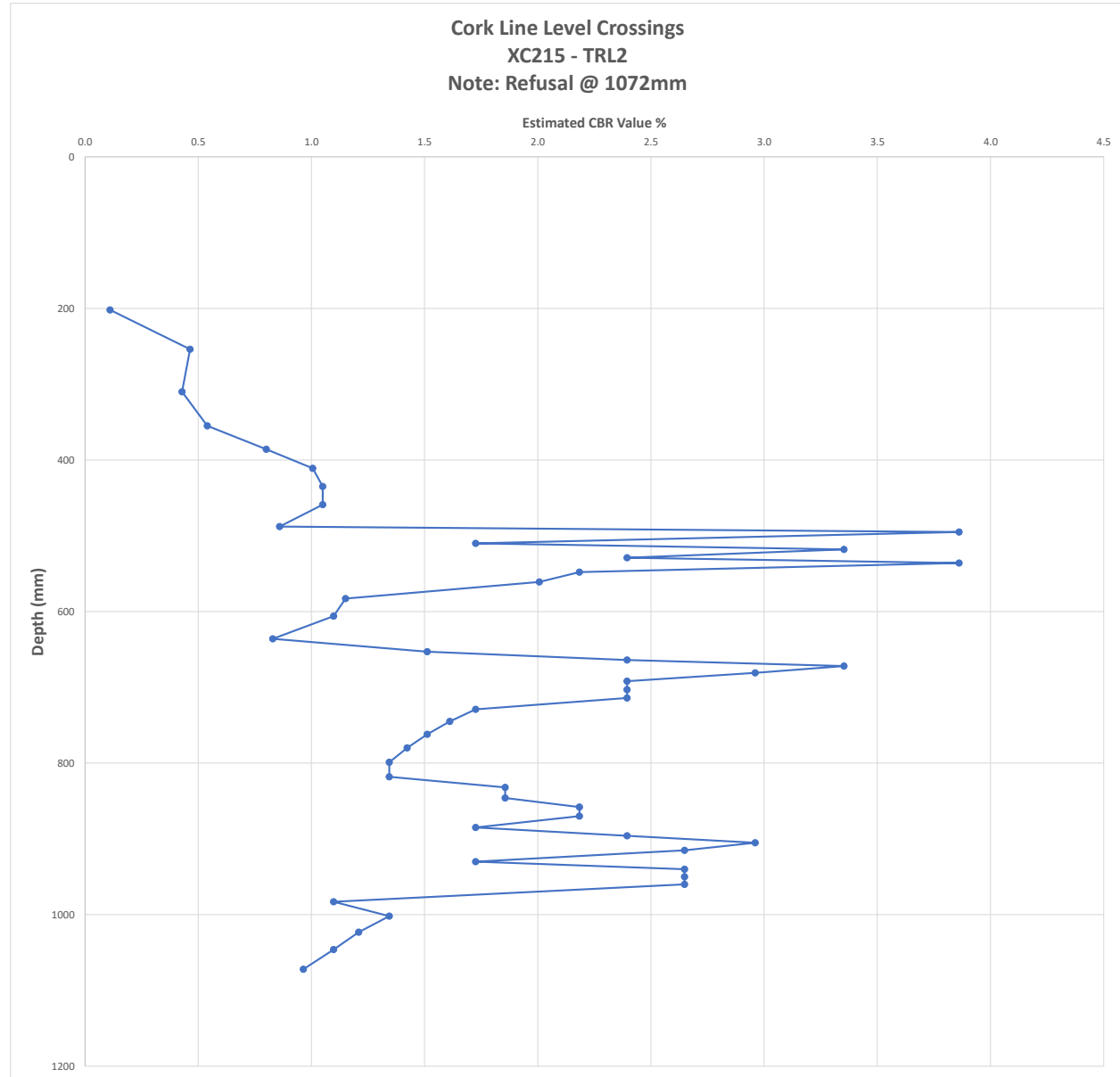
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL2	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553388.56	614494.392	90.591

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	948	202	202	0.1
2	896	52	254	0.5
3	840	56	310	0.4
4	795	45	355	0.5
5	764	31	386	0.8
6	739	25	411	1.0
7	715	24	435	1.0
8	691	24	459	1.0
9	662	29	488	0.9
10	655	7	495	3.9
11	640	15	510	1.7
12	632	8	518	3.4
13	621	11	529	2.4
14	614	7	536	3.9
15	602	12	548	2.2
16	589	13	561	2.0
17	567	22	583	1.2
18	544	23	606	1.1
19	514	30	636	0.8
20	497	17	653	1.5
21	486	11	664	2.4
22	478	8	672	3.4
23	469	9	681	3.0
24	458	11	692	2.4
25	447	11	703	2.4
26	436	11	714	2.4
27	421	15	729	1.7
28	405	16	745	1.6
29	388	17	762	1.5
30	370	18	780	1.4
31	351	19	799	1.3
32	332	19	818	1.3
33	318	14	832	1.9
34	304	14	846	1.9
35	292	12	858	2.2
36	280	12	870	2.2
37	265	15	885	1.7
38	254	11	896	2.4
39	245	9	905	3.0
40	235	10	915	2.6
41	220	15	930	1.7
42	210	10	940	2.6
43	200	10	950	2.6
44	190	10	960	2.6
45	167	23	983	1.1
46	148	19	1002	1.3
47	127	21	1023	1.2
48	104	23	1046	1.1
49	78	26	1072	1.0
50				



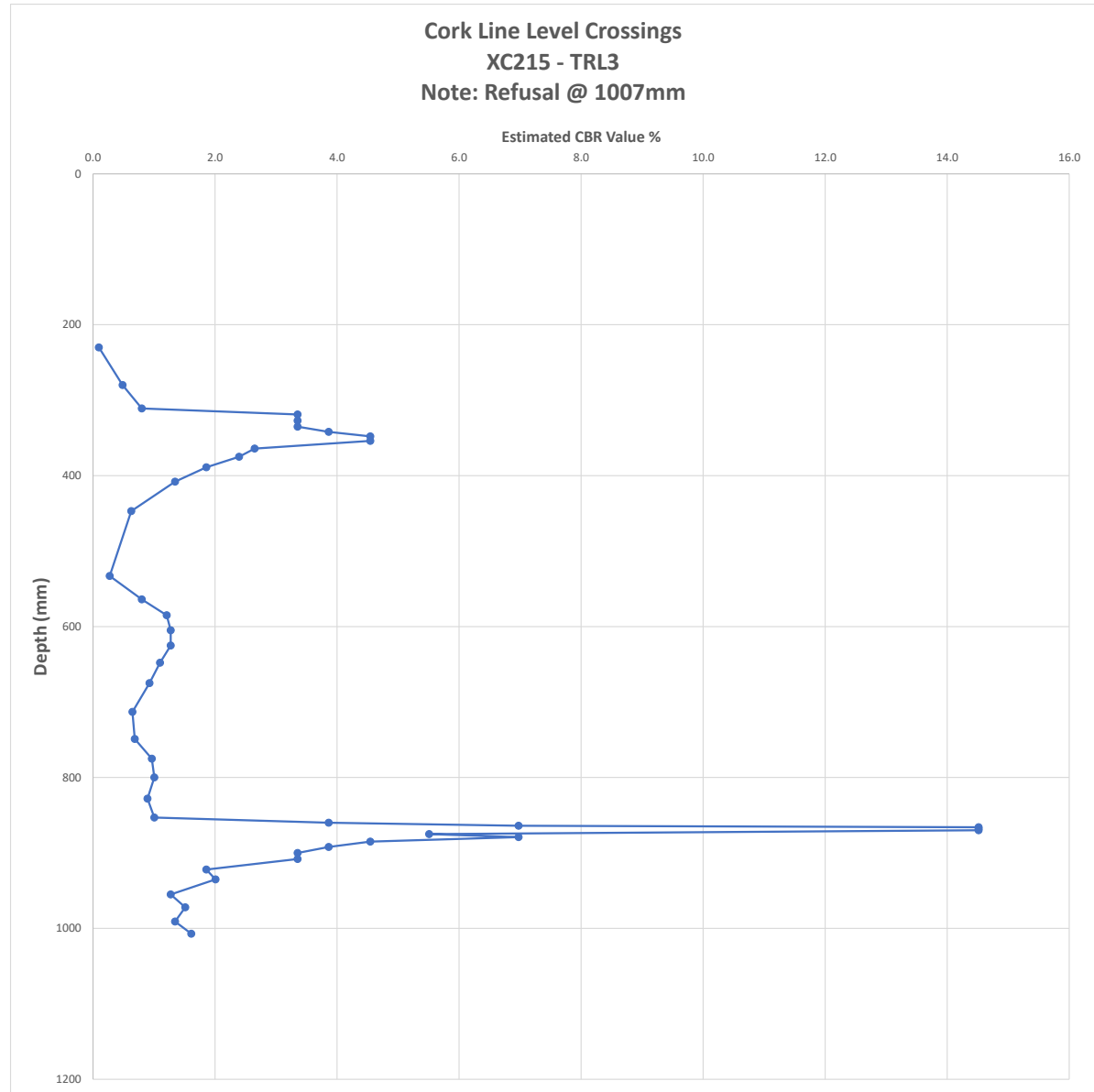
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL3	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553477.004	614544.776	90.917

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	920	230	230	0.1
2	870	50	280	0.5
3	839	31	311	0.8
4	831	8	319	3.4
5	823	8	327	3.4
6	815	8	335	3.4
7	808	7	342	3.9
8	802	6	348	4.5
9	796	6	354	4.5
10	786	10	364	2.6
11	775	11	375	2.4
12	761	14	389	1.9
13	742	19	408	1.3
14	703	39	447	0.6
15	617	86	533	0.3
16	586	31	564	0.8
17	565	21	585	1.2
18	545	20	605	1.3
19	525	20	625	1.3
20	502	23	648	1.1
21	475	27	675	0.9
22	437	38	713	0.6
23	401	36	749	0.7
24	375	26	775	1.0
25	350	25	800	1.0
26	322	28	828	0.9
27	297	25	853	1.0
28	290	7	860	3.9
29	286	4	864	7.0
30	284	2	866	14.5
31	282	2	868	14.5
32	280	2	870	14.5
33	275	5	875	5.5
34	271	4	879	7.0
35	265	6	885	4.5
36	258	7	892	3.9
37	250	8	900	3.4
38	242	8	908	3.4
39	228	14	922	1.9
40	215	13	935	2.0
41	195	20	955	1.3
42	178	17	972	1.5
43	159	19	991	1.3
44	143	16	1007	1.6
45				



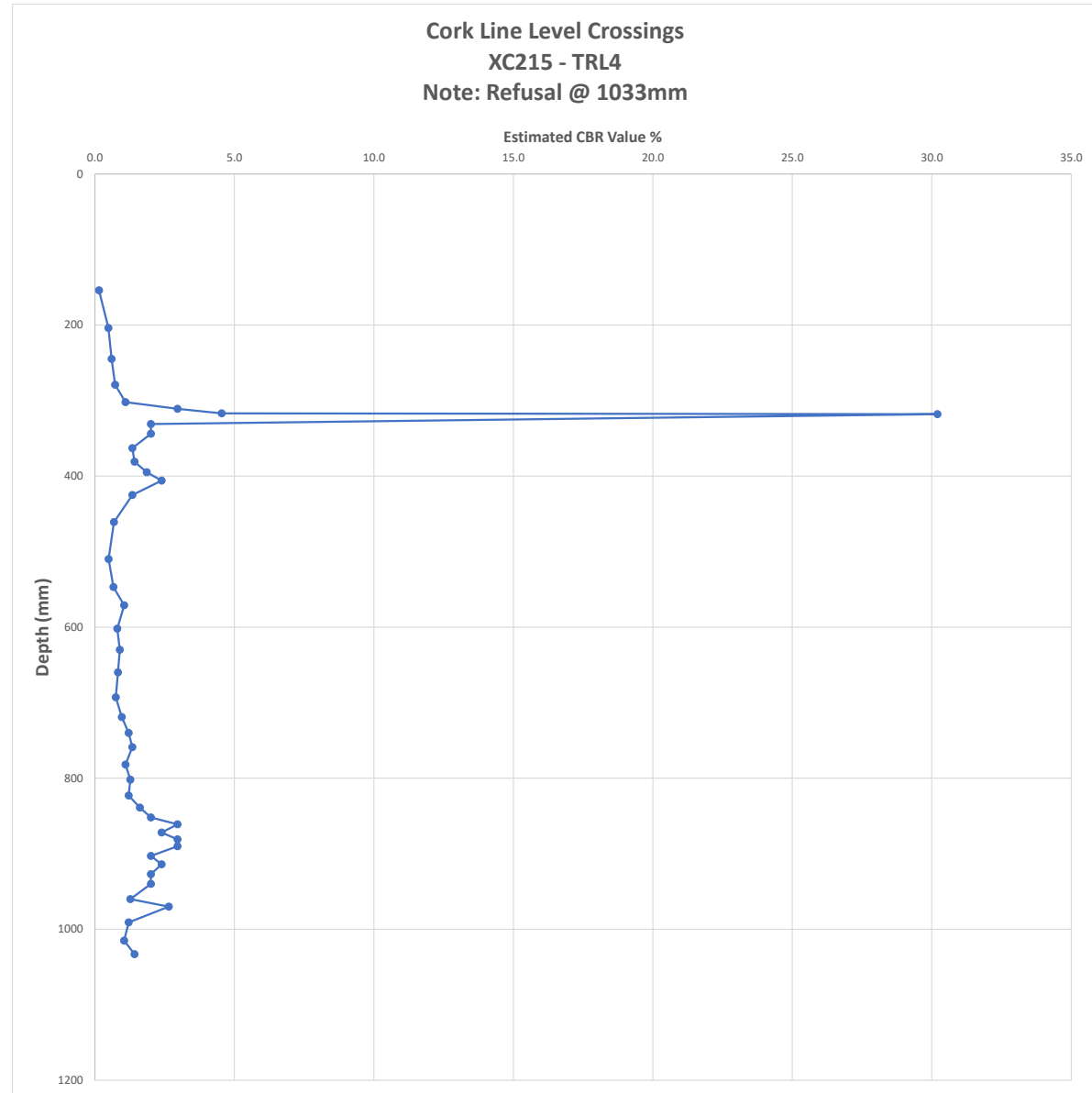
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL4	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553480.886	614551.358	91.2

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	996	154	154	0.1
2	946	50	204	0.5
3	905	41	245	0.6
4	871	34	279	0.7
5	848	23	302	1.1
6	839	9	311	3.0
7	833	6	317	4.5
8	832	1	318	30.2
9	819	13	331	2.0
10	806	13	344	2.0
11	787	19	363	1.3
12	769	18	381	1.4
13	755	14	395	1.9
14	744	11	406	2.4
15	725	19	425	1.3
16	689	36	461	0.7
17	640	49	510	0.5
18	603	37	547	0.7
19	579	24	571	1.0
20	548	31	602	0.8
21	520	28	630	0.9
22	490	30	660	0.8
23	457	33	693	0.7
24	431	26	719	1.0
25	410	21	740	1.2
26	391	19	759	1.3
27	368	23	782	1.1
28	348	20	802	1.3
29	327	21	823	1.2
30	311	16	839	1.6
31	298	13	852	2.0
32	289	9	861	3.0
33	278	11	872	2.4
34	269	9	881	3.0
35	260	9	890	3.0
36	247	13	903	2.0
37	236	11	914	2.4
38	223	13	927	2.0
39	210	13	940	2.0
40	190	20	960	1.3
41	180	10	970	2.6
42	159	21	991	1.2
43	135	24	1015	1.0
44	117	18	1033	1.4
45				



