APPENDIX I

Dynamic Cone Penetrometer (DCP) Data

Appendix I. Dynamic Cone Penetrometer (DCP) Data

The Dynamic Cone Penetrometer (DCP) Test is used in pavement evaluation for determination of the California Bearing Ratio (CBR) and relative stiffnesses of the foundation layers. Even though several correlations were found in the literature, it appears that each correlation is accurate only for the kind of soil for which they were established. Many factors influence the interpretation of the test, producing some level of uncertainty when these relationships are used in other soil types and field conditions.

In this study, DCP values are related to CBR using the correlation recommended by the U.S. Army Corps of Engineers. For the reasons described above, this correlation should be viewed only as provisional. The correlation is:

$$CBR = 292\ DCP^{1.2}$$

In this study, the DCP blowcount was used directly as a qualitative representation of the stiffnesses of the base and subbase layers of the foundation. The number of millimeters of travel of the DCP shaft per blow on the DCP anvil by a 10.1 lb. weight dropped from a height of 22.6 in were recorded.

Because the base layer was 4 inches thick in each test section, base mm/blow values were taken as an average of the values from 0 to 75 mm below the bottom of the concrete. The subbase typically extended an additional 8-12 inches below the base, so values at 150 to 250 mm below the concrete were averaged to give the subbase results. Using these ranges ensured that interfaces between layers were not encountered during averaging.

At each test section, DCP tests were performed on a minimum of 5 midpanel core locations. This appendix contains the raw data from each test location, as well as figures showing base and subbase DCP values vs. distance along the test section.

DCP DATA

Control Section: 11017-32516A Section A
Direction: Eastbound
Date Tested: 4/23/97

Core # M2
Station # 1790+49

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
10	100	100	10	22.2
10	50	150	5	48.1
10	40	190	4	61.8
10	35	225	4	71.8
10	35	260	4	71.8
10	30	290	3	85.3
10	30	320	3	85.3
20	65	385	3	78.0
20	65	450	3	78.0
20	70	520	4	71.8
10	40	560	4	61.8

Comments: Refusal at 482 mm depth
Core 225 mm

Core # M3
Station # 1790+80

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	70	70	23	8.6
10	80	150	8	28.4
10	50	200	5	48.1
10	30	230	3	85.3
20	65	295	3	78.0
20	65	360	3	78.0
20	60	420	3	85.3
10	30	450	3	85.3

Comments: Core 229 mm

Core # J3
Station # 1792+36

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	20	120	7	34.9
10	70	190	7	33.0
10	40	230	4	61.8
10	40	270	4	61.8
10	35	305	4	71.8
10	35	340	4	71.8
10	35	375	4	71.8
10	40	415	4	61.8

Comments: Base 102 mm, 686 mm to subgrade
Core 254 mm

Core # C3
Station # 1793+08

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
5	85	85	17	12.2
10	100	185	10	22.2
20	120	305	6	39.3
20	100	405	5	48.1
20	120	525	6	39.3
10	60	585	6	39.3

Comments: Core 248 mm

Core # M4
Station # 1793+52

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	35	135	12	18.6
3	20	155	7	34.9
10	65	220	7	35.9
10	50	270	5	48.1
10	50	320	5	48.1
10	50	370	5	48.1
10	50	420	5	48.1
10	70	490	7	33.0

Comments: Base 95.25 mm
Subbase starts @ 1016 mm
Core 229 mm

Core # M5
Station # 1794+53

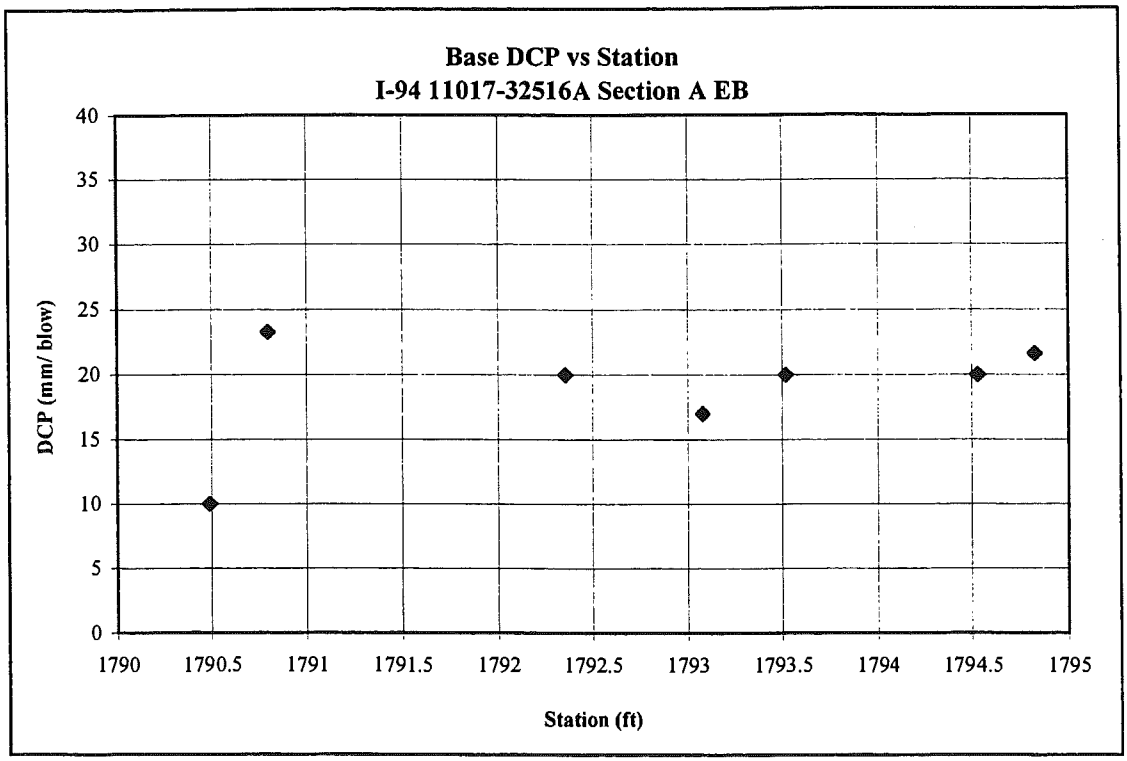
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	50	110	17	12.5
3	25	135	8	27.2
3	25	160	8	27.2
10	55	215	6	43.3
10	55	270	6	43.3
10	50	320	5	48.1
10	45	365	5	54.2
10	45	410	5	54.2
10	45	455	5	54.2

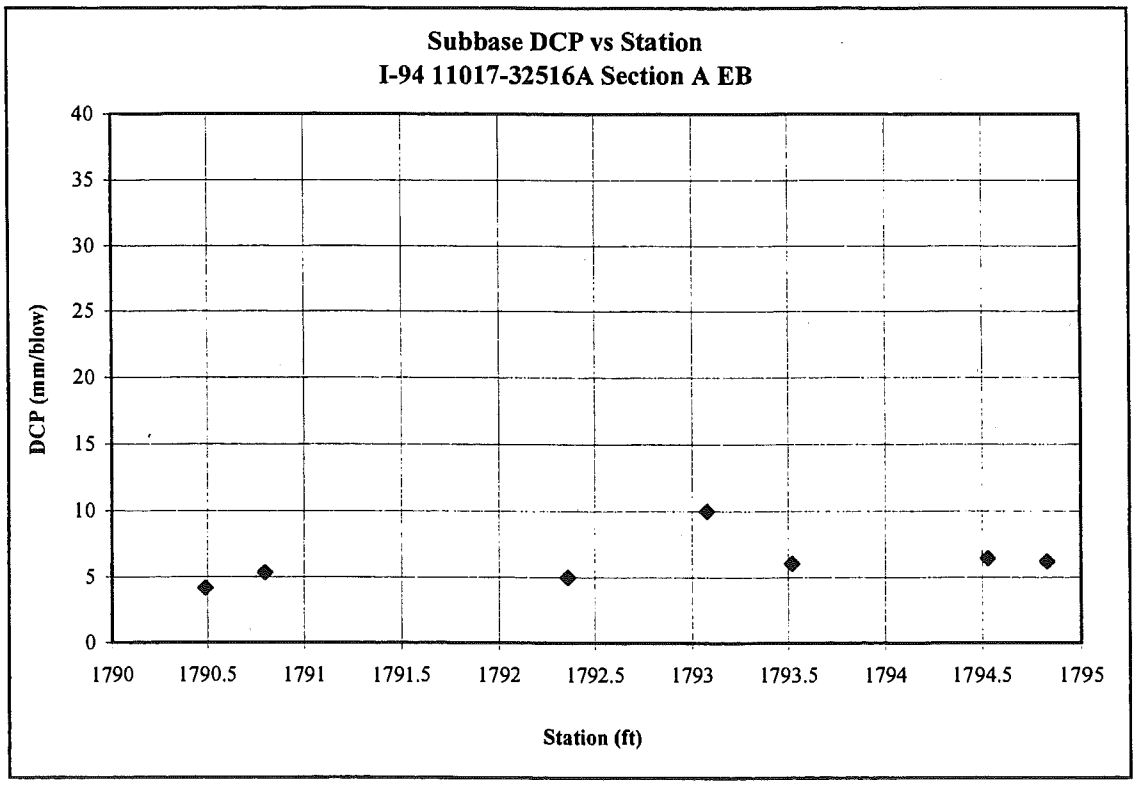
Comments: Refusal at 787mm depth Core 241 mm
Base 102 mm
Subgrade starts @ 737 mm

Core # M6
Station # 1794+83

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	65	65	22	9.3
3	35	100	12	18.6
3	35	135	12	18.6
3	20	155	7	34.9
10	70	225	7	33.0
10	50	275	5	48.1
10	50	325	5	48.1
10	35	360	4	71.8
10	45	405	5	54.2

Comments: Base 102 mm
Subgrade starts @ 610 mm
Core 229 mm


Base DCP vs Station
I-94 11017-32516A Section A EB
DCP (mm/ blow)
40
35
30
25
20
15
10
5
0
1790
1790.5
1791
1791.5
1792
1792.5
1793
1793.5
1794
1794.5
1795
Station (ft)


Subbase DCP vs Station
I-94 11017-32516A Section A EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
1790
1790.5
1791
1791.5
1792
1792.5
1793
1793.5
1794
1794.5
1795
Station (ft)

DCP DATA

Control Section: 11017-32516A Section C
Direction: Eastbound
Date Tested: 4/30/97

Core # M1
Station # 1682+90

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	68	68	23	8.9
3	37	105	12	17.5
3	25	130	8	27.2
10	50	180	5	48.1
20	80	260	4	61.8
20	65	325	3	78.0
20	65	390	3	78.0

Comments:

Core # M2
Station # 1683+48

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	30	90	10	22.2
3	30	120	10	22.2
3	20	140	7	34.9
10	50	190	5	48.1
10	40	230	4	61.8
20	70	300	4	71.8
20	60	360	3	85.3

Comments:

Core # M3
Station # 1684+35

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	50	50	17	12.5
3	35	85	12	18.6
3	35	120	12	18.6
3	5	125	2	164.8
10	55	180	6	43.3
20	85	265	4	57.8
20	80	345	4	61.8
20	65	410	3	78.0
10	30	440	3	85.3

Comments:

Core # M4
Station # 1685+41

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	50	50	17	12.5
3	30	80	10	22.2
3	25	105	8	27.2
10	50	155	5	48.1
20	75	230	4	66.4
20	65	295	3	78.0
10	30	325	3	85.3