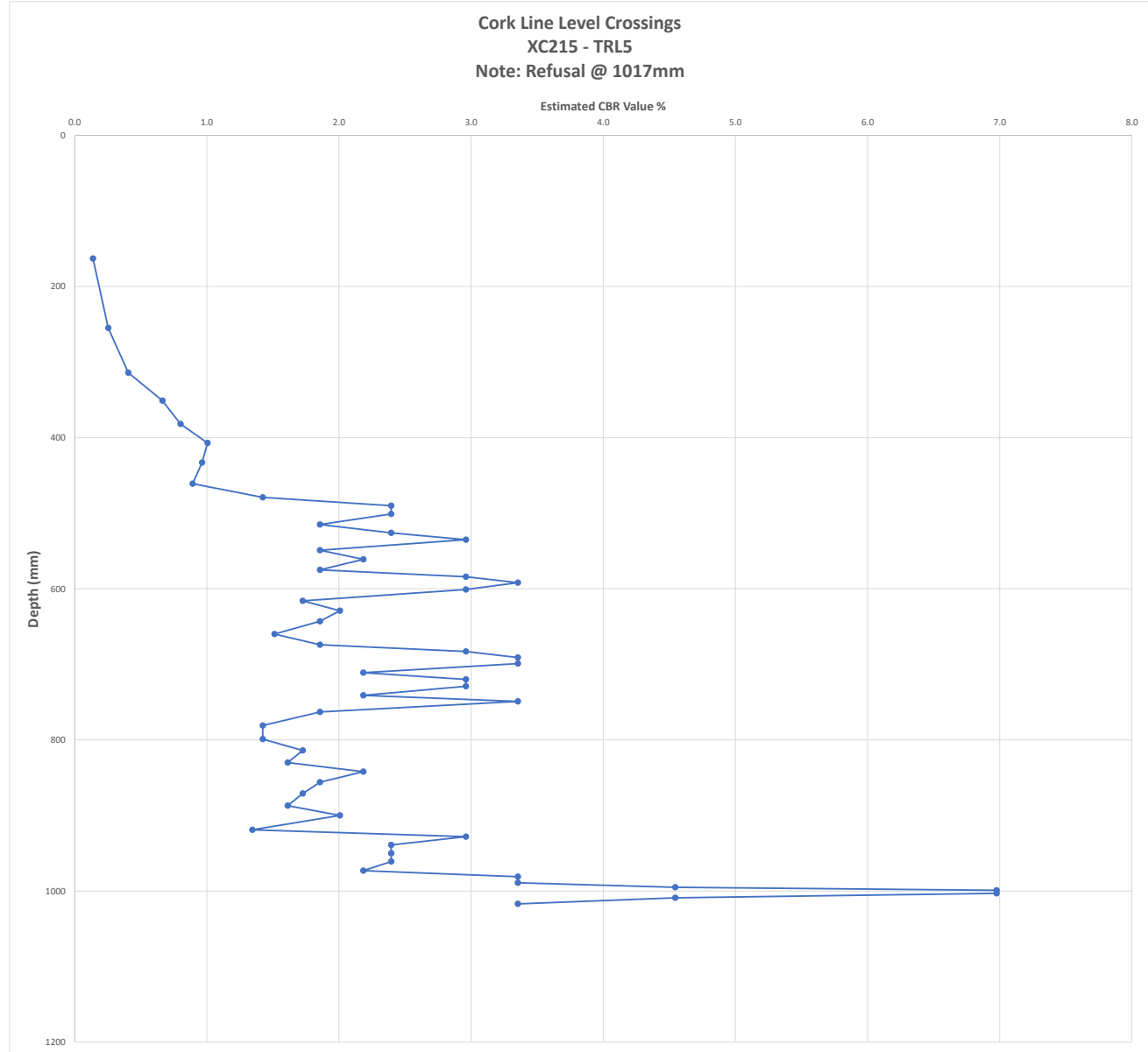
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL5	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553507.653	614660.645	92.217

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	987	163	163	0.1
2	895	92	255	0.3
3	836	59	314	0.4
4	799	37	351	0.7
5	768	31	382	0.8
6	743	25	407	1.0
7	717	26	433	1.0
8	689	28	461	0.9
9	671	18	479	1.4
10	660	11	490	2.4
11	649	11	501	2.4
12	635	14	515	1.9
13	624	11	526	2.4
14	615	9	535	3.0
15	601	14	549	1.9
16	589	12	561	2.2
17	575	14	575	1.9
18	566	9	584	3.0
19	558	8	592	3.4
20	549	9	601	3.0
21	534	15	616	1.7
22	521	13	629	2.0
23	507	14	643	1.9
24	490	17	660	1.5
25	476	14	674	1.9
26	467	9	683	3.0
27	459	8	691	3.4
28	451	8	699	3.4
29	439	12	711	2.2
30	430	9	720	3.0
31	421	9	729	3.0
32	409	12	741	2.2
33	401	8	749	3.4
34	387	14	763	1.9
35	369	18	781	1.4
36	351	18	799	1.4
37	336	15	814	1.7
38	320	16	830	1.6
39	308	12	842	2.2
40	294	14	856	1.9
41	279	15	871	1.7
42	263	16	887	1.6
43	250	13	900	2.0
44	231	19	919	1.3
45	222	9	928	3.0
46	211	11	939	2.4
47	200	11	950	2.4
48	189	11	961	2.4
49	177	12	973	2.2
50	169	8	981	3.4
51	161	8	989	3.4
52	155	6	995	4.5
53	151	4	999	7.0
54	147	4	1003	7.0
55	141	6	1009	4.5
56	133	8	1017	3.4
57				



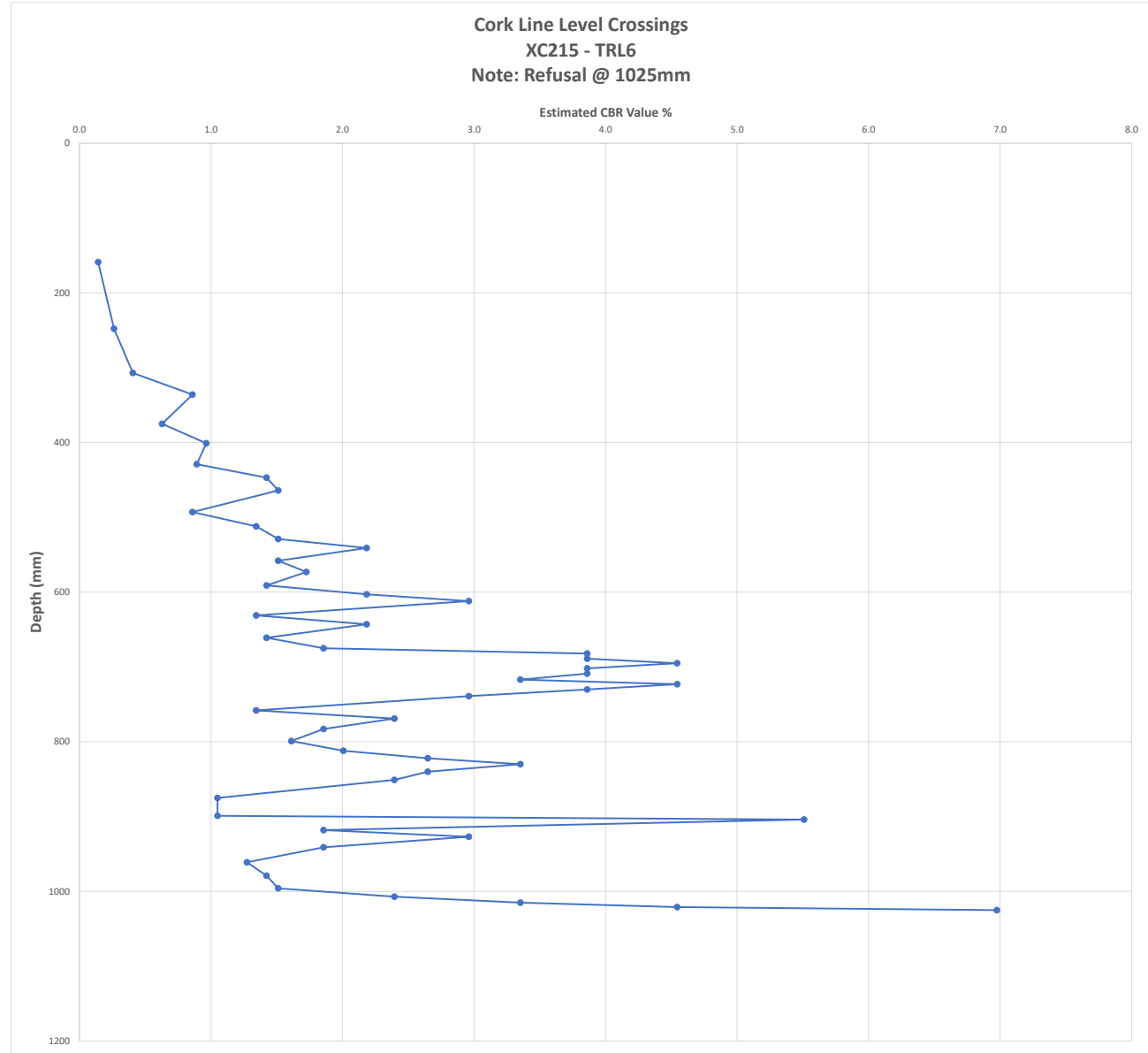
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL6	Job No	19-135
----------	---------------------	--------	--------

Easting	Northing	Elevation
553507.708	614667.947	92.671

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	991	159	159	0.1
2	902	89	248	0.3
3	843	59	307	0.4
4	814	29	336	0.9
5	775	39	375	0.6
6	749	26	401	1.0
7	721	28	429	0.9
8	703	18	447	1.4
9	686	17	464	1.5
10	657	29	493	0.9
11	638	19	512	1.3
12	621	17	529	1.5
13	609	12	541	2.2
14	592	17	558	1.5
15	577	15	573	1.7
16	559	18	591	1.4
17	547	12	603	2.2
18	538	9	612	3.0
19	519	19	631	1.3
20	507	12	643	2.2
21	489	18	661	1.4
22	475	14	675	1.9
23	468	7	682	3.9
24	461	7	689	3.9
25	455	6	695	4.5
26	448	7	702	3.9
27	441	7	709	3.9
28	433	8	717	3.4
29	427	6	723	4.5
30	420	7	730	3.9
31	411	9	739	3.0
32	392	19	758	1.3
33	381	11	769	2.4
34	367	14	783	1.9
35	351	16	799	1.6
36	338	13	812	2.0
37	328	10	822	2.6
38	320	8	830	3.4
39	310	10	840	2.6
40	299	11	851	2.4
41	275	24	875	1.0
42	251	24	899	1.0
43	246	5	904	5.5
44	232	14	918	1.9
45	223	9	927	3.0
46	209	14	941	1.9
47	189	20	961	1.3
48	171	18	979	1.4
49	154	17	996	1.5
50	143	11	1007	2.4
51	135	8	1015	3.4
52	129	6	1021	4.5
53	125	4	1025	7.0
54				



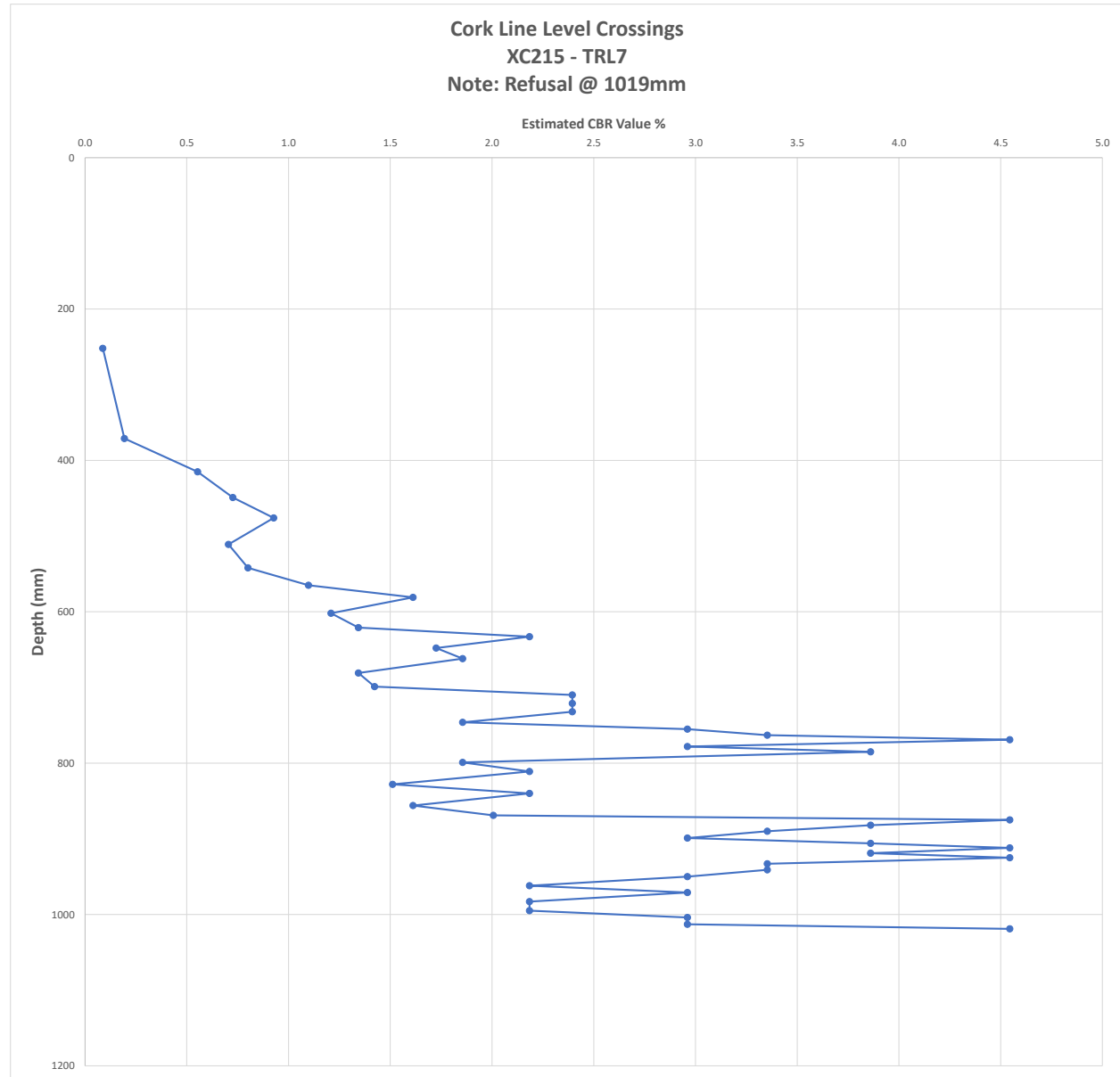
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL7	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553501.29	614764.114	93.922