Comments:

Core # M5
Station # 1687+01

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	40	40	13	16.0
3	28	68	9	23.9
3	22	90	7	31.4
10	41	131	4	60.1
20	54	185	3	96.0
20	43	228	2	123.9

Comments:

Core # J1
Station # 1687+42

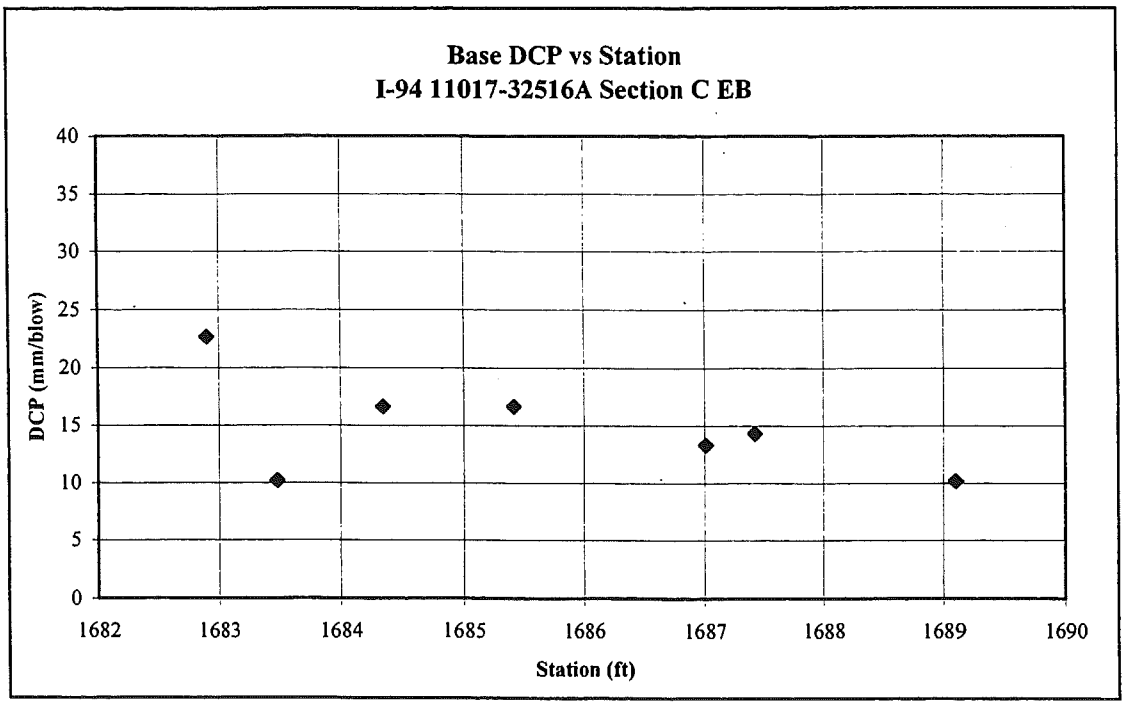
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	43	43	14	14.8
3	18	61	6	39.3
3	17	78	6	41.8
3	31	109	10	21.4
10	64	173	6	36.5
20	75	248	4	66.4
20	65	313	3	78.0

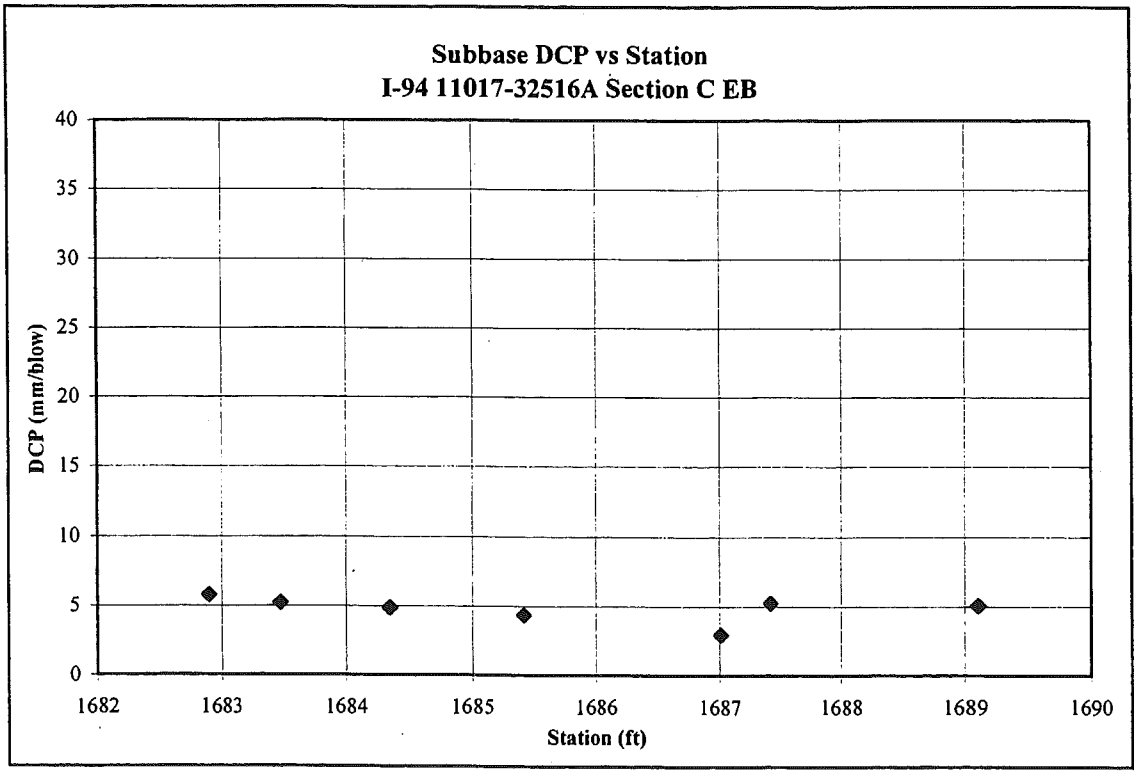
Comments:

Core # M6
Station # 1689+10

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	25	125	8	27.2
10	58	183	6	40.8
10	47	230	5	51.6
20	80	310	4	61.8

Comments:


Base DCP vs Station
I-94 11017-32516A Section C EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
1682
1683
1684
1685
1686
1687
1688
1689
1690
Station (ft)


Subbase DCP vs Station
I-94 11017-32516A Section C EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
1682
1683
1684
1685
1686
1687
1688
1689
1690
Station (ft)

DCP DATA

Control Section: 11017-32516A Section D
Direction: Westbound
Date Tested: 5/29/97

Core # M1
Station # 1783+39

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	75	75	25	7.9
5	55	130	11	19.9
3	20	150	7	34.9
3	15	165	5	48.1
10	45	210	5	54.2
10	30	240	3	85.3
10	25	265	3	100.0
10	30	295	3	85.3
10	20	315	2	100.0
10	30	345	3	85.3

Comments: Core 311 mm

Core # M3
Station # 1784+98

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	55	55	18	11.2
3	55	110	18	11.2
3	30	140	10	22.2
3	25	165	8	27.2
3	20	185	7	34.9
3	15	200	5	48.1
10	50	250	5	48.1
10	45	295	5	54.2
10	45	340	5	54.2
10	40	380	4	61.8

Comments: 1016 mm dry sand, 1524 mm no subgrade
Core 311 mm

Core # M5
Station # 1786+53

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	70	70	23	8.6
3	50	120	17	12.5
3	25	145	8	27.2
3	25	170	8	27.2
3	20	190	7	34.9
3	20	210	7	34.9
10	50	260	5	48.1
10	45	305	5	54.2
10	50	355	5	48.1
10	50	405	5	48.1

Comments: Subgrade 762 mm below surface
Core 311 mm

Core # M7
Station # 1788+11

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	30	130	10	22.2
3	10	140	3	75.8
10	50	190	5	48.1
10	35	225	4	71.8
10	35	260	4	71.8
10	30	290	3	85.3
10	30	320	3	85.3

Comments: Subgrade 889 mm below surface
Refusal at 1041 mm
Core 318 mm

Core # M9
Station # 1789+70

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	65	65	22	9.3
3	30	95	10	22.2
3	25	120	8	27.2
3	15	135	5	48.1
3	10	145	3	75.8
10	40	185	4	61.8
10	40	225	4	61.8
10	25	250	3	100.0
10	25	275	3	100.0
10	30	305	3	85.3
10	20	325	2	100.0

Comments: Subgrade 1092 mm
Core 305 mm

Core # M11
Station # 1791+27

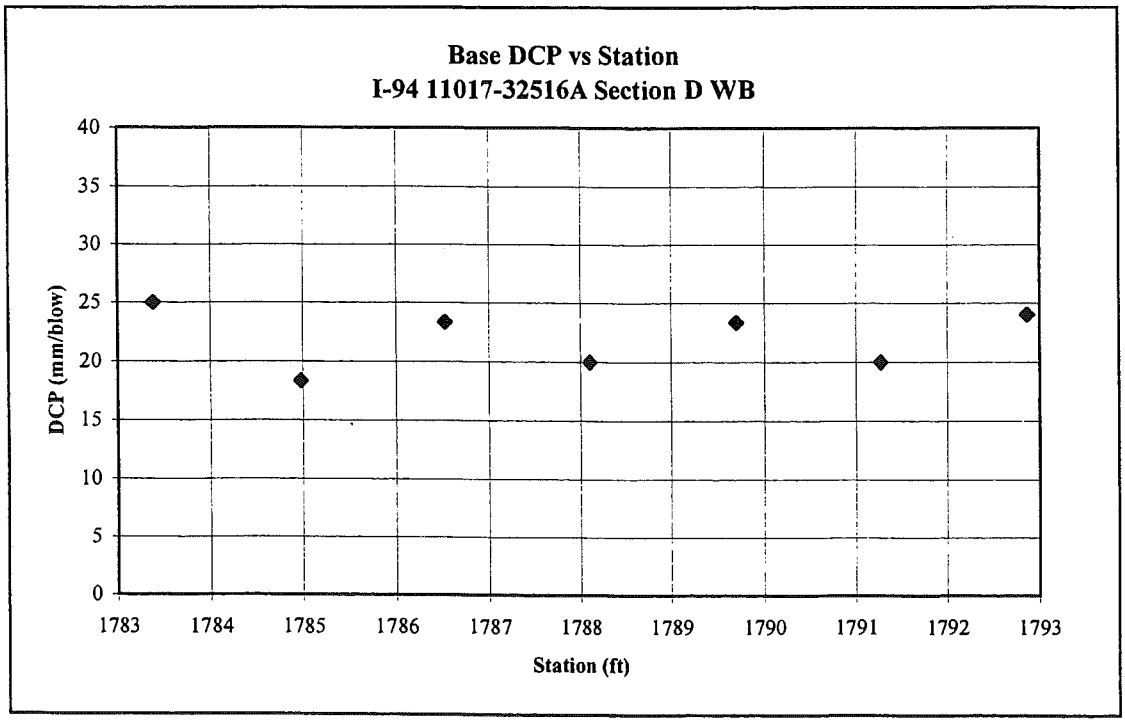
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	20	80	7	34.9
3	22	102	7	31.4
3	16	118	5	44.8
3	13	131	4	56.5
3	14	145	5	52.0
10	32	177	3	79.4
10	33	210	3	76.7
10	27	237	3	96.0
10	28	265	3	92.2
10	30	295	3	85.3