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	898	252	252	0.1
2	779	119	371	0.2
3	735	44	415	0.6
4	701	34	449	0.7
5	674	27	476	0.9
6	639	35	511	0.7
7	608	31	542	0.8
8	585	23	565	1.1
9	569	16	581	1.6
10	548	21	602	1.2
11	529	19	621	1.3
12	517	12	633	2.2
13	502	15	648	1.7
14	488	14	662	1.9
15	469	19	681	1.3
16	451	18	699	1.4
17	440	11	710	2.4
18	429	11	721	2.4
19	418	11	732	2.4
20	404	14	746	1.9
21	395	9	755	3.0
22	387	8	763	3.4
23	381	6	769	4.5
24	372	9	778	3.0
25	365	7	785	3.9
26	351	14	799	1.9
27	339	12	811	2.2
28	322	17	828	1.5
29	310	12	840	2.2
30	294	16	856	1.6
31	281	13	869	2.0
32	275	6	875	4.5
33	268	7	882	3.9
34	260	8	890	3.4
35	251	9	899	3.0
36	244	7	906	3.9
37	238	6	912	4.5
38	231	7	919	3.9
39	225	6	925	4.5
40	217	8	933	3.4
41	209	8	941	3.4
42	200	9	950	3.0
43	188	12	962	2.2
44	179	9	971	3.0
45	167	12	983	2.2
46	155	12	995	2.2
47	146	9	1004	3.0
48	137	9	1013	3.0
49	131	6	1019	4.5
50				



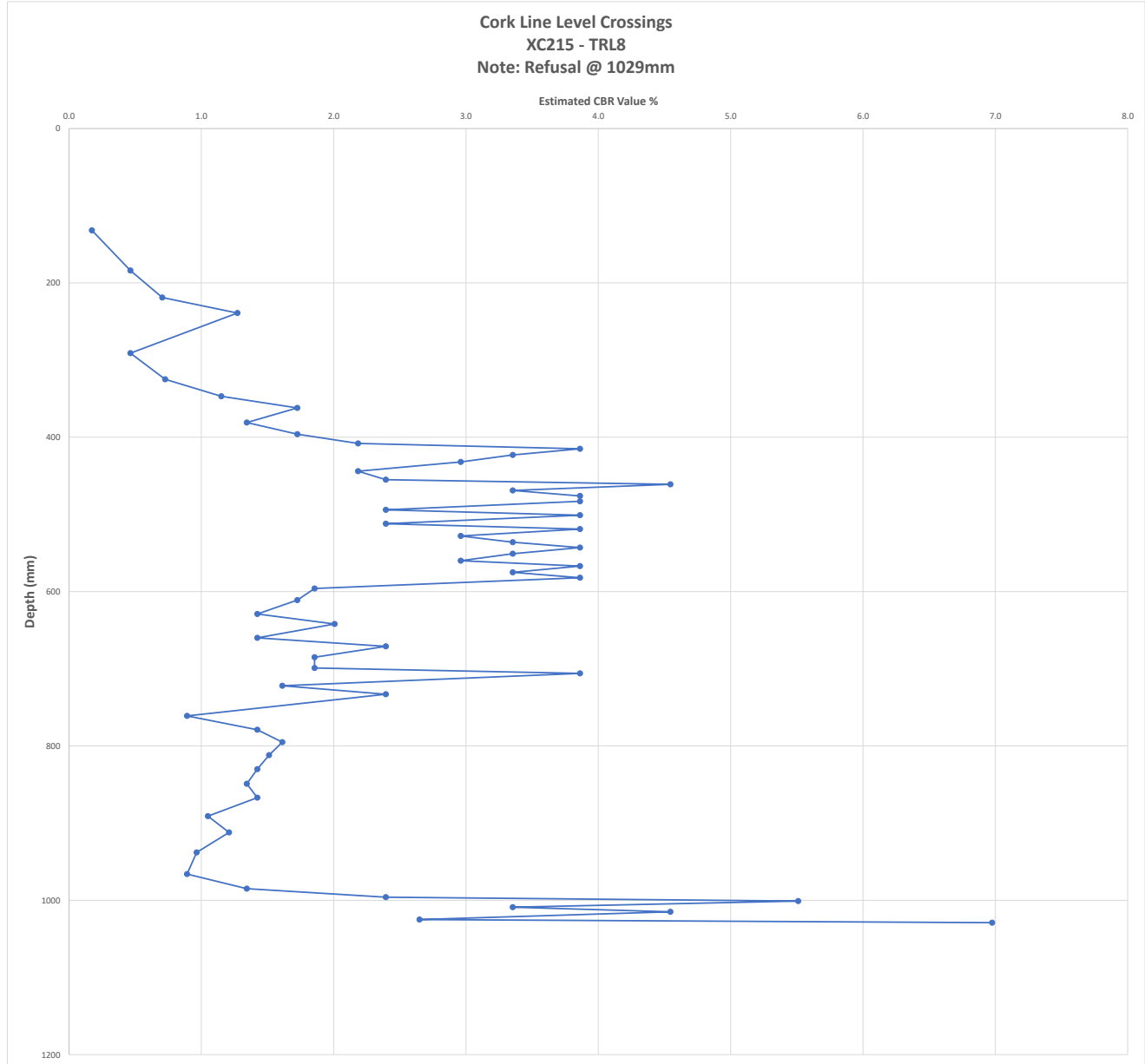
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL8	Job No	19-135
----------	--------------	--------	--------

Easting	Northing	Elevation
553501.532	614771.003	93.891

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	1018	132	132	0.2
2	966	52	184	0.5
3	931	35	219	0.7
4	911	20	239	1.3
5	859	52	291	0.5
6	825	34	325	0.7
7	803	22	347	1.2
8	788	15	362	1.7
9	769	19	381	1.3
10	754	15	396	1.7
11	742	12	408	2.2
12	735	7	415	3.9
13	727	8	423	3.4
14	718	9	432	3.0
15	706	12	444	2.2
16	695	11	455	2.4
17	689	6	461	4.5
18	681	8	469	3.4
19	674	7	476	3.9
20	667	7	483	3.9
21	656	11	494	2.4
22	649	7	501	3.9
23	638	11	512	2.4
24	631	7	519	3.9
25	622	9	528	3.0
26	614	8	536	3.4
27	607	7	543	3.9
28	599	8	551	3.4
29	590	9	560	3.0
30	583	7	567	3.9
31	575	8	575	3.4
32	568	7	582	3.9
33	554	14	596	1.9
34	539	15	611	1.7
35	521	18	629	1.4
36	508	13	642	2.0
37	490	18	660	1.4
38	479	11	671	2.4
39	465	14	685	1.9
40	451	14	699	1.9
41	444	7	706	3.9
42	428	16	722	1.6
43	417	11	733	2.4
44	389	28	761	0.9
45	371	18	779	1.4
46	355	16	795	1.6
47	338	17	812	1.5
48	320	18	830	1.4
49	301	19	849	1.3
50	283	18	867	1.4
51	259	24	891	1.0
52	238	21	912	1.2
53	212	26	938	1.0
54	184	28	966	0.9
55	165	19	985	1.3
56	154	11	996	2.4
57	149	5	1001	5.5
58	141	8	1009	3.4
59	135	6	1015	4.5
60	125	10	1025	2.6
61	121	4	1029	7.0



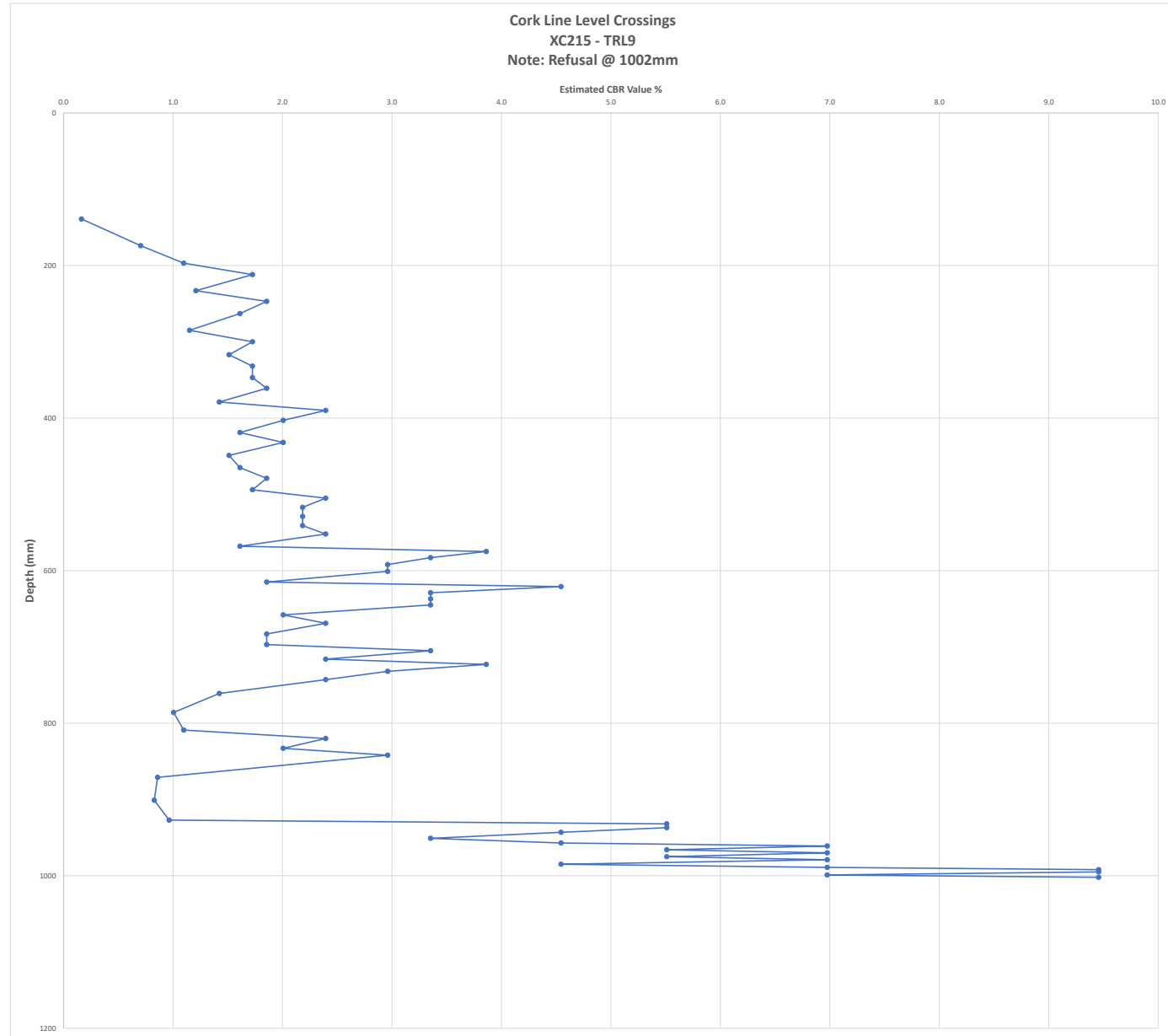
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL9	Job No	19-135
----------	---------------------	--------	--------

Easting	Northing	Elevation
553499.313	614852.182	94.915

Test Start Depth	0	mm/bgj	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH (mm)	CBR %
1	1011	139	139	0.2
2	976	35	174	0.7
3	953	23	197	1.1
4	938	15	212	1.7
5	917	21	233	1.2
6	903	14	247	1.9
7	887	16	263	1.6
8	865	22	285	1.2
9	850	15	300	1.7
10	833	17	317	1.5
11	818	15	332	1.7
12	803	15	347	1.7
13	789	14	361	1.9
14	771	18	379	1.4
15	760	11	390	2.4
16	747	13	403	2.0
17	731	16	419	1.6
18	718	13	432	2.0
19	701	17	449	1.5
20	685	16	465	1.6
21	671	14	479	1.9
22	656	15	494	1.7
23	645	11	505	2.4
24	633	12	517	2.2
25	621	12	529	2.2
26	609	12	541	2.2
27	598	11	552	2.4
28	582	16	568	1.6
29	575	7	575	3.9
30	567	8	583	3.4
31	558	9	592	3.0
32	549	9	601	3.0
33	535	14	615	1.9
34	529	6	621	4.5
35	521	8	629	3.4
36	513	8	637	3.4
37	505	8	645	3.4
38	492	13	658	2.0
39	481	11	669	2.4
40	467	14	683	1.9
41	453	14	697	1.9
42	445	8	705	3.4
43	434	11	716	2.4
44	427	7	723	3.9
45	418	9	732	3.0
46	407	11	743	2.4
47	389	18	761	1.4
48	364	25	786	1.0
49	341	23	809	1.1
50	330	11	820	2.4
51	317	13	833	2.0
52	308	9	842	3.0
53	279	29	871	0.9
54	249	30	901	0.8
55	223	26	927	1.0
56	218	5	932	5.5
57	213	5	937	5.5
58	207	6	943	4.5
59	199	8	951	3.4
60	193	6	957	4.5
61	189	4	961	7.0
62	184	5	966	5.5
63	180	4	970	7.0
64	175	5	975	5.5
65	171	4	979	7.0
66	165	6	985	4.5
67	161	4	989	7.0
68	158	3	992	9.5
69	155	3	995	9.5
70	151	4	999	7.0
71	148	3	1002	9.5



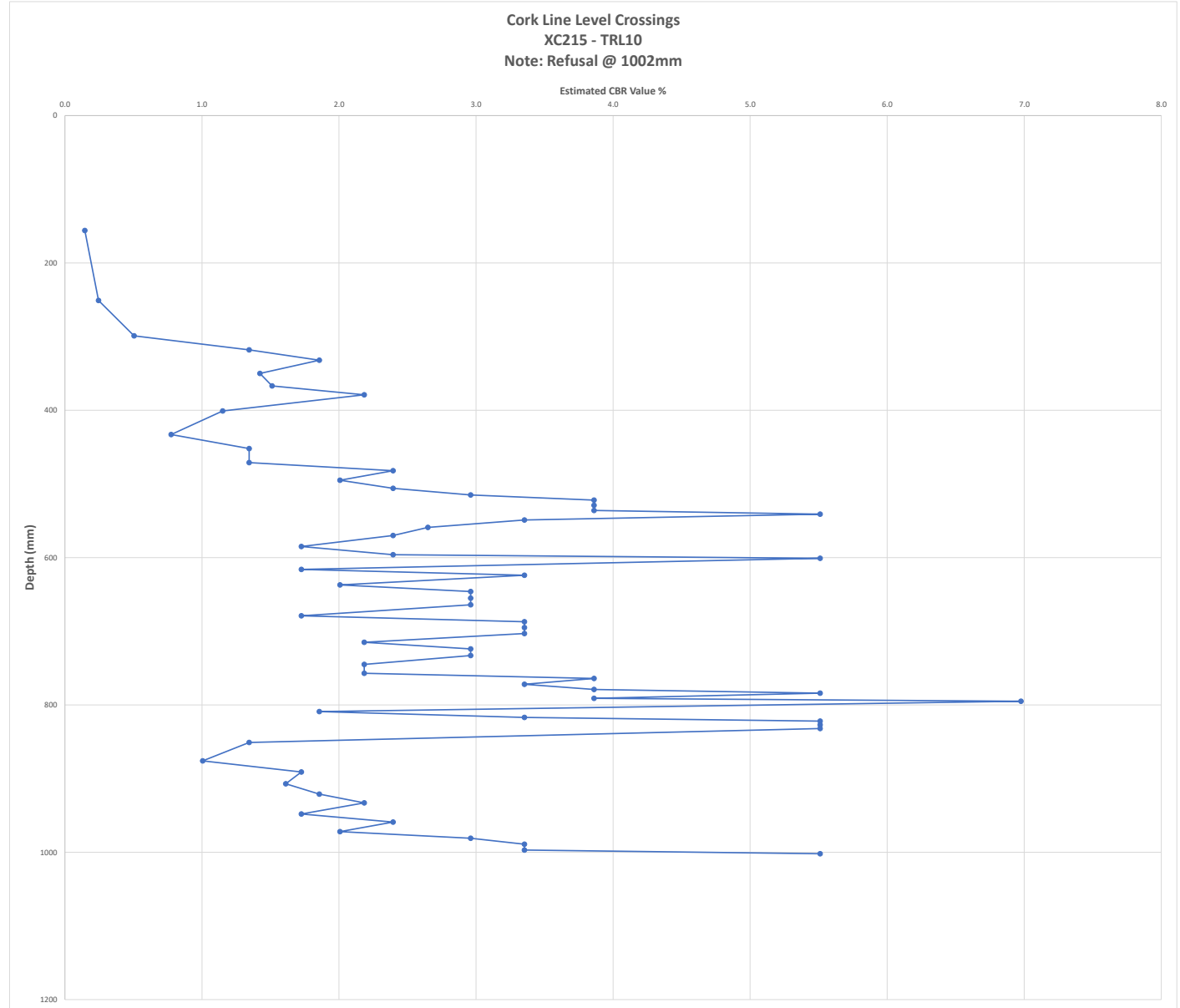
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL10	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553503.342	614858.482	95.172

Test Start Depth	0	mm/bl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	994	156	156	0.1
2	899	95	251	0.2
3	851	48	299	0.5
4	832	19	318	1.3
5	818	14	332	1.9
6	800	18	350	1.4
7	783	17	367	1.5
8	771	12	379	2.2
9	749	22	401	1.2
10	717	32	433	0.8
11	698	19	452	1.3
12	679	19	471	1.3
13	668	11	482	2.4
14	655	13	495	2.0
15	644	11	506	2.4
16	635	9	515	3.0
17	628	7	522	3.9
18	621	7	529	3.9
19	614	7	536	3.9
20	609	5	541	5.5
21	601	8	549	3.4
22	591	10	559	2.6
23	580	11	570	2.4
24	565	15	585	1.7
25	554	11	596	2.4
26	549	5	601	5.5
27	534	15	616	1.7
28	526	8	624	3.4
29	513	13	637	2.0
30	504	9	646	3.0
31	495	9	655	3.0
32	486	9	664	3.0
33	471	15	679	1.7
34	463	8	687	3.4
35	455	8	695	3.4
36	447	8	703	3.4
37	435	12	715	2.2
38	426	9	724	3.0
39	417	9	733	3.0
40	405	12	745	2.2
41	393	12	757	2.2
42	386	7	764	3.9
43	378	8	772	3.4
44	371	7	779	3.9
45	366	5	784	5.5
46	359	7	791	3.9
47	355	4	795	7.0
48	341	14	809	1.9
49	333	8	817	3.4
50	328	5	822	5.5
51	323	5	827	5.5
52	318	5	832	5.5
53	299	19	851	1.3
54	274	25	876	1.0
55	259	15	891	1.7
56	243	16	907	1.6
57	229	14	921	1.9
58	217	12	933	2.2
59	202	15	948	1.7
60	191	11	959	2.4
61	178	13	972	2.0
62	169	9	981	3.0
63	161	8	989	3.4
64	153	8	997	3.4
65	148	5	1002	5.5



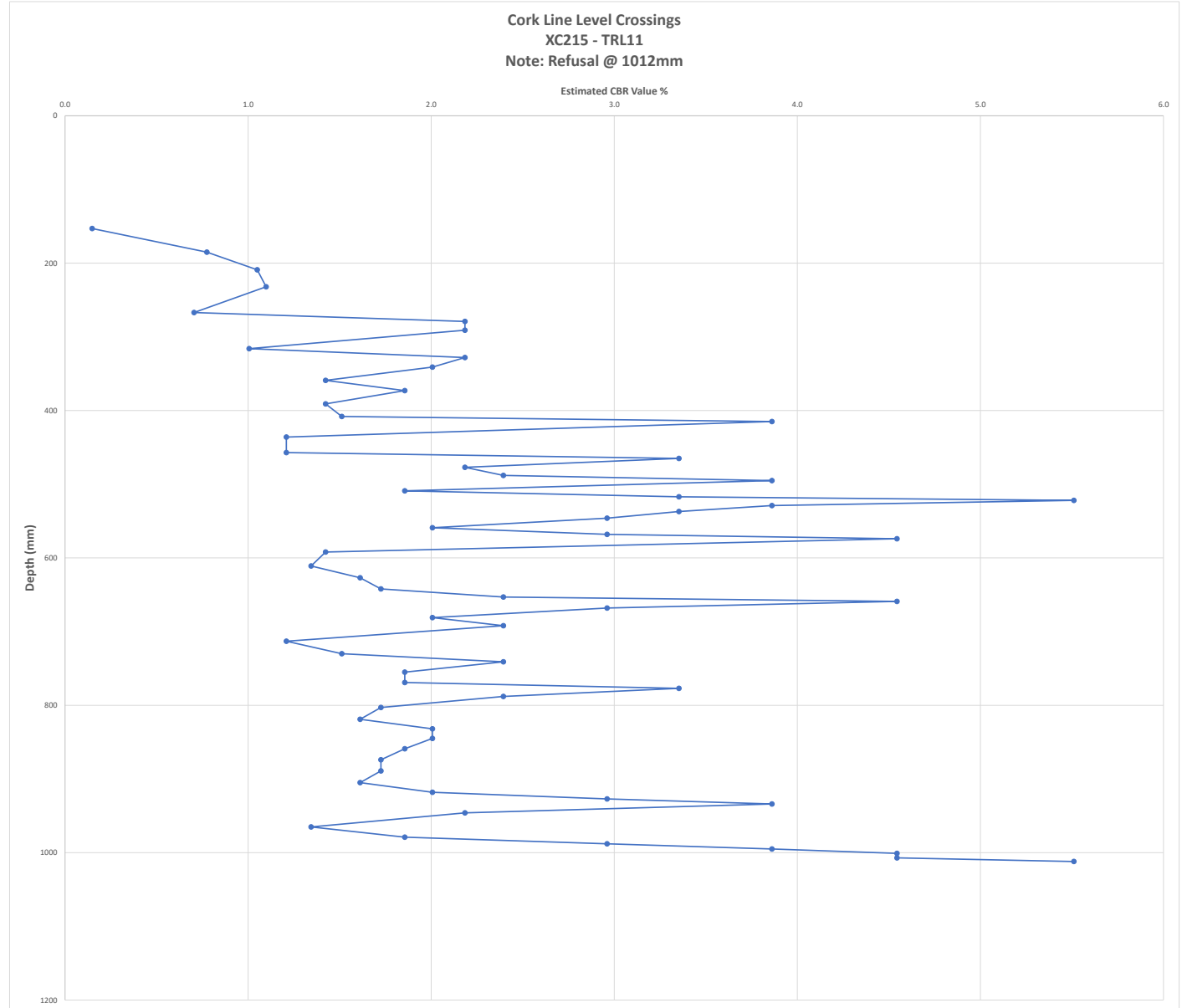
Cork Line Level Crossings - Irish Rail
 Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL11	Job No	19-135
----------	---------------	--------	--------

Easting	Northing	Elevation
553502.583	614953.133	95.679

Test Start Depth	0	mm/bl	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	997	153	153	0.1
2	965	32	185	0.8
3	941	24	209	1.0
4	918	23	232	1.1
5	883	35	267	0.7
6	871	12	279	2.2
7	859	12	291	2.2
8	834	25	316	1.0
9	822	12	328	2.2
10	809	13	341	2.0
11	791	18	359	1.4
12	777	14	373	1.9
13	759	18	391	1.4
14	742	17	408	1.5
15	735	7	415	3.9
16	714	21	436	1.2
17	693	21	457	1.2
18	685	8	465	3.4
19	673	12	477	2.2
20	662	11	488	2.4
21	655	7	495	3.9
22	641	14	509	1.9
23	633	8	517	3.4
24	628	5	522	5.5
25	621	7	529	3.9
26	613	8	537	3.4
27	604	9	546	3.0
28	591	13	559	2.0
29	582	9	568	3.0
30	576	6	574	4.5
31	558	18	592	1.4
32	539	19	611	1.3
33	523	16	627	1.6
34	508	15	642	1.7
35	497	11	653	2.4
36	491	6	659	4.5
37	482	9	668	3.0
38	469	13	681	2.0
39	458	11	692	2.4
40	437	21	713	1.2
41	420	17	730	1.5
42	409	11	741	2.4
43	395	14	755	1.9
44	381	14	769	1.9
45	373	8	777	3.4
46	362	11	788	2.4
47	347	15	803	1.7
48	331	16	819	1.6
49	318	13	832	2.0
50	305	13	845	2.0
51	291	14	859	1.9
52	276	15	874	1.7
53	261	15	889	1.7
54	245	16	905	1.6
55	232	13	918	2.0
56	223	9	927	3.0
57	216	7	934	3.9
58	204	12	946	2.2
59	185	19	965	1.3
60	171	14	979	1.9
61	162	9	988	3.0
62	155	7	995	3.9
63	149	6	1001	4.5
64	143	6	1007	4.5
65	138	5	1012	5.5



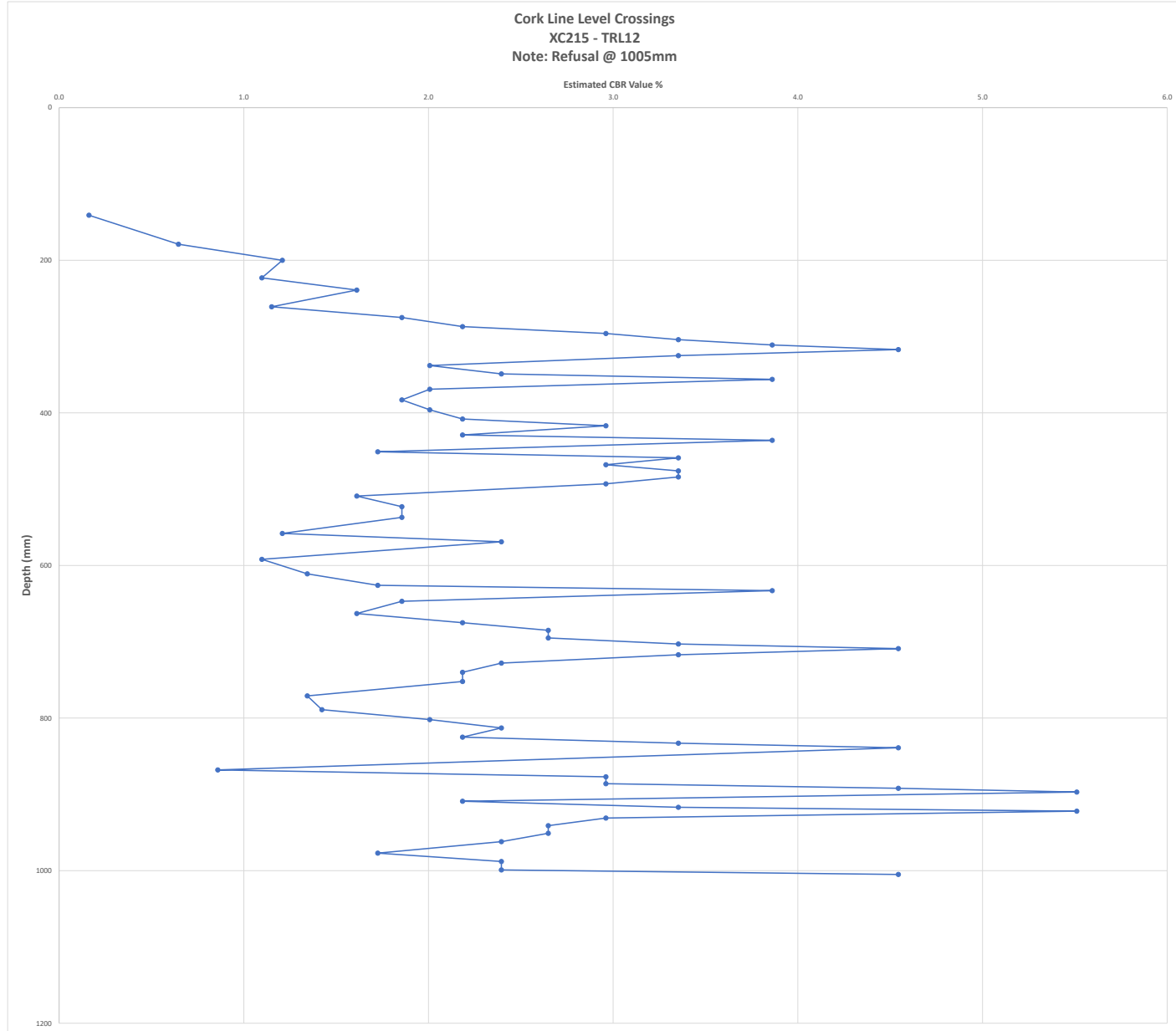
Cork Line Level Crossings - Irish Rail
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL12	Job No	19-135
----------	---------------	--------	--------

Eastings	Northing	Elevation
553505.713	614959.532	95.749

Test Start Depth	0	mm/blow	DATE
Start Reading:	1150	mm	25/02/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	1099	141	141	0.2
2	971	38	179	0.6
3	950	21	200	1.2
4	927	23	223	1.1
5	911	16	239	1.6
6	889	22	261	1.2
7	875	14	275	1.9
8	863	12	287	2.2
9	854	9	296	3.0
10	846	8	304	3.4
11	839	7	311	3.9
12	833	6	317	4.5
13	825	8	325	3.4
14	812	13	338	2.0
15	801	11	349	2.4
16	794	7	356	3.9
17	781	13	369	2.0
18	767	14	383	1.9
19	754	13	396	2.0
20	742	12	408	2.2
21	733	9	417	3.0
22	721	12	429	2.2
23	714	7	436	3.9
24	699	15	451	1.7
25	691	8	459	3.4
26	682	9	468	3.0
27	674	8	476	3.4
28	666	8	484	3.4
29	657	9	493	3.0
30	641	16	509	1.6
31	627	14	523	1.9
32	613	14	537	1.9
33	592	21	558	1.2
34	581	11	569	2.4
35	558	23	592	1.1
36	539	19	611	1.3
37	524	15	626	1.7
38	517	7	633	3.9
39	503	14	647	1.9
40	487	16	663	1.6
41	475	12	675	2.2
42	465	10	685	2.6
43	455	10	695	2.6
44	447	8	703	3.4
45	441	6	709	4.5
46	433	8	717	3.4
47	422	11	728	2.4
48	410	12	740	2.2
49	398	12	752	2.2
50	379	19	771	1.3
51	361	18	789	1.4
52	348	13	802	2.0
53	337	11	813	2.4
54	325	12	825	2.2
55	317	8	833	3.4
56	311	6	839	4.5
57	282	29	868	0.9
58	273	9	877	3.0
59	264	9	886	3.0
60	258	6	892	4.5
61	253	5	897	5.5
62	241	12	909	2.2
63	233	8	917	3.4
64	228	5	922	5.5
65	219	9	931	3.0
66	209	10	941	2.6
67	199	10	951	2.6
68	188	11	962	2.4
69	173	15	977	1.7
70	162	11	988	2.4
71	151	11	999	2.4
72	145	6	1005	4.5
73				