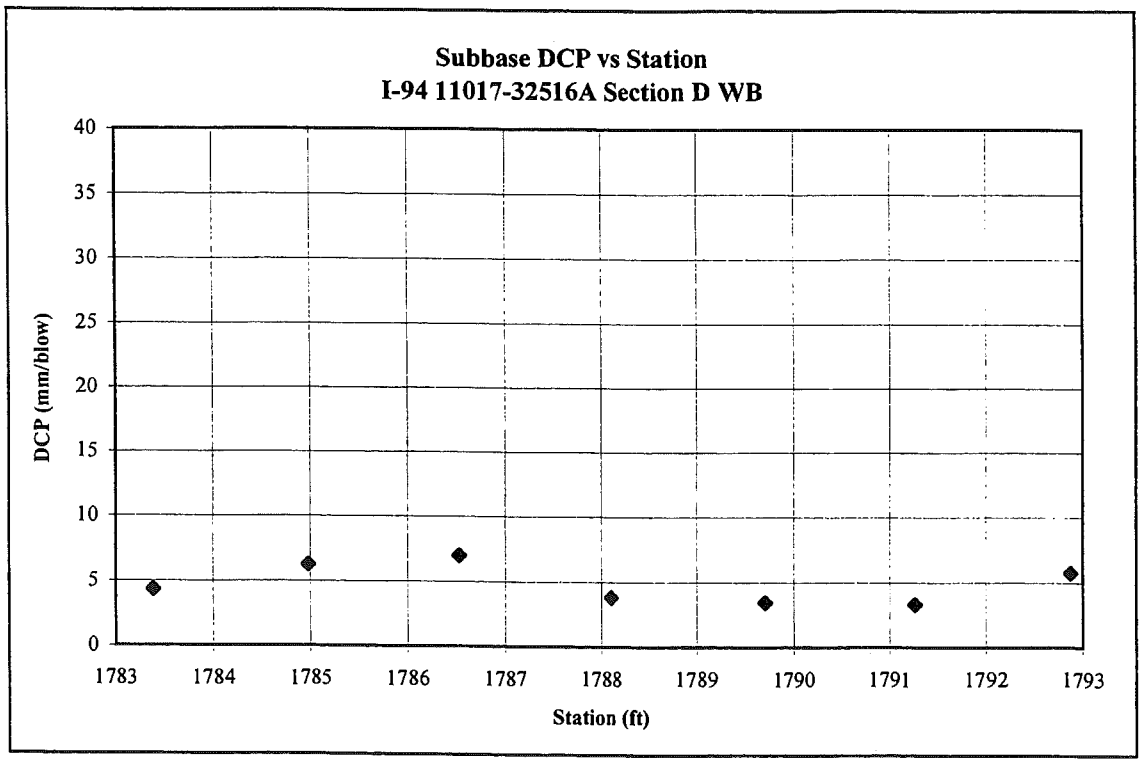
Comments: Subgrade 737 mm below surface
Refusal at 762 mm
Core 318 mm

Core # M13
Station # 1792+87

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	72	72	24	8.3
3	38	110	13	17.0
3	35	145	12	18.6
3	20	165	7	34.9
3	15	180	5	48.1
3	20	200	7	34.9
10	15	215	2	100.0
10	30	245	3	85.3
10	30	275	3	85.3
10	30	305	3	85.3
10	25	330	3	100.0

Comments: Subgrade 1448 mm below surface
Core 330 mm


Base DCP vs Station
I-94 11017-32516A Section D WB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
1783
1784
1785
1786
1787
1788
1789
1790
1791
1792
1793
Station (ft)


Subbase DCP vs Station
I-94 11017-32516A Section D WB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
1783
1784
1785
1786
1787
1788
1789
1790
1791
1792
1793
Station (ft)

DCP DATA

Control Section: 77023-21586A
Direction: Eastbound
Date Tested: 7/2/96

Core # M1
Station # 1820+74

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	50	50	17	12.5
3	25	75	8	27.2
3	35	110	12	18.6
3	20	130	7	34.9
3	30	160	10	22.2
3	20	180	7	34.9
10	70	250	7	33.0
10	75	325	8	30.6
10	50	375	5	48.1

Comments: Base 102 mm, 787 mm to subgrade
Core 248 mm

Core # M4
Station # 1822+93

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	65	65	22	9.3
3	30	95	10	22.2
3	35	130	12	18.6
3	25	155	8	27.2
3	25	180	8	27.2
10	65	245	7	35.9
10	65	310	7	35.9
10	75	385	8	30.6

Comments: Base 102 mm, 864 mm to subgrade
Core 254 mm

Core # M6
Station # 1824+29

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	55	55	18	11.2
3	25	80	8	27.2
3	35	115	12	18.6
3	25	140	8	27.2
3	25	165	8	27.2
10	85	250	9	26.6
10	75	325	8	30.6
10	65	390	7	35.9

Comments: Base 95 mm
Subbase starts @ 737 mm
Core 229 mm

Core # M8
Station # 1827+70

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	65	65	22	9.3
3	110	110	37	5.2
3	140	140	47	3.9
3	170	170	57	3.2
3	205	205	68	2.6
10	305	305	31	6.4
10	365	365	37	5.2
10	415	415	42	4.5

Comments: Refusal at 787 mm Core 1254 mm
Base 102 mm
Subgrade starts @ 597 mm

Core # M11
Station # 1830+40

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	55	55	18	11.2
3	35	90	12	18.6
3	25	115	8	27.2
3	25	140	8	27.2
3	20	160	7	34.9
10	75	235	8	30.6
10	60	295	6	39.3
10	65	360	7	35.9
10	20	380	2	134.3
10	25	405	3	104.6

Comments: Base 89 mm
Subgrade starts @ 622 mm
Core 254 mm

Core # M12
Station # 1834+27

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	30	130	10	22.2
3	25	155	8	27.2
3	25	180	8	27.2
3	25	205	8	27.2
10	80	285	8	28.4
10	60	345	6	39.3
10	30	375	3	85.3

Comments: No donut

Core # M13
Station # 1834+47

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	45	145	15	14.1
3	35	180	12	18.6
10	110	290	11	19.9
10	60	350	6	39.3
10	40	390	4	61.8

Comments: Base 95 mm
Subgrade starts @ 559 mm
Core 254 mm

Core # M14
Station # 1834+56

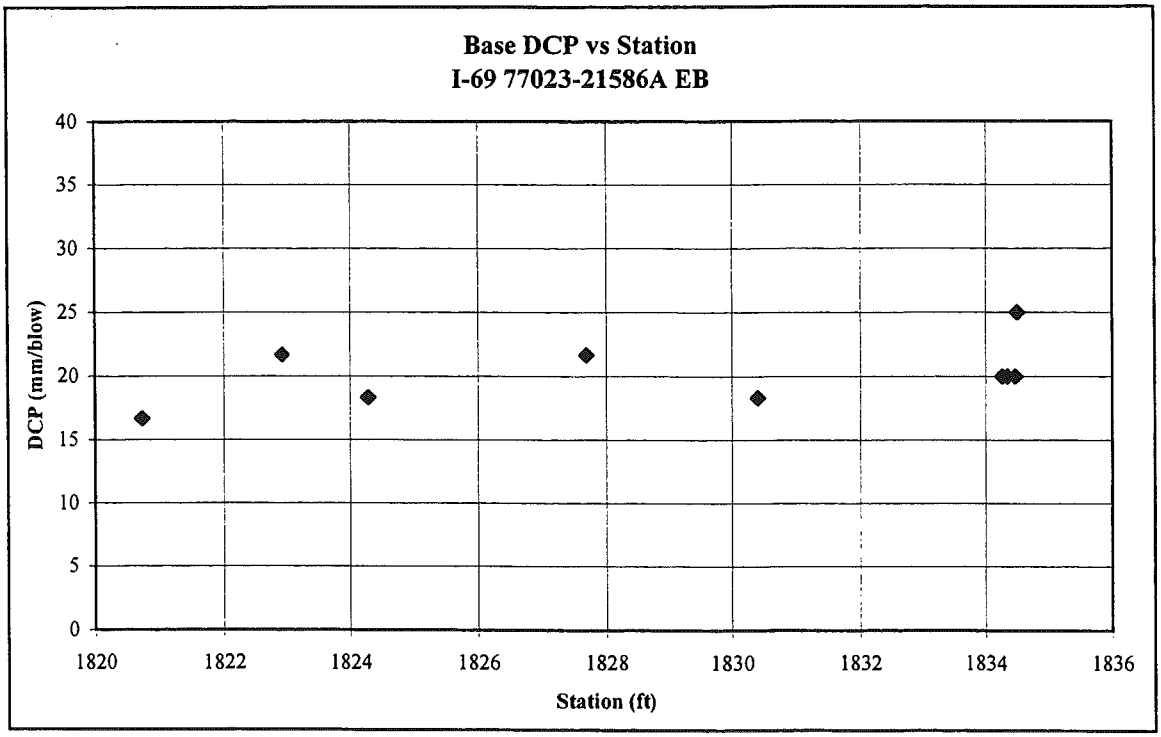
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	75	75	25	7.9
3	45	120	15	14.1
3	35	155	12	18.6
3	30	185	10	22.2
3	35	220	12	18.6
10	110	330	11	19.9
10	55	385	6	43.3

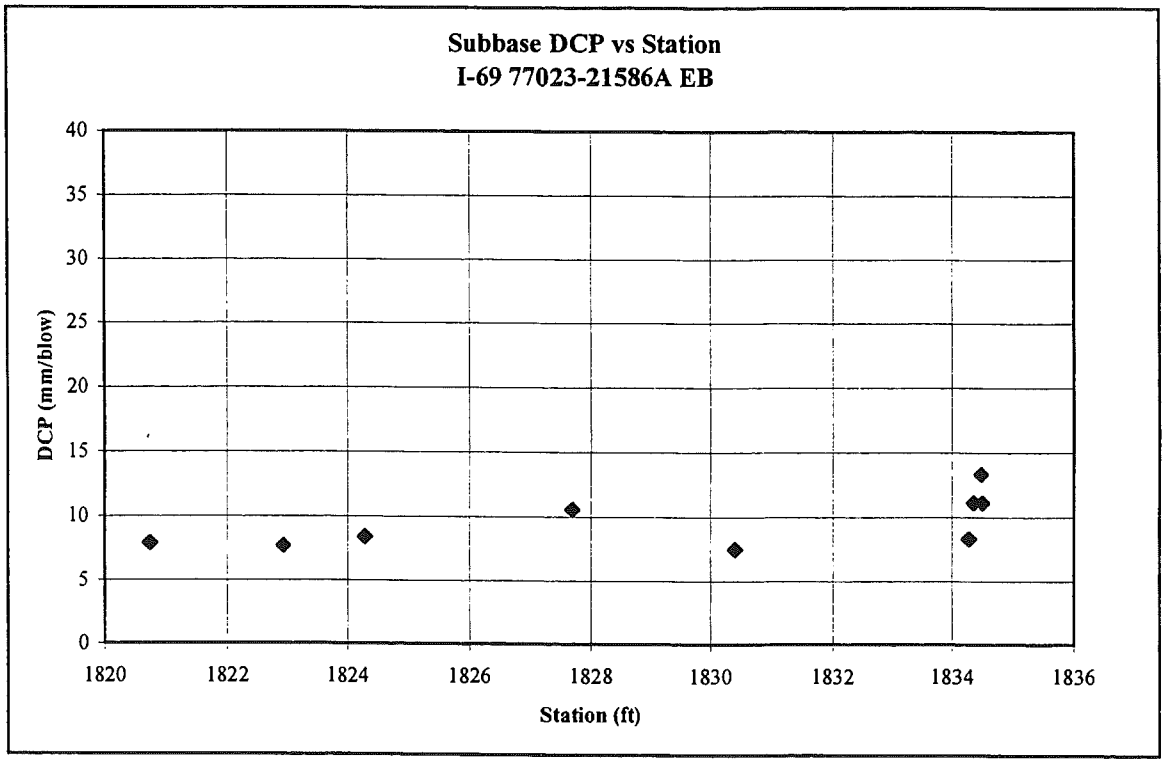
Comments: No donut

Core # C2
Station # 1834+35

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	60	60	20	10.2
3	40	100	13	16.0
3	35	135	12	18.6
3	35	170	12	18.6
3	30	200	10	22.2
3	35	235	12	18.6
10	95	330	10	23.5
10	75	405	8	30.6