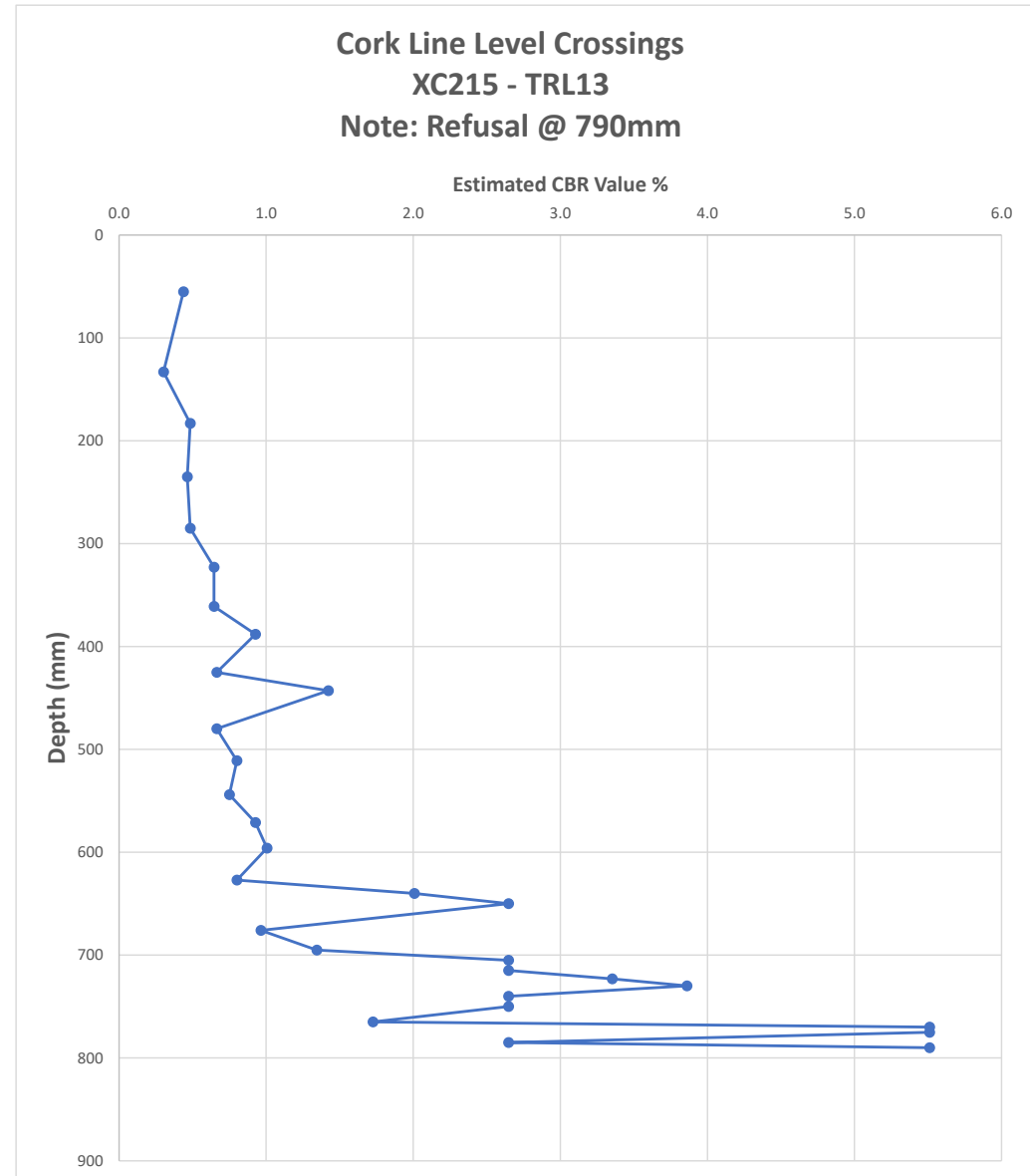
Cork Line Level Crossings - Irish Rail
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL13	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553514.535	615074.448	96.219

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1050	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	995	55	55	0.4
2	917	78	133	0.3
3	867	50	183	0.5
4	815	52	235	0.5
5	765	50	285	0.5
6	727	38	323	0.6
7	689	38	361	0.6
8	662	27	388	0.9
9	625	37	425	0.7
10	607	18	443	1.4
11	570	37	480	0.7
12	539	31	511	0.8
13	506	33	544	0.7
14	479	27	571	0.9
15	454	25	596	1.0
16	423	31	627	0.8
17	410	13	640	2.0
18	400	10	650	2.6
19	374	26	676	1.0
20	355	19	695	1.3
21	345	10	705	2.6
22	335	10	715	2.6
23	327	8	723	3.4
24	320	7	730	3.9
25	310	10	740	2.6
26	300	10	750	2.6
27	285	15	765	1.7
28	280	5	770	5.5
29	275	5	775	5.5
30	265	10	785	2.6
31	260	5	790	5.5
32	260	0	790	
33	260	0	790	
34				



Cork Line Level Crossings - Irish Rail

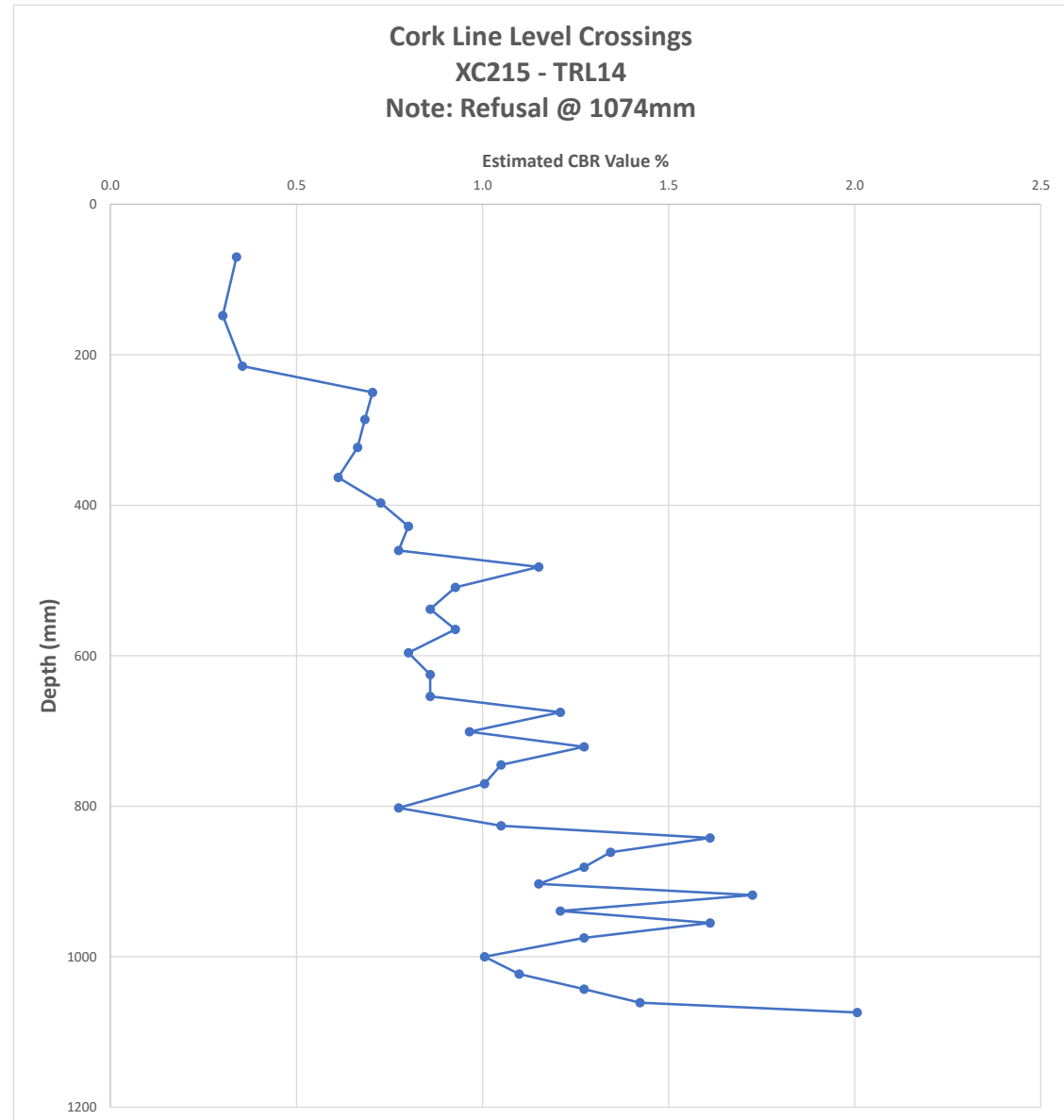
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL14	Job No	19-135
----------	---------------	--------	--------

Easting	Northing	Elevation
553522.173	615075.924	96.272

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1110	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	1040	70	70	0.3
2	962	78	148	0.3
3	895	67	215	0.4
4	860	35	250	0.7
5	824	36	286	0.7
6	787	37	323	0.7
7	747	40	363	0.6
8	713	34	397	0.7
9	682	31	428	0.8
10	650	32	460	0.8
11	628	22	482	1.2
12	601	27	509	0.9
13	572	29	538	0.9
14	545	27	565	0.9
15	514	31	596	0.8
16	485	29	625	0.9
17	456	29	654	0.9
18	435	21	675	1.2
19	409	26	701	1.0
20	389	20	721	1.3
21	365	24	745	1.0
22	340	25	770	1.0
23	308	32	802	0.8
24	284	24	826	1.0
25	268	16	842	1.6
26	249	19	861	1.3
27	229	20	881	1.3
28	207	22	903	1.2
29	192	15	918	1.7
30	171	21	939	1.2
31	155	16	955	1.6
32	135	20	975	1.3
33	110	25	1000	1.0
34	87	23	1023	1.1
35	67	20	1043	1.3
36	49	18	1061	1.4
37	36	13	1074	2.0
38				



Cork Line Level Crossings - Irish Rail

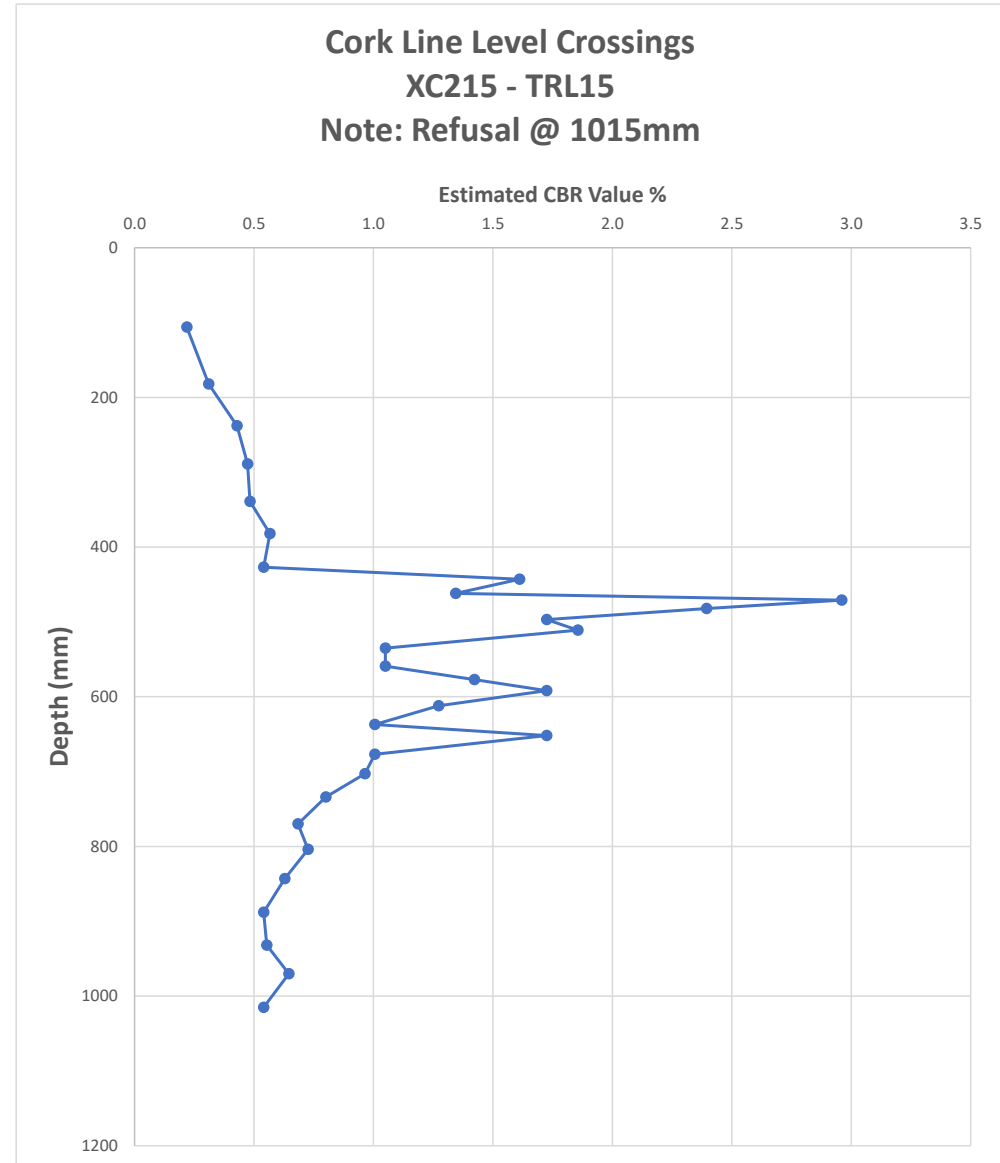
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL15	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553539.79	615171.124	97.785

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1037	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	931	106	106	0.2
2	855	76	182	0.3
3	799	56	238	0.4
4	748	51	289	0.5
5	698	50	339	0.5
6	655	43	382	0.6
7	610	45	427	0.5
8	594	16	443	1.6
9	575	19	462	1.3
10	566	9	471	3.0
11	555	11	482	2.4
12	540	15	497	1.7
13	526	14	511	1.9
14	502	24	535	1.0
15	478	24	559	1.0
16	460	18	577	1.4
17	445	15	592	1.7
18	425	20	612	1.3
19	400	25	637	1.0
20	385	15	652	1.7
21	360	25	677	1.0
22	334	26	703	1.0
23	303	31	734	0.8
24	267	36	770	0.7
25	233	34	804	0.7
26	194	39	843	0.6
27	149	45	888	0.5
28	105	44	932	0.6
29	67	38	970	0.6
30	22	45	1015	0.5
31				



Cork Line Level Crossings - Irish Rail

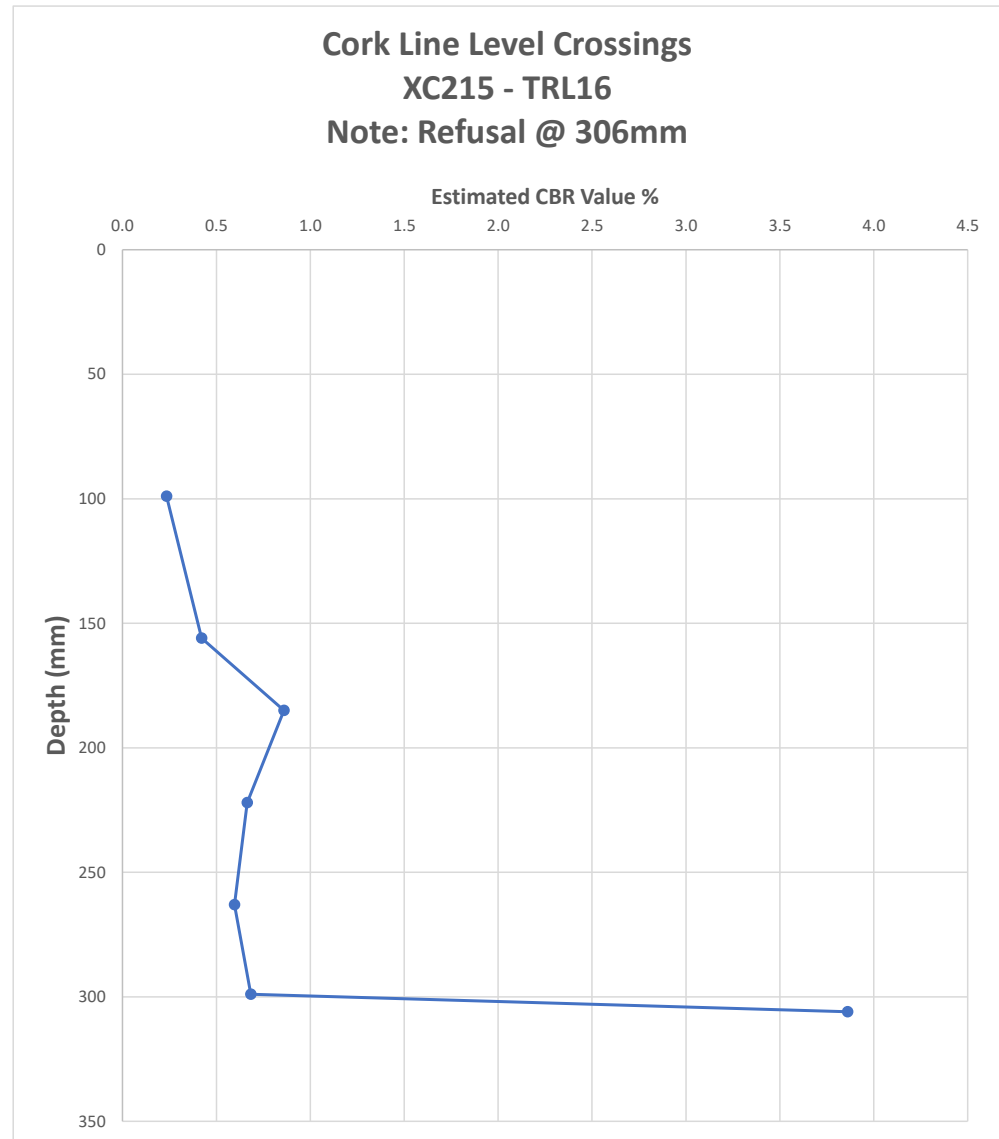
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL16	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553546.563	615174.868	97.845

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1056	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	957	99	99	0.2
2	900	57	156	0.4
3	871	29	185	0.9
4	834	37	222	0.7
5	793	41	263	0.6
6	757	36	299	0.7
7	750	7	306	3.9
8	750	0	306	
9	750	0	306	
10				



Cork Line Level Crossings - Irish Rail

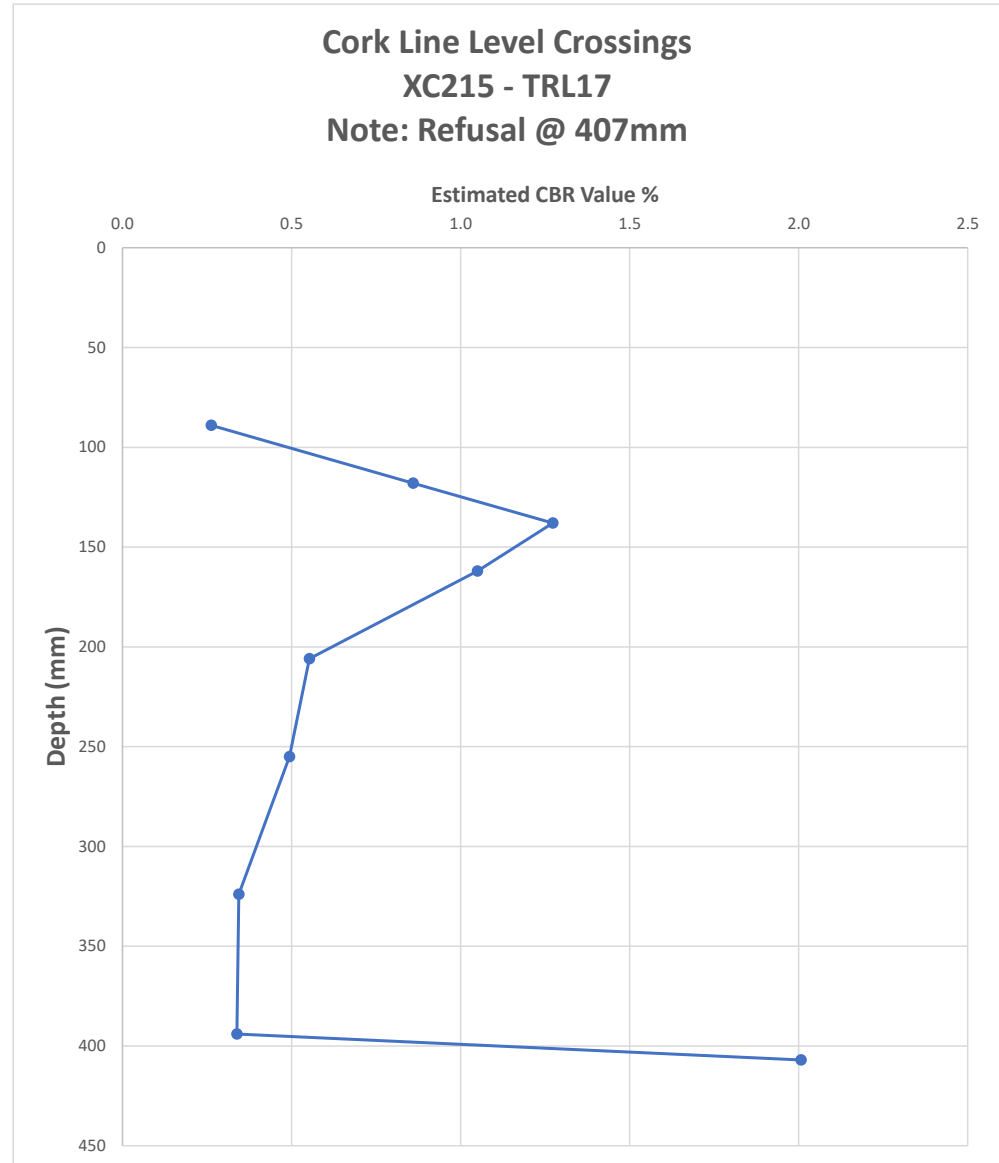
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL17	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553475.81	615224.461	96.724

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1083	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	994	89	89	0.3
2	965	29	118	0.9
3	945	20	138	1.3
4	921	24	162	1.0
5	877	44	206	0.6
6	828	49	255	0.5
7	759	69	324	0.3
8	689	70	394	0.3
9	676	13	407	2.0
10	676	0	407	
11	676	0	407	
12				



Cork Line Level Crossings - Irish Rail

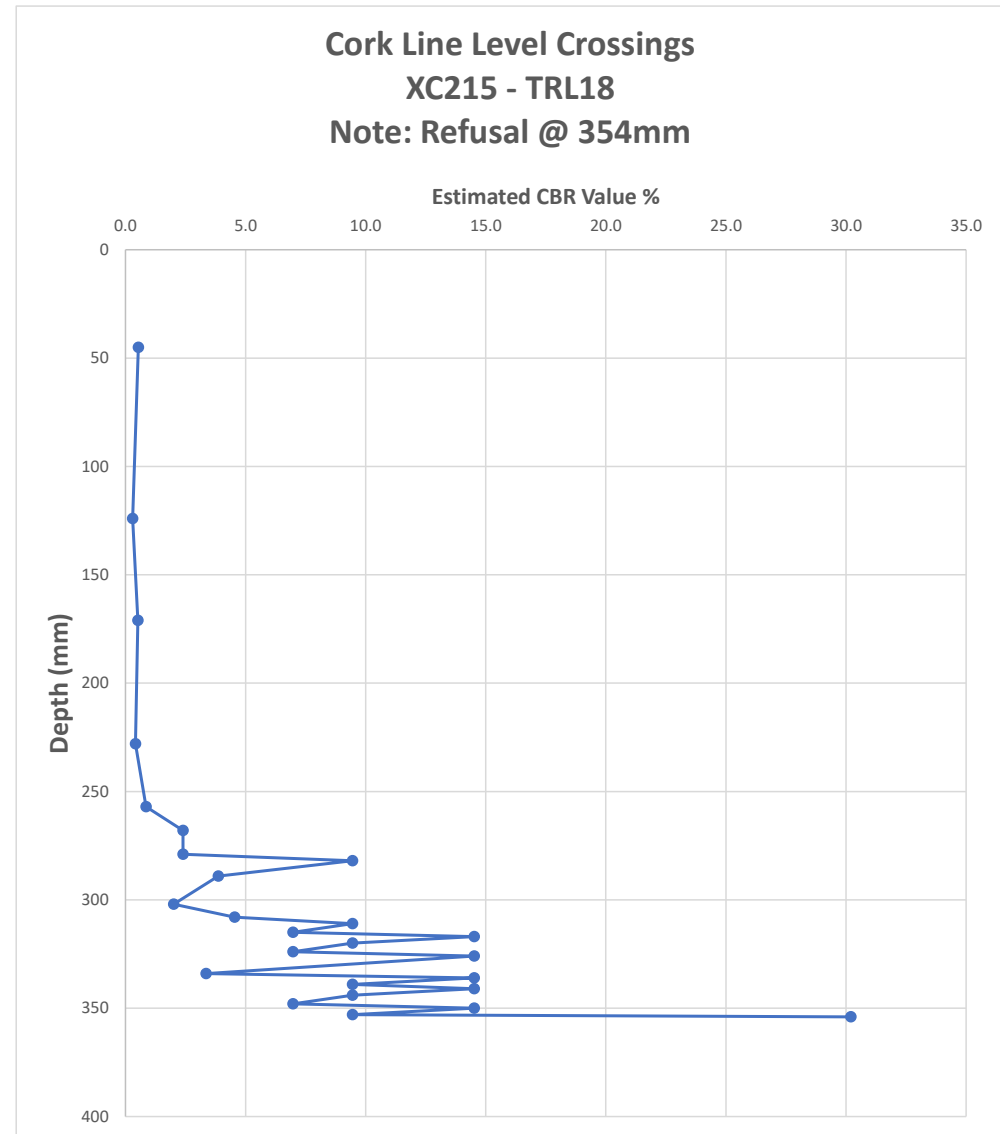
Transport Research Laboratory - Dynamic Cone Penetrometer Data

Location	XC215 - TRL18	Job No	19-135
----------	----------------------	--------	--------

Easting	Northing	Elevation
553481.288	615229.003	96.98

Test Start Depth	0	mm/bgl	DATE
Start Reading:	1105	mm	09/03/2020

No. of Blows	READING (mm)	Penetration/blow (mm)	DEPTH	CBR %
1	1060	45	45	0.5
2	981	79	124	0.3
3	934	47	171	0.5
4	877	57	228	0.4
5	848	29	257	0.9
6	837	11	268	2.4
7	826	11	279	2.4
8	823	3	282	9.5
9	816	7	289	3.9
10	803	13	302	2.0
11	797	6	308	4.5
12	794	3	311	9.5
13	790	4	315	7.0
14	788	2	317	14.5
15	785	3	320	9.5
16	781	4	324	7.0
17	779	2	326	14.5
18	771	8	334	3.4
19	769	2	336	14.5
20	766	3	339	9.5
21	764	2	341	14.5
22	761	3	344	9.5
23	757	4	348	7.0
24	755	2	350	14.5
25	752	3	353	9.5
26	751	1	354	30.2
27	751	0	354	
28	751	0	354	
29				



Appendix G

Water Purging Data & Logs

Job Name: I.E - Cork Line	h (m)	6
	r (m)	0.0505
Job Nr: 19-135	r2	0.00255025
	TWV (m3)	0.048071192

BH ID: XC215-CPRC01	Theoretical Well Volume	48.071192 ltrs
Depth to Response Zone: Top (mbgl) Bottom (mbgl)	TWV x3	144.213576 ltrs
9.6 12.2		

13/08/2020 14/08/2020

Purge Start Time: 10:45	10:00	(mbgl)
Purge Finish Time: 14:30	14:45	Depth to Water 9.81
Depth to water after purging: 9.6 mbgl		Total Depth 14.03

	Time Taken to fill 25ltr container(mins)	Flow Rate l/min	Date 13/08/20 & 14/08/20
Reading 1:			Bailer
Reading 2:			
Reading 3:			
			9.81
			14.03
Nr of Containers filled:	<input type="text"/>		
Total Volume Purged:	<input type="text"/>	145 litres	