Comments: No donut


Base DCP vs Station
I-69 77023-21586A EB
DCP (mm/blow)
0
5
10
15
20
25
30
35
40
1820
1822
1824
1826
1828
1830
1832
1834
1836
Station (ft)


Subbase DCP vs Station
I-69 77023-21586A EB
DCP (mm/blow)
0
5
10
15
20
25
30
35
40
1820
1822
1824
1826
1828
1830
1832
1834
1836
Station (ft)

DCP DATA*

Control Section: 19042-24680A SECTION B
Direction: Eastbound
Date Tested: 8/14/96

Core #1M
Station # 275+77

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
29	76	76	2.6	99.3
58	76	152	1.3	100.0
80	76	228	1.0	100.0
100	38	266	0.4	100.0

Comments: Refusal at 266 mm depth

Core # 2M
Station # 276+59

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
29	76	76	2.6	99.3
70	76	152	1.1	100.0
125	76	228	0.6	100.0
100	19	247	0.2	100.0

Comments: Refusal at 247 mm depth

Core # 4M
Station # 277+77

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
12	76	76	6.3	36.9
27	76	152	2.8	91.6
65	76	228	1.2	100.0
100	51	279	0.5	100.0

Comments: Refusal at 279 mm depth

Core # 7M
Station # 279+48

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
20	76	76	3.8	65.5
59	76	152	1.3	100.0
130	76	228	0.6	100.0
100	51	279	0.5	100.0

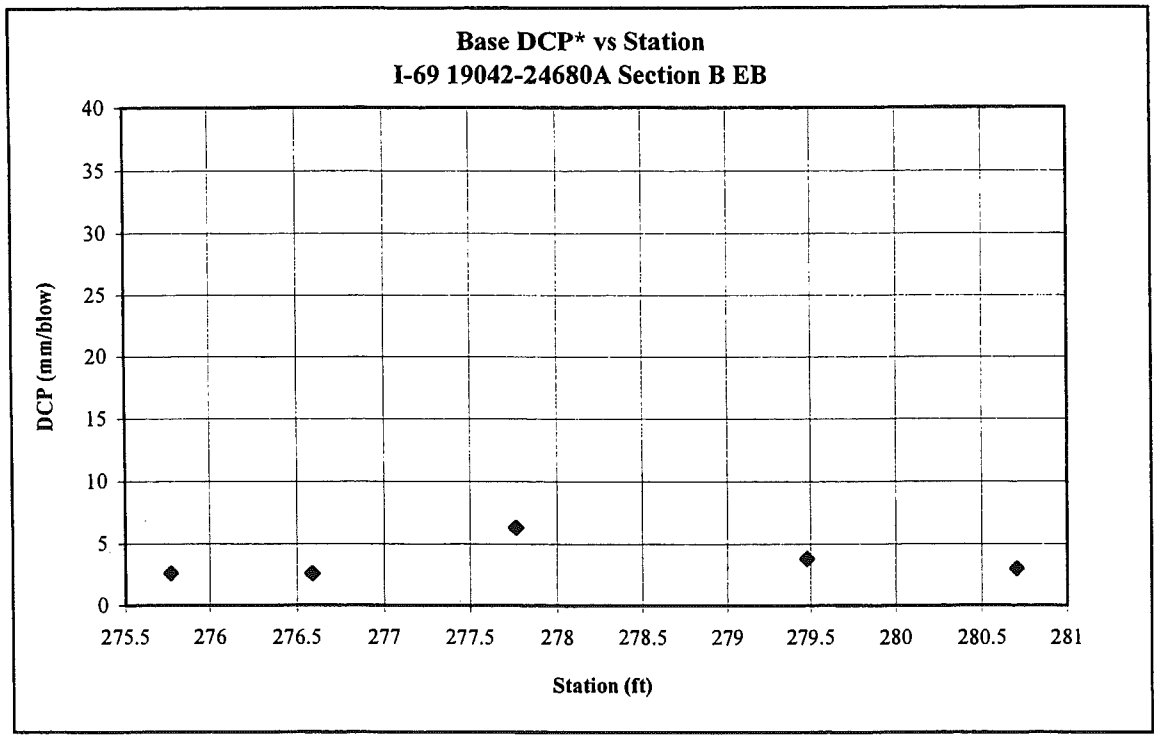
Comments: Refusal at 279 mm depth

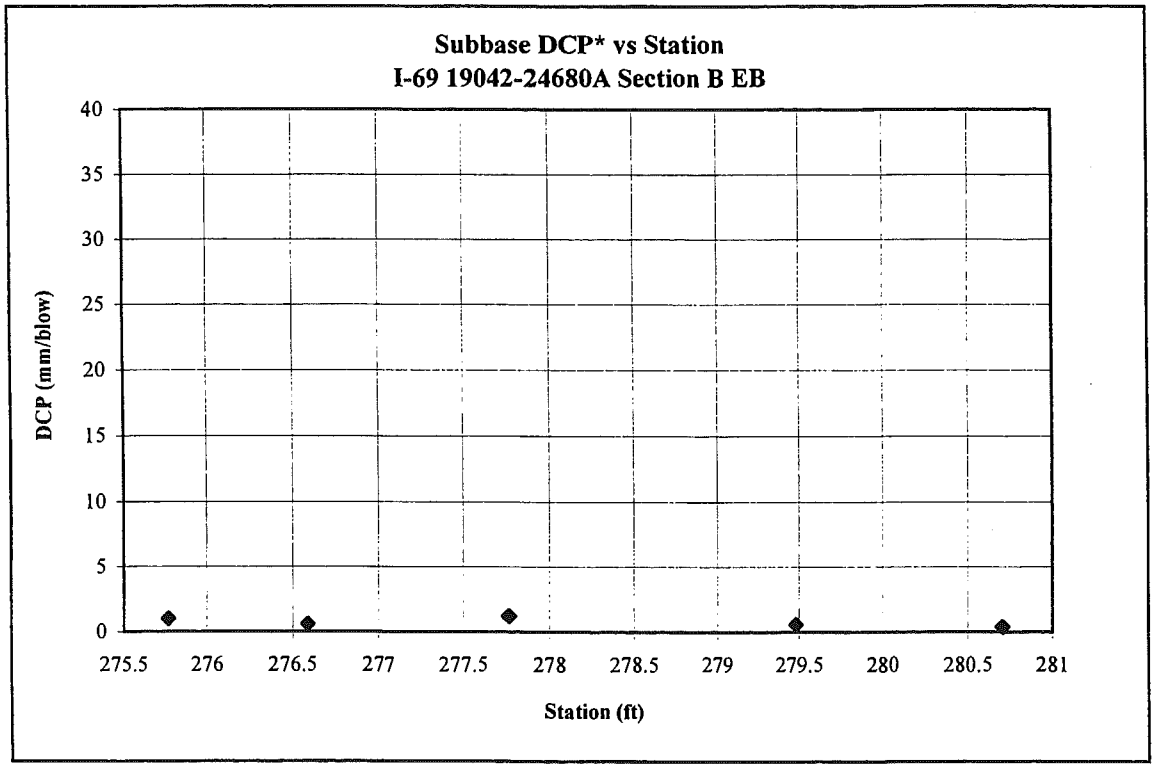
Core # 10M
Station # 280+70

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
25	76	76	3.0	84.1
65	76	152	1.2	100.0
100	38	190	0.4	100.0

Comments: Refusal at 190 mm depth

*Large diameter DCP used in this section





*Larger diameter DCP used in this section

DCP DATA

Control Section: 19042-02233A SECTION C
Direction: Eastbound
Date Tested: 8/7/96

Core # 1M
Station # 527+68

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
10	76	76	7.6	30.1
17	76	152	4.5	54.6
33	76	228	2.3	100.0
60	76	304	1.3	100.0
65	76	380	1.2	100.0
77	76	456	1.0	100.0
60	76	532	1.3	100.0
59	76	608	1.3	100.0

Comments:

Core # 5M
Station # 528+30

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
9	76	76	8.4	26.8
20	76	152	3.8	65.5
45	76	228	1.7	100.0
65	76	304	1.2	100.0
55	76	380	1.4	100.0
65	76	456	1.2	100.0
65	76	532	1.2	100.0
65	76	608	1.2	100.0

Comments:

Core # 7M
Station # 529+14

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
10	76	76	7.6	30.1
20	76	152	3.8	65.5
28	76	228	2.7	95.4
23	76	304	3.3	76.6
27	76	380	2.8	91.6
35	76	456	2.2	100.0
41	76	532	1.9	100.0
26	76	608	2.9	87.8

Comments:

Core # 11M
Station # 531+23

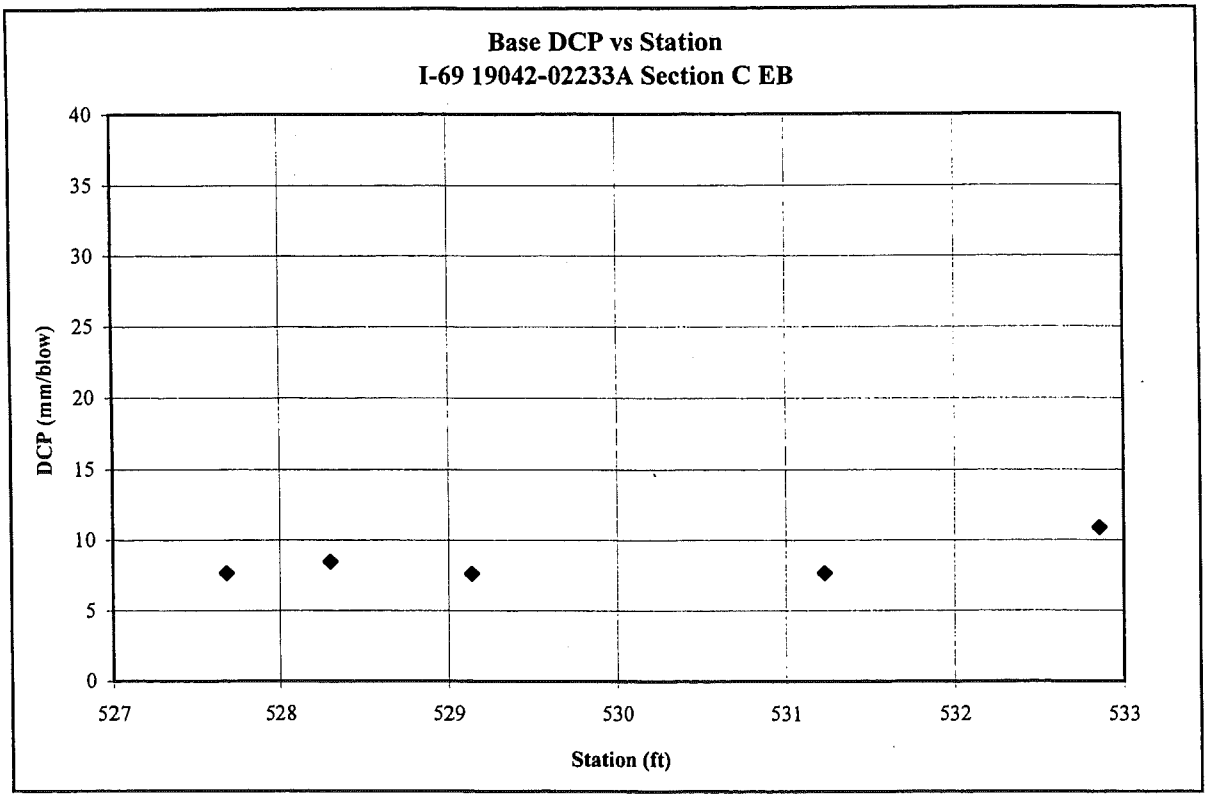
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
10	76	76	7.6	30.1
15	76	152	5.1	47.4
35	76	228	2.2	100.0
33	76	304	2.3	100.0
57	76	380	1.3	100.0
46	76	456	1.7	100.0
50	76	532	1.5	100.0
60	76	608	1.3	100.0