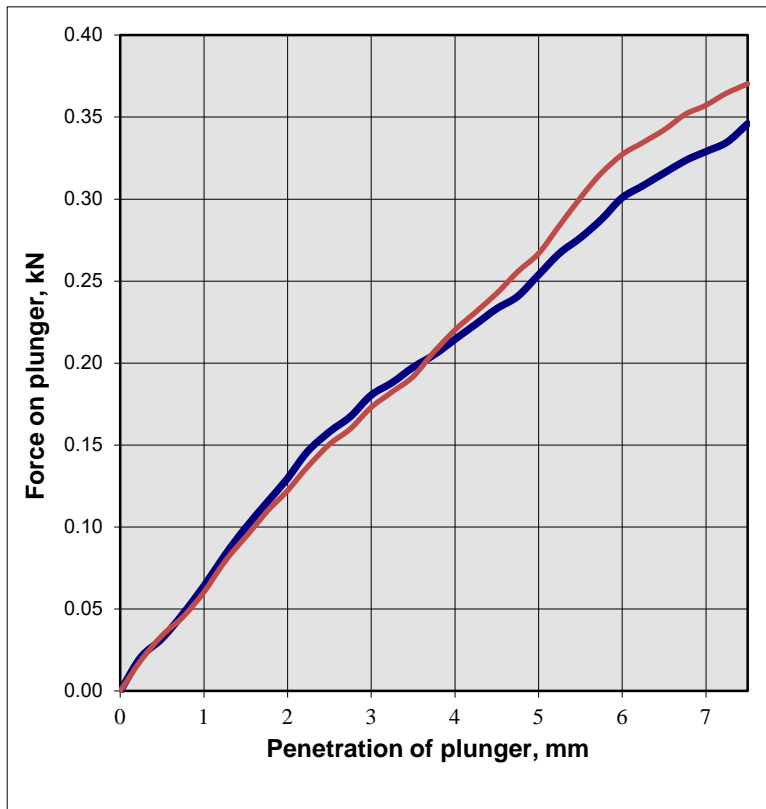
	Temperature	pH	Electrical Conductivity	Dissolved Oxygen	Redox Potential
(13/08/20) Reading 1	20.35	6.54	8.36	0	-23.1
Reading 2	16.19	6.86	4.69	0	-32.3
Reading 3	17.51	6.39	6.35	0	-25.1
Reading 4	17.7	6.43	6.77	0	-24.4
(14/08/20) Reading 5	15.52	6.64	48.54	0	-40.6
Reading 6	13.72	6.61	55.34	0	-41.1
Reading 7	12.42	6.69	23.4	0	-40.6
Reading 8	11.92	6.69	21.43	0	-37.8
Reading 9	11.83	6.82	14.92	0	-38
Reading 10	11.91	6.53	16.13	0	-33.9
Reading 11	11.73	6.57	13.06	0	-35.7
Reading 12	12.39	6.33	21.85	0	-31.5
Reading 13	14.53	6.54	16.86	0	-36.3
Reading 14	15.14	6.36	22.81	0	-38.3
Reading 15	13.38	6.17	19.65	0	-41.5

Appendix H Geotechnical Soil Laboratory Test Results



LABORATORY TEST REPORT
 DETERMINATION OF CALIFORNIA BEARING RATIO - BS 1377 : Part 4 : 1990

Project : Cork Line Level Crossings	Job No: 19-135
Client : OCB Geotechnical	Lab Ref No: ST 93372
Unit 1 Carrigogna	Date Received: 09/03/2020
Midleton	Date Tested: 16/04/2020
Co Cork	Date Reported: 21/04/2020
Order No: 2003-104	Sample Ref: XC215-TP01 Type B Sample 3
Originator : Ian Holley	Location: 0.35-0.8m



Type of Reaction Load
Load Frame
Technician(s)
NW
Mass of Surcharge Weights
8.8Kg
Overburden Pressure
3.9kPa
Material Type
Soil
Density (Mg/m³)
2.17
Proportion of material removed from initial sample by dry mass (%)
10.9
Swell (mm)
0
Days Soaked
0
Final Swell (mm):
N/A

Penetration (mm)	Force (kN)	Standard Force (kN)	Top CBR (%)
2.5	0.16	13.2	1.2
5.0	0.25	20.0	1.3
Moisture content : %	19.5	Mean CBR value : %	1.2
Penetration (mm)	Force (kN)	Standard Force (kN)	Bottom CBR (%)
2.5	0.15	13.2	1.1
5.0	0.27	20.0	1.3
Moisture content : %	19.5	Mean CBR value : %	1.2

Moisture content determined in accordance with BS 1377 : Part 2 : 1990 - oven drying method
 CBR determined in accordance with BS 1377 : Part 4 : 1990
 The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature
 James Fisher Testing Services Ltd
 Phil Thorp, Laboratory Manager

James Fisher Testing Services Limited, a company registered in England and Wales with registration number: 01182561
 Registered office: Fisher House, PO Box 4, Barrow-in-Furness, Cumbria, LA14 1HR





LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton	Lab Ref No.:	ST 93373
Order No:	2003-104	Date Received:	09/03/2020
Originator:	Ian Holley	Date Tested:	26/03/2020
		Date Reported:	02/04/2020
		Specification:	Client

Sampled Ref: XC215-TP01 Type D Sample 4

Sample Type: Bulk **Location:** XC215-TP01 Type D Sample 4

Date Sampled: Client Info **Sample by:** Client

Depth: 0.35-0.80m **Material Type:** Soil

Moisture Content (%): 19

Tested in accordance with BS 1377: Part 2: 1990
Sample preparation by cone and quarter

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services (Ireland) Ltd
James Ward, Operations Manager

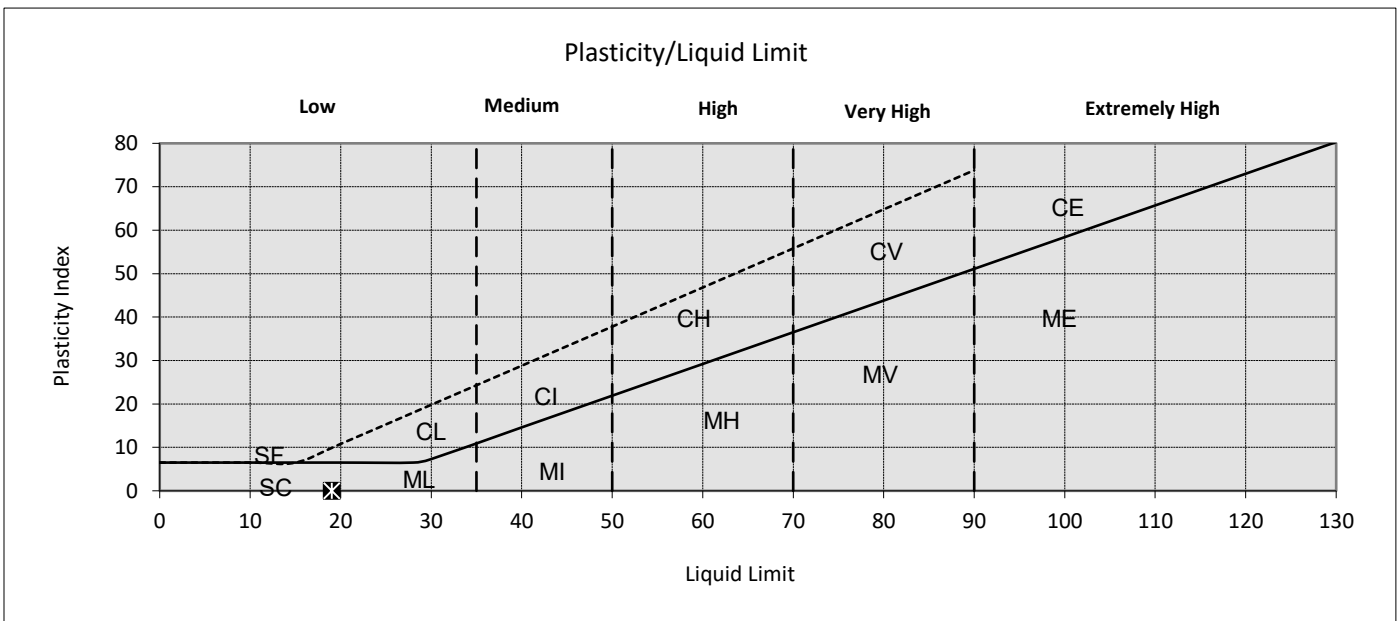




LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 CI 4.4,5.3

Site Ref.:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton Co Cork	Lab Ref No.:	ST 93374
Order No:	2003-104	Sample Ref.:	XC215-TP01 0.35-0.8m Type D Sample4
Originator:	Ian Holley	Date Sampled:	Client Info
		Date Received:	09/03/2020
		Date Tested:	26/03/2020
		Date Reported:	31/03/2020

Sampling Certificate	No
Sampled By	Client
Sample Type	Bulk
Sample Preparation Method	Washed
MATERIAL	Soil
Retained 425 micron (%)	61
Natural Moisture Content (%)	18
Liquid Limit (single point)(%)	19
Plastic Limit (%)	Non-Plastic
Plasticity Index	N/A



The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature
 James Fisher Testing Services Ltd
 Phil Thorp, Laboratory Manager



LABORATORY TEST REPORT

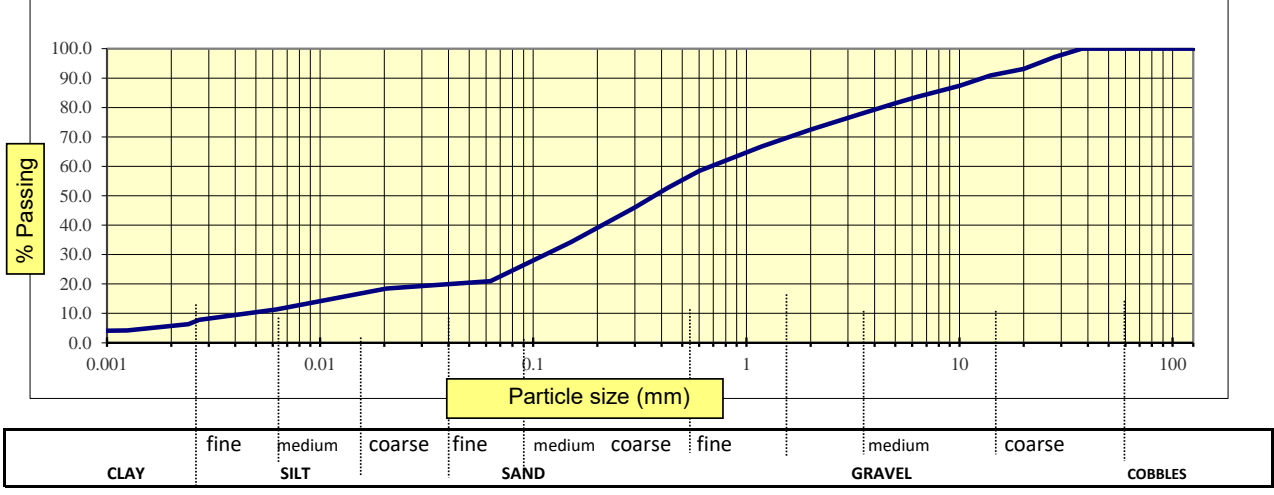
Determination of Particle Size Distribution - BS 1377 : Part 2 : 1990

Determination of Particle Size Distribution (Hydrometer Sedimentation) - BS 1377 : Part 2 : 1990 Cl. 9.5

Project:	Cork Line Level Crossings	Job No:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton	Lab Ref No.:	ST 93371
		Date Received:	09/03/2020
		Date Reported:	02/04/2020
		Date Tested:	31/03/2020
Order No:	2003-104	Material:	Soil
Originator:	Ian Holley	Visual Description	Light Clay, Sandy

Client Ref.	XC215-TP01 Type B Sample 2
Location:	XC215-TP01 Type B Sample 2
Supplier:	Bulk
Source:	Client Info.
Depth (m):	0.35-0.8m
Sampling Reason:	Client Request
Sampled By:	Client
Specification:	Client
Preparation Method:	Without Organics Preparation
Notes:	Disturbed sample from cleanout

BS Sieve Size	% Passing	Specification
300 mm	100	
125 mm	100	
100 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	97	
20 mm	93	
14 mm	91	
10 mm	87	
6.3 mm	84	
5 mm	81	
3.35 mm	78	
2 mm	72	
1.18 mm	67	
0.6 mm	58	
0.425 mm	53	
0.3 mm	46	
0.15 mm	34	
0.063 mm	21	
0.020 mm	18	
0.006 mm	11	
0.003 mm	8	
0.002 mm	6	
0.001 mm	4	



Tested in accordance with BS 1377: Part 2 : 1990 Clause 9.2 and 9.5

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.
 Sedimentation by Hydrometer - Not UKAS



Approved Signature
JAMES FISHER TESTING SERVICES (IRELAND) LTD.
 James Ward, Operations Manager



LABORATORY TEST REPORT

BRE Test Suite B - Greenfield Site

Project:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton Co. Cork	Lab Ref. No.:	ST 93375
Order No.:	2003-104	Date Received:	09/03/2020
Originator:	Ian Holley	Date Reported:	08/04/2020
		Material:	Soil
		Date Tested:	07/04/2020
		Specification:	Client

Sample Details

XC215-TP01 Type D Sample 8

Supplier:	Client Info	Date of Sampling:	Client Info.
Source:	Client Info	Sampled By:	Client
Sample Location:	1.1-1.6m	Sampling Reason:	Request

Parameter	RESULT
pH	7.8
Sulphate Aqueous Extract (SO4) (mg/l)	<10
Sulphur as S, Total (%)	<0.01
Sulphate as SO4, Total (%)	0.01

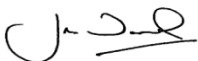
Comments:

None

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Tested in accordance with the above specifications

Subcontracted to a laboratory UKAS accredited for this testing



Approved Signature

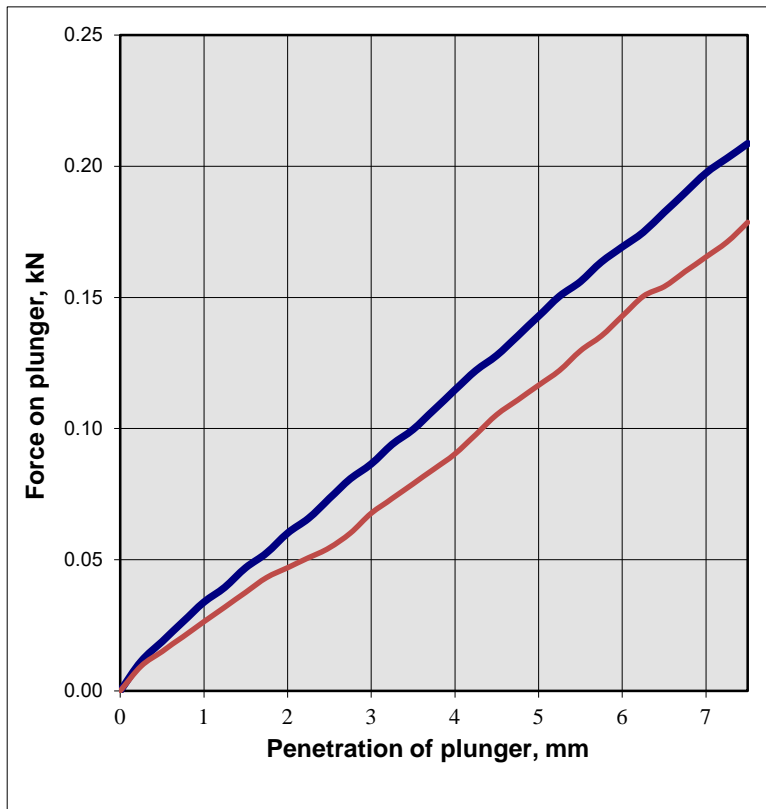
JAMES FISHER TESTING SERVICES (IRELAND) LTD.

James Ward, Operations Manager



LABORATORY TEST REPORT
 DETERMINATION OF CALIFORNIA BEARING RATIO - BS 1377 : Part 4 : 1990

Project : Cork Line Level Crossings	Job No: 19-135
Client : OCB Geotechnical	Lab Ref No: ST 93376
Unit 1 Carrigogna	Date Received: 09/03/2020
Midleton	Date Tested: 16/04/2020
Co Cork	Date Reported: 21/04/2020
Order No: 2003-104	Sample Ref: XC215-TP02 Type B Sample 3
Originator : Ian Holley	Location: 0.3-0.8m



Type of Reaction Load	Load Frame
Technician(s)	NW
Mass of Surcharge Weights	8.8Kg
Overburden Pressure	3.9kPa
Material Type	Soil
Density (Mg/m³)	2.21
Proportion of material removed from initial sample by dry mass (%)	7.24
Swell (mm)	0
Days Soaked	0
Final Swell (mm):	N/A

Penetration (mm)	Force (kN)	Standard Force (kN)	Top CBR (%)
2.5	0.07	13.2	0.6
5.0	0.14	20.0	0.7
Moisture content : %	26.8	Mean CBR value : %	0.6
Penetration (mm)	Force (kN)	Standard Force (kN)	Bottom CBR (%)
2.5	0.05	13.2	0.4
5.0	0.12	20.0	0.6
Moisture content : %	26.8	Mean CBR value : %	0.5

Moisture content determined in accordance with BS 1377 : Part 2 : 1990 - oven drying method
 CBR determined in accordance with BS 1377 : Part 4 : 1990
 The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature
 James Fisher Testing Services Ltd
 Phil Thorp, Laboratory Manager

James Fisher Testing Services Limited, a company registered in England and Wales with registration number: 01182561
 Registered office: Fisher House, PO Box 4, Barrow-in-Furness, Cumbria, LA14 1HR





LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton	Lab Ref No.:	ST 93377
Order No:	2003-104	Date Received:	09/03/2020
Originator:	Ian Holley	Date Tested:	26/03/2020
		Date Reported:	03/04/2020
		Specification:	Client

Sampled Ref: XC215-TP02 Type D Sample 4

Sample Type: Bulk **Location:** XC215-TP02 Type D Sample 4

Date Sampled: Client Info **Sample by:** Client

Depth: 0.3-0.8m **Material Type:** Soil

Moisture Content (%): 25

Tested in accordance with BS 1377: Part 2: 1990
Sample preparation by cone and quarter

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services (Ireland) Ltd
James Ward, Operations Manager

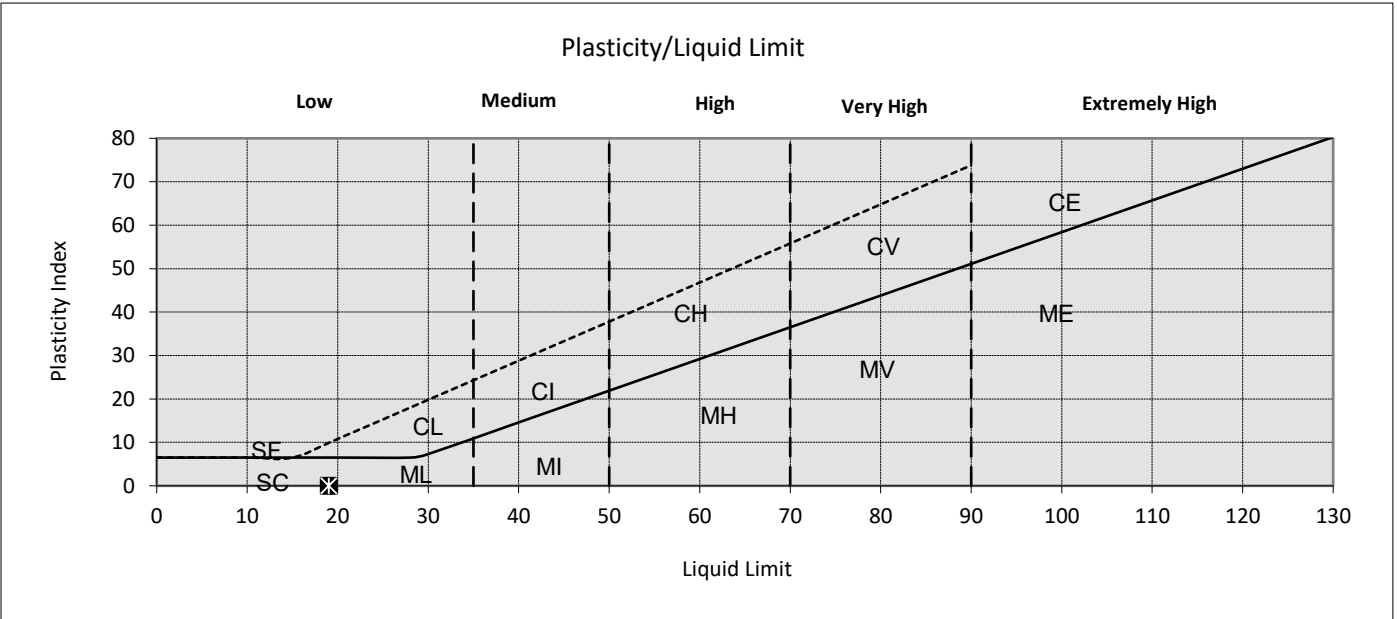




LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 CI 4.4,5.3

Site Ref.:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton Co Cork	Lab Ref No.:	ST 93378
Order No:	2003-104	Sample Ref.:	XC215-TP02 0.3-0.8m Type D Sample 4
Originator:	Ian Holley	Date Sampled:	Client Info
		Date Received:	09/03/2020
		Date Tested:	27/03/2020
		Date Reported:	02/04/2020

Sampling Certificate	No
Sampled By	Client
Sample Type	Bulk
Sample Preparation Method	Washed
MATERIAL	Soil
Retained 425 micron (%)	72
Natural Moisture Content (%)	28
Liquid Limit (single point)(%)	19
Plastic Limit (%)	Non-Plastic
Plasticity Index	N/A



The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature
 James Fisher Testing Services Ltd
 Phil Thorp, Laboratory Manager





LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton	Lab Ref No.:	ST 93385
Order No:	2003-104	Date Received:	09/03/2020
Originator:	Ian Holley	Date Tested:	31/03/2020
		Date Reported:	03/04/2020
		Specification:	Client

Sampled Ref: XC215-TP03 Type D Sample 6

Sample Type: Bulk **Location:** XC215-TP03 Type D Sample 6

Date Sampled: Client Info **Sample by:** Client

Depth: 0.5-1.0m **Material Type:** Soil

Moisture Content (%): 11

Tested in accordance with BS 1377: Part 2: 1990
Sample preparation by cone and quarter

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature

James Fisher Testing Services (Ireland) Ltd
James Ward, Operations Manager



LABORATORY TEST REPORT

To determine the Organic Content of Soil
in accordance with BS 1377

Project:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton Co. Cork	Lab Ref. No.:	ST 93386
Order No.:	2003-104	Date Received:	09/03/2020
Originator:	Ian Holley	Date Reported:	08/04/2020
		Material:	Soil
		Date Tested:	07/04/2020
		Specification:	Client

Sample Details

XC215-TP03 Type D Sample 6

Supplier:	Client Info	Date of Sampling:	Client Info
Source:	Client Info	Sampled By:	Client
Sample Location:	0.5-1.0m	Sampling Reason:	Request

Result:

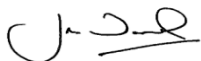
Organic Matter (%)	0.4
---------------------------	------------

Comments:

None

Tested in accordance with the above specifications
Subcontracted to a laboratory UKAS accredited for this testing

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.



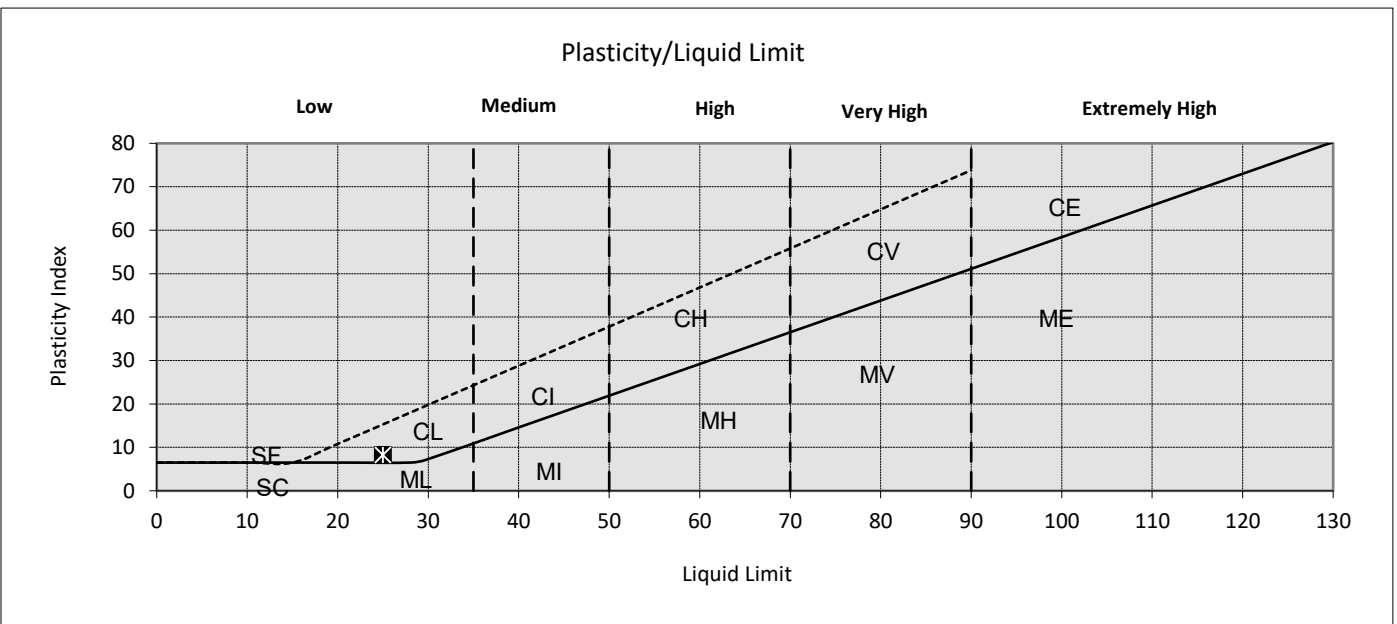
Approved Signature
JAMES FISHER TESTING SERVICES (IRELAND) LTD.
James Ward, Operations Manager



LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 CI 4.4,5.3

Site Ref.:	Cork Line Level Crossings	Job No.:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton Co Cork	Lab Ref No.:	ST 93382
Order No:	2003-104	Sample Ref.:	XC215-TP03 0.5-1.0m Type D Sample 5
Originator:	Ian Holley	Date Sampled:	Client Info
		Date Received:	09/03/2020
		Date Tested:	02/04/2020
		Date Reported:	03/04/2020

Sampling Certificate	No
Sampled By	Client
Sample Type	Bulk
Sample Preparation Method	Washed
MATERIAL	Soil
Retained 425 micron (%)	22
Natural Moisture Content (%)	10
Liquid Limit (single point)(%)	25
Plastic Limit (%)	16
Plasticity Index	8



The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Approved Signature
 James Fisher Testing Services Ltd
 Phil Thorp, Laboratory Manager



LABORATORY TEST REPORT

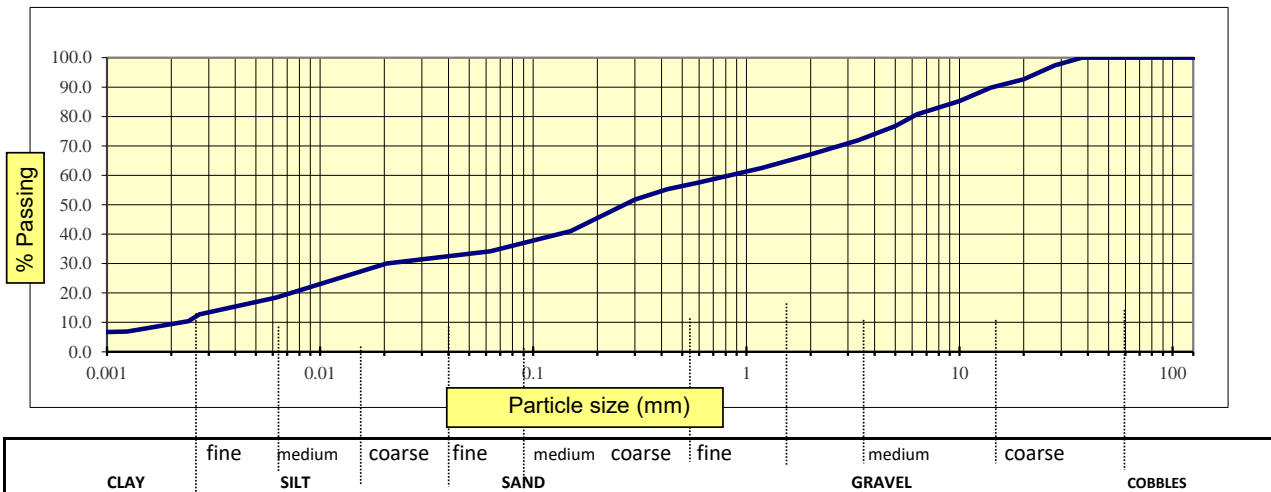
Determination of Particle Size Distribution - BS 1377 : Part 2 : 1990

Determination of Particle Size Distribution (Hydrometer Sedimentation) - BS 1377 : Part 2 : 1990 Cl. 9.5

Project:	Cork Line Level Crossings	Job No:	19-135
Client:	OCB Geotechnical Unit 1 Carrigogna Midleton	Lab Ref No.:	ST 93383
		Date Received:	09/03/2020
		Date Reported:	02/04/2020
		Date Tested:	01/04/2020
Order No:	2003-104	Material:	Soil
Originator:	Ian Holley	Visual Description	Light Clay, Sandy

Client Ref.	XC215-TP03 Type B Sample 5
Location:	XC215-TP03 Type B Sample 5
Supplier:	Bulk
Source:	Client Info.
Depth (m):	0.5-1.0m
Sampling Reason:	Client Request
Sampled By:	Client
Specification:	Client
Preparation Method:	Without Organics Preparation
Notes:	Disturbed sample from cleanout

BS Sieve Size	% Passing	Specification
300 mm	100	
125 mm	100	
100 mm	100	
75 mm	100	
63 mm	100	
50 mm	100	
37.5 mm	100	
28 mm	97	
20 mm	93	
14 mm	90	
10 mm	85	
6.3 mm	81	
5 mm	77	
3.35 mm	72	
2 mm	67	
1.18 mm	63	
0.6 mm	58	
0.425 mm	55	
0.3 mm	52	
0.15 mm	41	
0.063 mm	34	
0.020 mm	30	
0.006 mm	19	
0.003 mm	13	
0.002 mm	10	
0.001 mm	7	



Tested in accordance with BS 1377: Part 2 : 1990 Clause 9.2 and 9.5

The stated result only relates to the item/location tested, this report shall not be reproduced except in full.

Sedimentation by Hydrometer - Not UKAS


 Approved Signature

JAMES FISHER TESTING SERVICES (IRELAND) LTD.

James Ward, Operations Manager