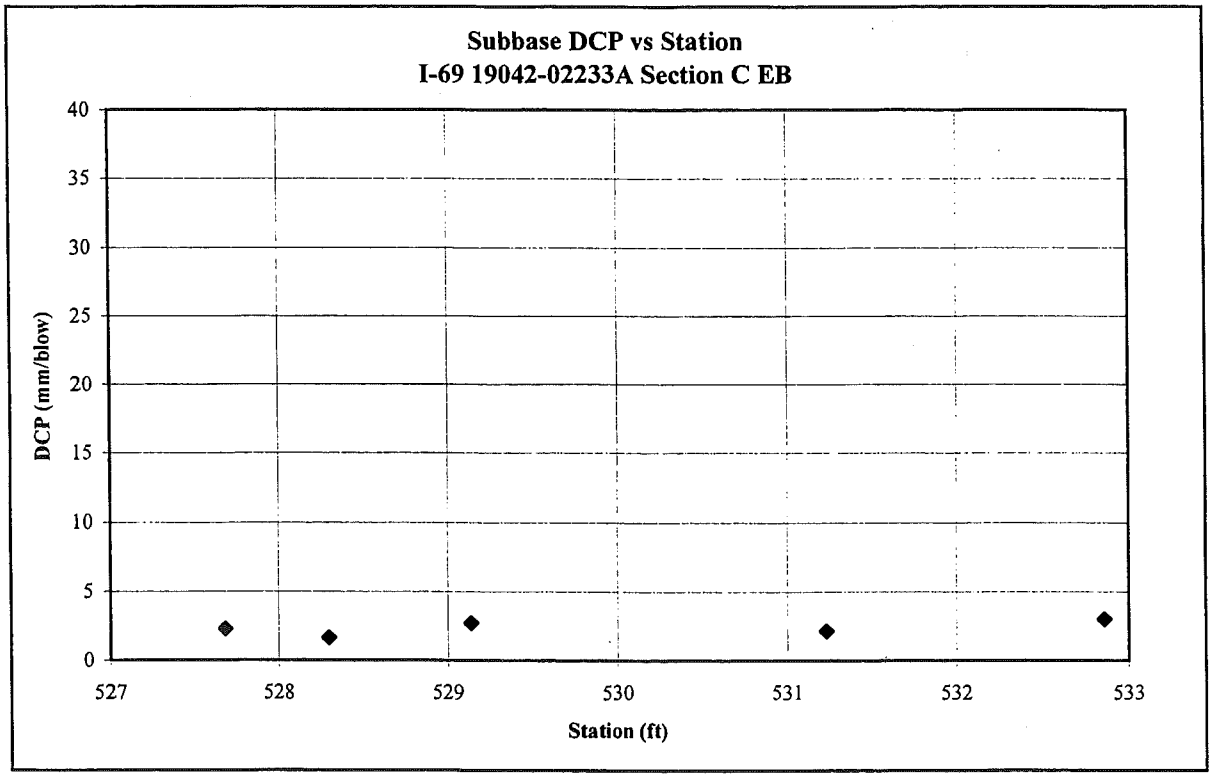
Comments:

Core # 13M
Station # 532+86

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
7	76	76	10.9	20.2
14	76	152	5.4	43.9
25	76	228	3.0	84.1
28	76	304	2.7	95.4
34	76	380	2.2	100.0
40	76	456	1.9	100.0
70	76	532	1.1	100.0
50	76	608	1.5	100.0

Comments:


Base DCP vs Station
I-69 19042-02233A Section C EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
527
528
529
530
531
532
533
Station (ft)


Subbase DCP vs Station
I-69 19042-02233A Section C EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
527
528
529
530
531
532
533
Station (ft)

DCP DATA

Control Section: 77024-20821A SECTION A
Direction: East Bound
Date Tested: 10/17/96

Core # M0
Station # 83+65

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
6	76	152	12.7	17.0
6	76	228	12.7	17.0
4	76	304	19.0	10.8
2	76	380	38.0	5.0
3	76	456	25.3	7.8
2	76	532	38.0	5.0
3	76	608	25.3	7.8
3	76	684	25.3	7.8

Comments:

Core # M1
Station # 83+80

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
6	76	152	12.7	17.0
8	76	228	9.5	23.5
5	76	304	15.2	13.9
2	76	380	38.0	5.0
2	76	456	38.0	5.0
2	76	532	38.0	5.0
2	76	608	38.0	5.0
1	76	684	76.0	2.3

Comments:

Core # M2
Station # 85+30

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
8	76	152	9.5	23.5
5	76	228	15.2	13.9
5	76	304	15.2	13.9
2	76	380	38.0	5.0
3	76	456	25.3	7.8
3	76	532	25.3	7.8
4	76	608	19.0	10.8

Comments:

Core # M3
Station # 85+45

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
8	76	152	9.5	23.5
8	76	228	9.5	23.5
5	76	304	15.2	13.9
2	76	380	38.0	5.0
2	76	456	38.0	5.0
3	76	532	25.3	7.8
3	76	608	25.3	7.8
4	76	684	19.0	10.8

Comments:

Core # M4
Station # 87+04

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
4	76	152	19.0	10.8
3	76	228	25.3	7.8
3	76	304	25.3	7.8
2	76	380	38.0	5.0
3	76	456	25.3	7.8
2	76	532	38.0	5.0
3	76	608	25.3	7.8
4	76	684	19.0	10.8

Comments:

Core # M5
Station # 87+25

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
5	76	152	15.2	13.9
2	76	228	38.0	5.0
2	76	304	38.0	5.0
3	76	380	25.3	7.8
3	76	456	25.3	7.8
3	76	532	25.3	7.8
4	76	608	19.0	10.8
5	76	684	15.2	13.9

Comments:

Core # M6
Station # 88+55

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
5	76	152	15.2	13.9
5	76	228	15.2	13.9
2	76	304	38.0	5.0
2	76	380	38.0	5.0
3	76	456	25.3	7.8
5	76	532	15.2	13.9
4	76	608	19.0	10.8

Comments:

Core # M7
Station # 88+85

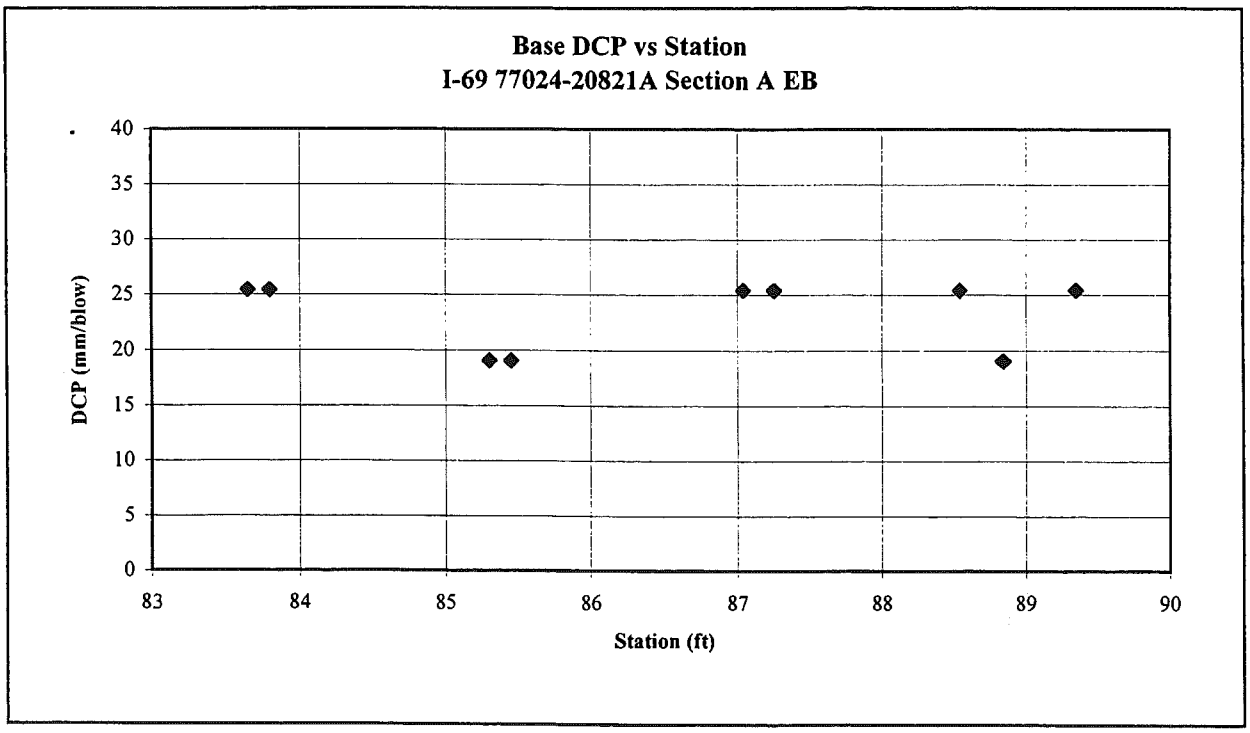
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
7	76	152	10.9	20.2
7	76	228	10.9	20.2
3	76	304	25.3	7.8
2	76	380	38.0	5.0
2	76	456	38.0	5.0
4	76	532	19.0	10.8
4	76	608	19.0	10.8
4	76	684	19.0	10.8

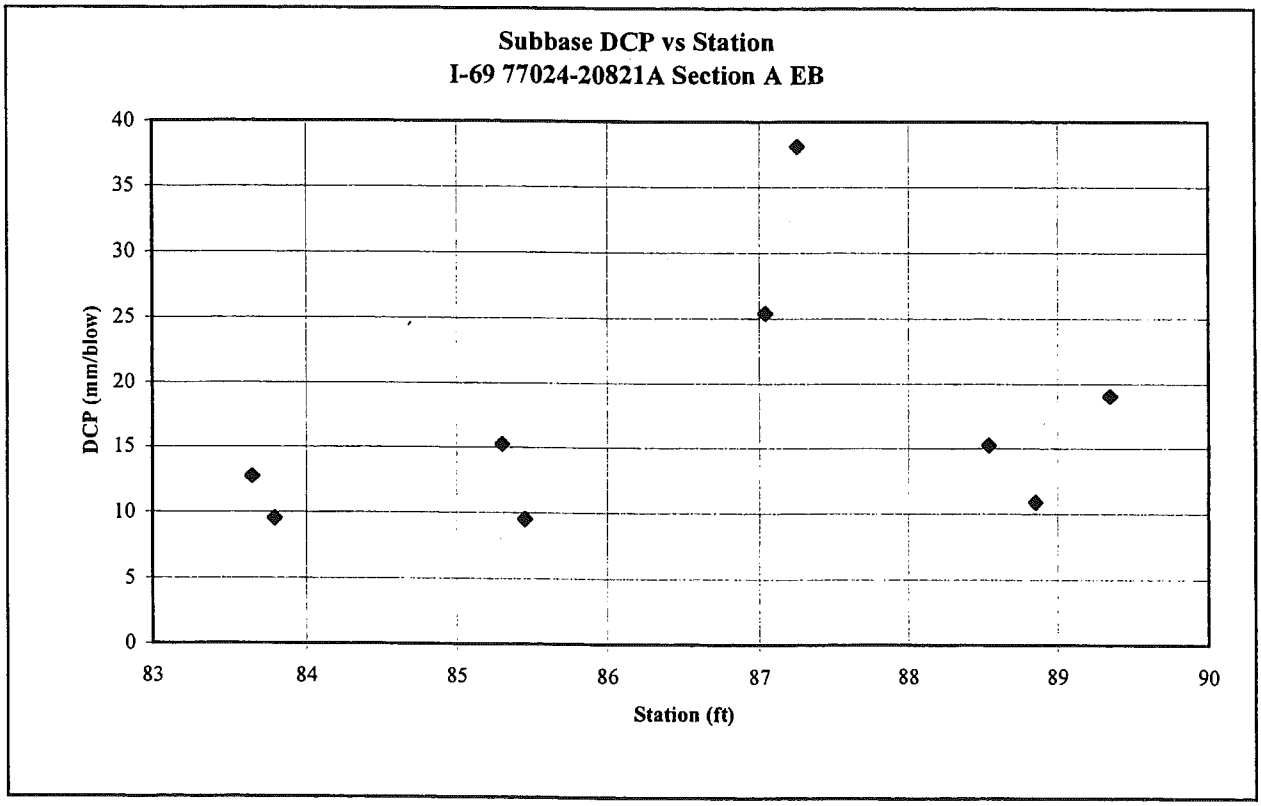
Comments:

Core # M9
Station # 89+35

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
7	76	152	10.9	20.2
4	76	228	19.0	10.8
2	76	304	38.0	5.0
2	76	380	38.0	5.0
2	76	456	38.0	5.0
3	76	532	25.3	7.8
3	76	608	25.3	7.8
3	76	684	25.3	7.8
4	76	760	19.0	10.8

Comments:


Base DCP vs Station
I-69 77024-20821A Section A EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
83
84
85
86
87
88
89
90
Station (ft)


Subbase DCP vs Station
I-69 77024-20821A Section A EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
83
84
85
86
87
88
89
90
Station (ft)

DCP DATA

Control Section: 77024-17988A SECTION B
Direction: East Bound
Date Tested: 10/29/96

Core # M1
Station # 408+15

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
12	76	152	6.3	36.9
22	76	228	3.5	72.8
25	76	304	3.0	84.1
23	76	380	3.3	76.6
28	76	456	2.7	95.4
30	76	532	2.5	100.0
30	76	608	2.5	100.0

Comments:

Core # M3
Station # 409+47

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
9	76	152	8.4	26.8
11	76	228	6.9	33.5
15	76	304	5.1	47.4
20	76	380	3.8	65.5
25	76	456	3.0	84.1
25	76	532	3.0	84.1
35	76	608	2.2	100.0

Comments:

Core # M4
Station # 414+01

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
6	76	152	12.7	17.0
9	76	228	8.4	26.8
5	76	304	15.2	13.9
6	76	380	12.7	17.0
10	76	456	7.6	30.1
8	76	532	9.5	23.5
10	76	608	7.6	30.1

Comments:

Core # M8
Station # 415+92

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
5	76	152	15.2	13.9
5	76	228	15.2	13.9
8	76	304	9.5	23.5
7	76	380	10.9	20.2
9	76	456	8.4	26.8
9	76	532	8.4	26.8
13	76	608	5.8	40.4

Comments:

Core # M11
Station # 416+88

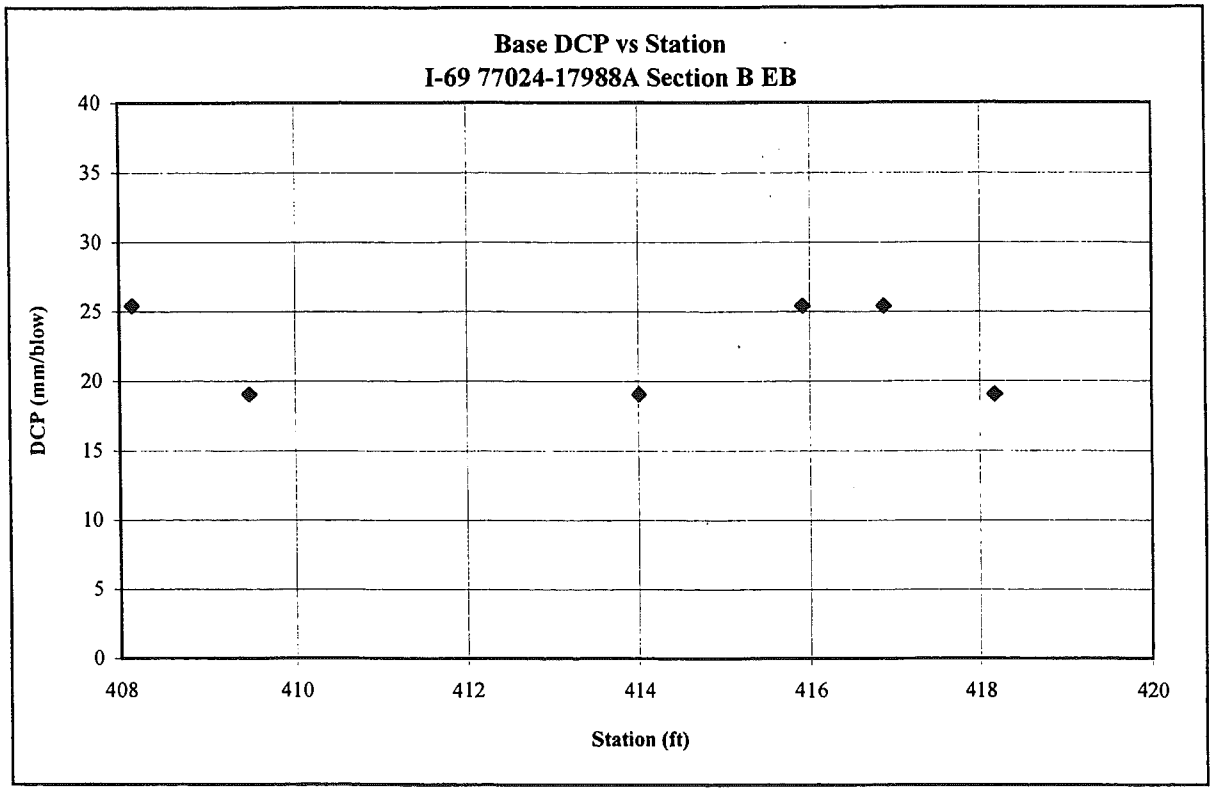
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
6	76	152	12.7	17.0
8	76	228	9.5	23.5
5	76	304	15.2	13.9
3	76	380	25.3	7.8
11	76	456	6.9	33.5
11	76	532	6.9	33.5
9	76	608	8.4	26.8

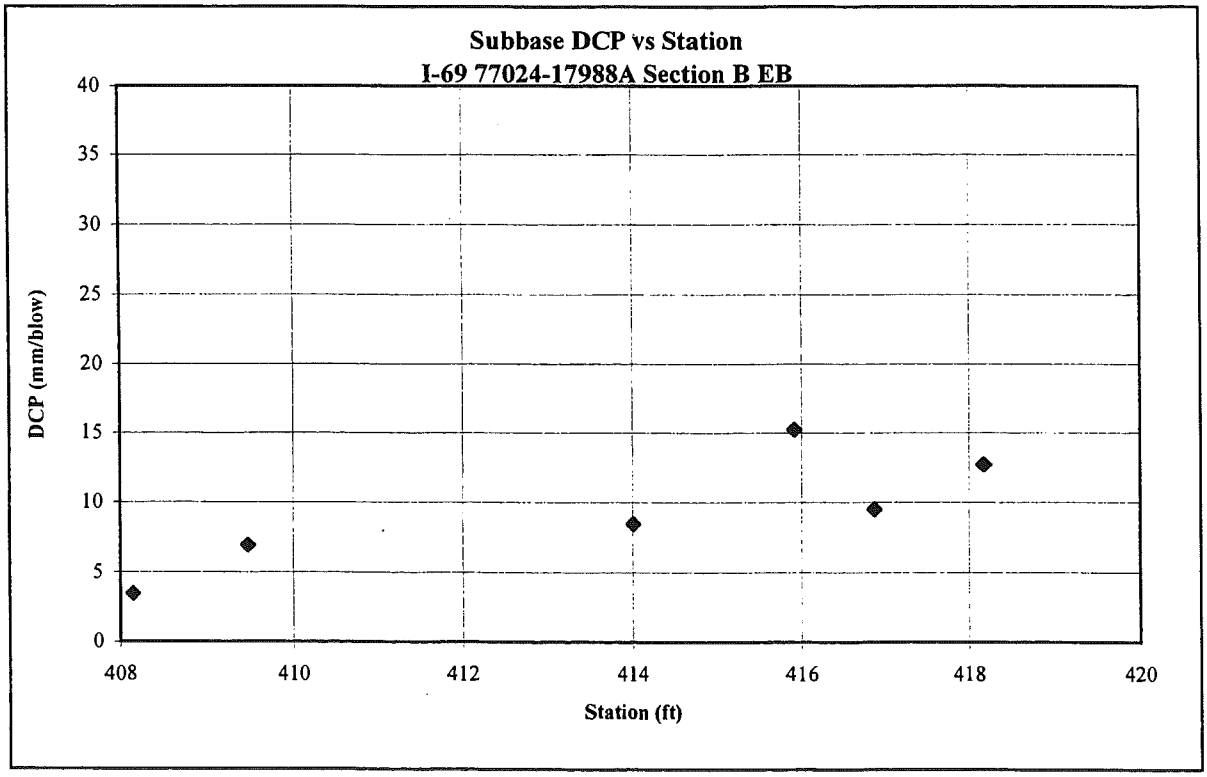
Comments:

Core # M13
Station # 418+17

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
4	76	152	19.0	10.8
6	76	228	12.7	17.0
8	76	304	9.5	23.5
5	76	380	15.2	13.9
3	76	456	25.3	7.8
9	76	532	8.4	26.8
7	76	608	10.9	20.2

Comments:


Base DCP vs Station
I-69 77024-17988A Section B EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
408
410
412
414
416
418
420
Station (ft)


Subbase DCP vs Station
I-69 77024-17988A Section B EB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
408
410
412
414
416
418
420
Station (ft)

DCP DATA*

Control Section: 19043-02234A
Direction: Eastbound
Date Tested: 8/15/96

Core #1M
Station # 137+04

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
23	76	76	3.3	76.6
37	76	152	2.1	100.0
48	76	228	1.6	100.0
52	76	304	1.5	100.0
50	76	380	1.5	100.0
31	76	456	2.5	100.0
33	76	532	2.3	100.0

Comments:

Core # 3M
Station # 137+43

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
40	76	76	1.9	100.0
120	76	152	0.6	100.0
130	76	228	0.6	100.0
100	44	272	0.4	100.0

Comments: Refusal at 272 mm depth

Core # 6M
Station # 137+91

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
50	76	76	1.5	100.0
82	76	152	0.9	100.0
79	76	228	1.0	100.0
106	76	304	0.7	100.0
105	76	380	0.7	100.0
115	76	456	0.7	100.0

Comments:

Core # 8M
Station # 138+36

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
62	76	76	1.2	100.0
100	38	114	0.4	100.0

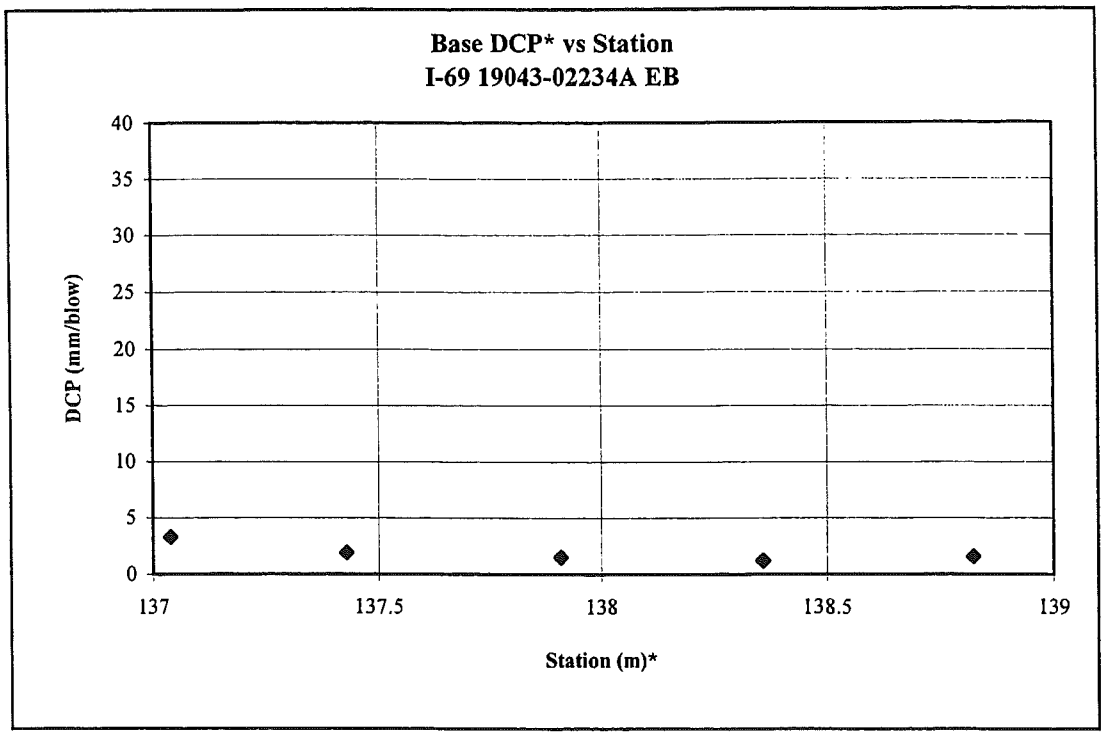
Comments: Refusal at 114 mm depth

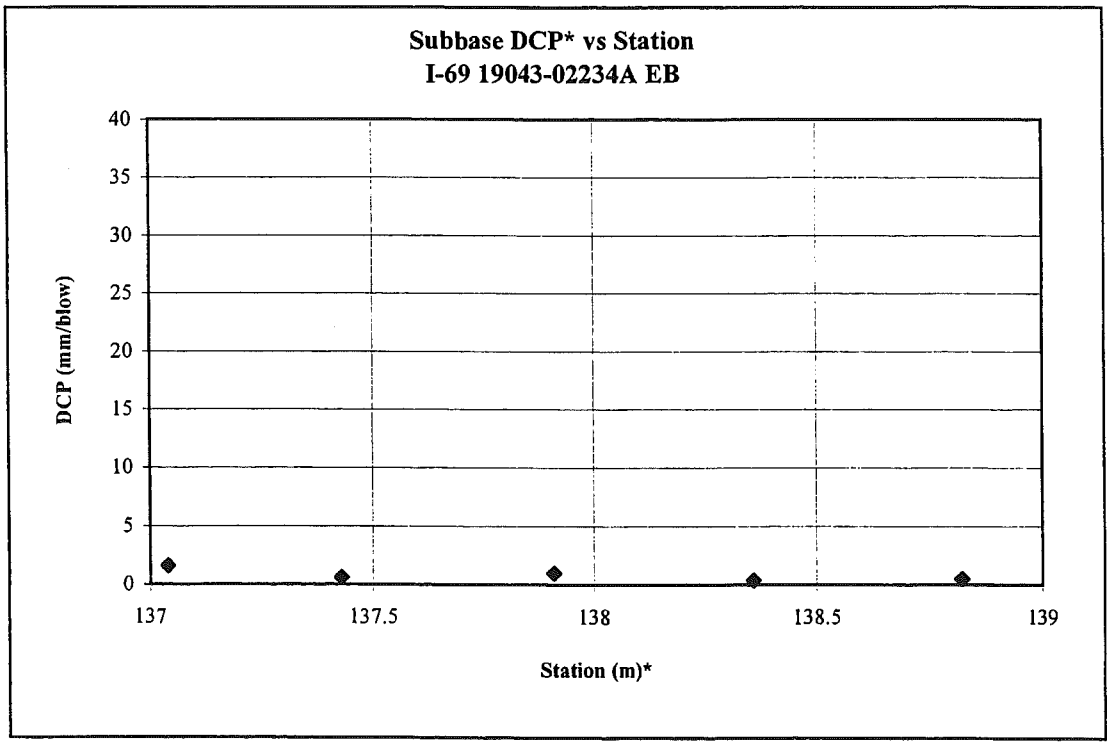
Core # 13M
Station # 138+82

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
49	76	76	1.6	100.0
102	76	152	0.7	100.0
100	51	203	0.5	100.0

Comments: Refusal at 203 mm depth

*Larger diameter DCP used in this section
*Station in Metric system





*Larger diameter DCP used in this section
*Station in Metric system

DCP DATA

Control Section: 19043-02234A
Direction: West Bound
Date Tested: 10/3/96

Core # 1M
Station # 149+68

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
23	76	76	3.3	76.6
26	76	152	2.9	87.8
25	76	228	3.0	84.1
30	76	304	2.5	100.0
26	76	380	2.9	87.8
25	76	456	3.0	84.1
24	76	532	3.2	80.3

Comments:

Core # 4M
Station # 149+18

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
18	76	76	4.2	58.2
23	76	152	3.3	76.6
24	76	228	3.2	80.3
23	76	304	3.3	76.6
32	76	380	2.4	100.0
33	76	456	2.3	100.0
37	76	532	2.1	100.0

Comments:

Core # 6M
Station # 148+69

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
10	76	76	7.6	30.1
25	76	152	3.0	84.1
35	76	228	2.2	100.0
28	76	304	2.7	95.4
47	76	380	1.6	100.0
44	76	456	1.7	100.0
40	76	532	1.9	100.0

Comments:

Core # 9M
Station # 148+31

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
8	76	76	9.5	23.5
17	76	152	4.5	54.6
26	76	228	2.9	87.8
27	76	304	2.8	91.6
43	76	380	1.8	100.0
47	76	456	1.6	100.0
73	76	532	1.0	100.0

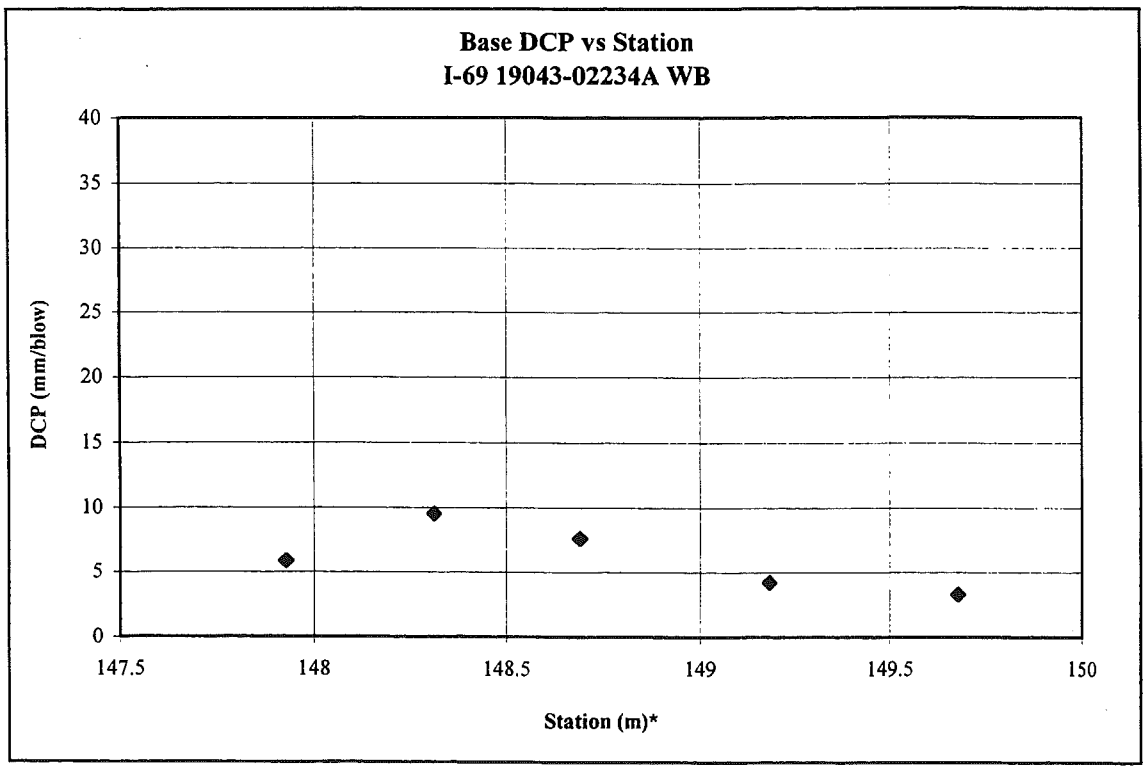
Comments:

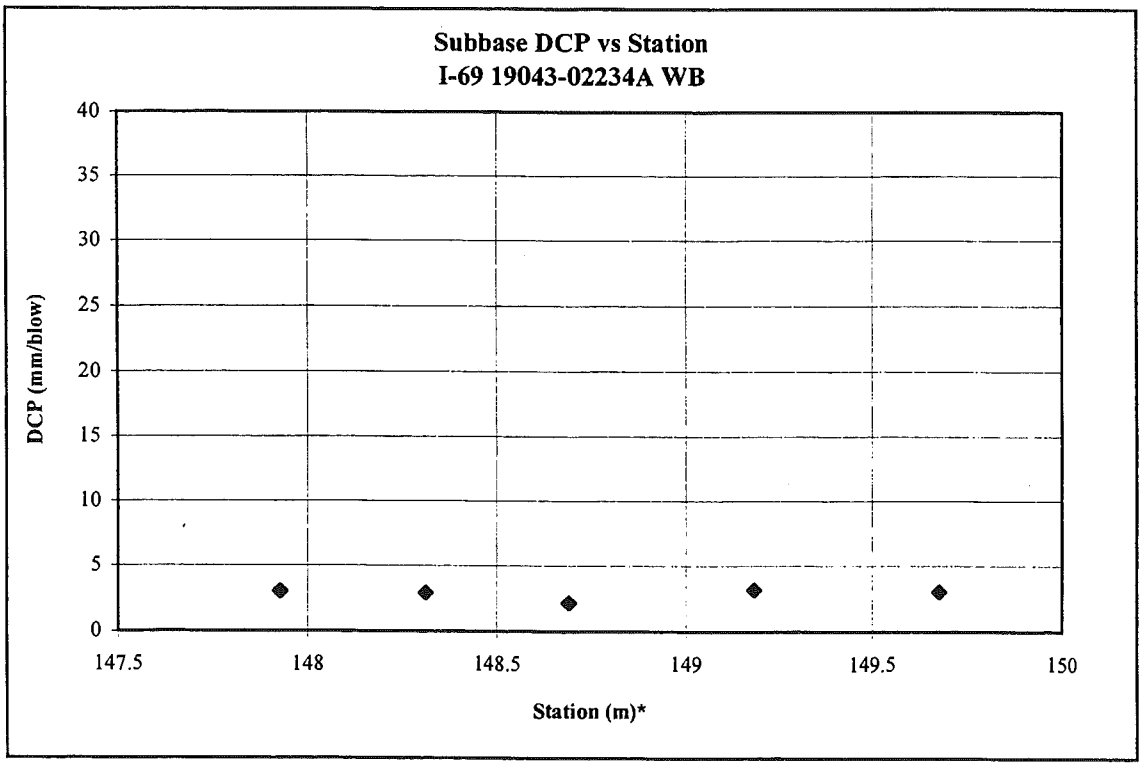
Core # 11M
Station # 147+93

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
13	76	76	5.8	40.4
26	76	152	2.9	87.8
25	76	228	3.0	84.1
27	76	304	2.8	91.6
35	76	380	2.2	100.0
55	76	456	1.4	100.0
50	76	532	1.5	100.0

Comments:

*Station in Metric system





*Station in Metric system

DCP DATA

Control Section: 44044 -18804A
Direction: Westbound
Date Tested: 7/23/96

Core # 2M
Station # 671+21

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	76	76	25.3	7.8
18	76	152	4.2	58.2
21	76	228	3.6	69.1
27	76	304	2.8	91.6
34	76	380	2.2	100.0

Comments:

Core # 5M
Station # 669+87

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
5	76	76	15.2	13.9
17	76	152	4.5	54.6
25	76	228	3.0	84.1
35	76	304	2.2	100.0
42	76	380	1.8	100.0

Comments:

Core # 7M
Station # 669+35

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
4	76	76	19.0	10.8
15	76	152	5.1	47.4
20	76	228	3.8	65.5
30	76	304	2.5	100.0
36	76	380	2.1	100.0

Comments:

Core # 10M
Station # 667+87

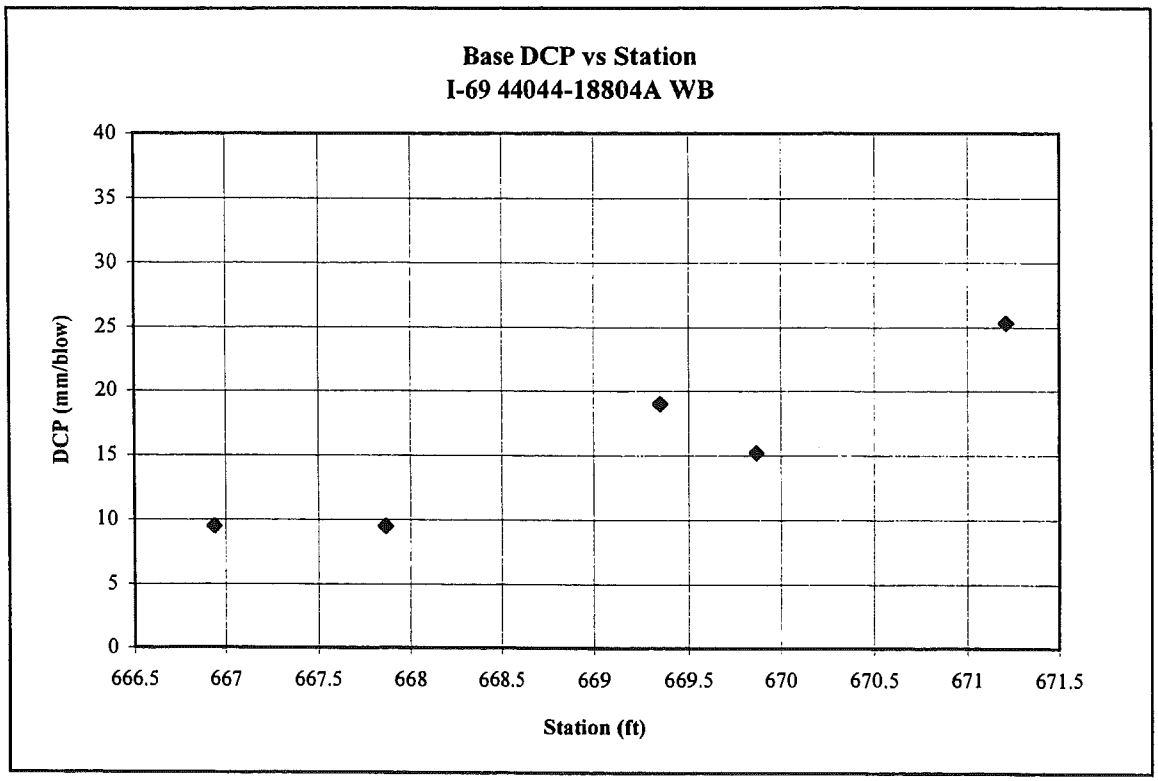
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
8	76	76	9.5	23.5
15	76	152	5.1	47.4
30	76	228	2.5	100.0
21	76	304	3.6	69.1
24	76	380	3.2	80.3
22	76	456	3.5	72.8
22	76	532	3.5	72.8
23	76	608	3.3	76.6

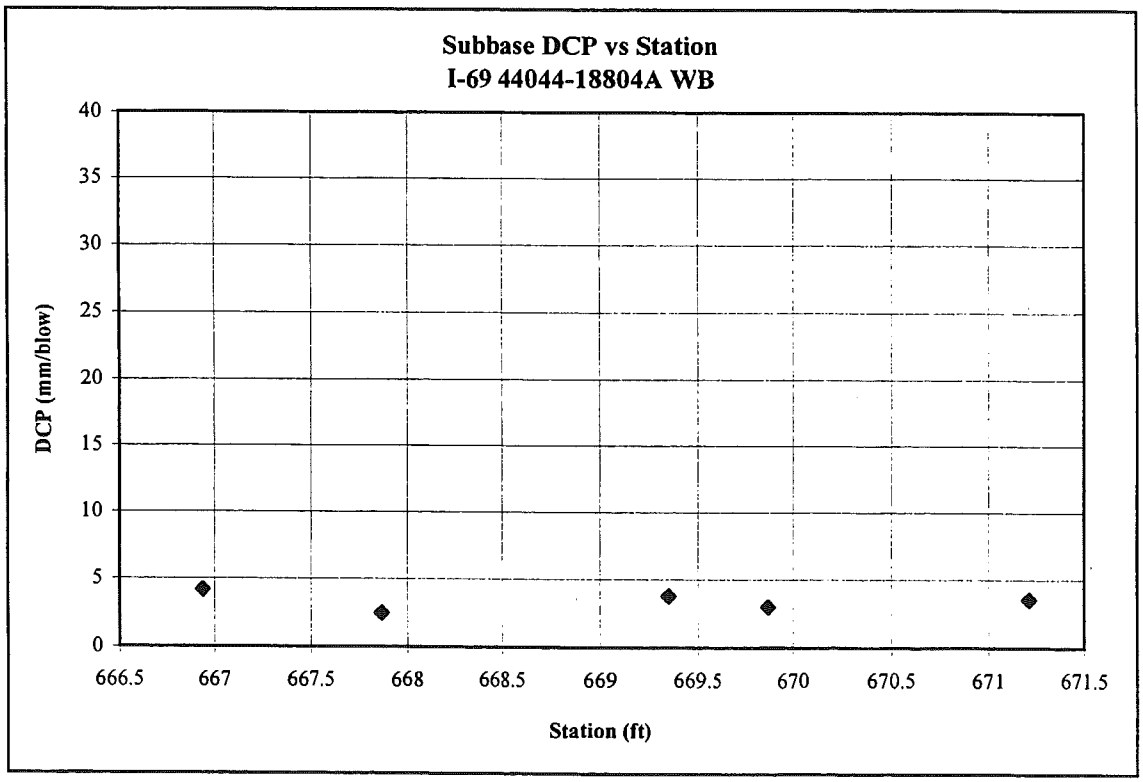
Comments:

Core # 12M
Station # 666+94

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
8	76	76	9.5	23.5
11	76	152	6.9	33.5
18	76	228	4.2	58.2
25	76	304	3.0	84.1
25	76	380	3.0	84.1
22	76	456	3.5	72.8
20	76	532	3.8	65.5
26	76	608	2.9	87.8

Comments:


Base DCP vs Station
I-69 44044-18804A WB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
666.5
667
667.5
668
668.5
669
669.5
670
670.5
671
671.5
Station (ft)


Subbase DCP vs Station
I-69 44044-18804A WB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
666.5
667
667.5
668
668.5
669
669.5
670
670.5
671
671.5
Station (ft)

DCP DATA

Control Section: 25132-06582
Direction: Southbound
Date Tested: 6/26/97

Core # M1
Station # 660+19

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	30	30	10	22.2
3	15	45	5	48.1
3	15	60	5	48.1
3	15	75	5	48.1
3	10	85	3	75.8
10	40	125	4	61.8
10	45	170	5	54.2
10	45	215	5	54.2
10	35	250	4	71.8
10	50	300	5	48.1
10	50	350	5	48.1
10	75	425	8	30.6

Comments: Refusal at 482 mm depth
Core 225 mm

Core # M2
Station # 659+19

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	35	35	12	18.6
3	25	60	8	27.2
3	20	80	7	34.9
3	15	95	5	48.1
3	20	115	7	34.9
10	45	160	5	54.2
10	45	205	5	54.2
10	40	245	4	61.8
10	50	295	5	48.1
10	50	345	5	48.1
10	55	400	6	43.3

Comments: Core 229 mm

Core # M3
Station # 657+20

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	35	35	12	18.6
3	25	60	8	27.2
3	20	80	7	34.9
3	25	105	8	27.2
3	25	130	8	27.2
3	20	150	7	34.9
10	60	210	6	39.3
10	60	270	6	39.3
10	65	335	7	35.9
10	55	390	6	43.3

Comments: Base 95.25 mm No donut
Subbase starts @ 1016 mm
Core 229 mm

Core # M4
Station # 655+66

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	20	20	7	34.9
3	20	40	7	34.9
3	20	60	7	34.9
3	10	70	3	75.8
3	20	90	7	34.9
10	60	150	6	39.3
10	40	190	4	61.8
10	50	240	5	48.1
10	50	290	5	48.1
10	40	330	4	61.8

Comments: Refusal at 787mm depth Core 241 mm
Base 102 mm
Subgrade starts @ 737 mm

Core # M5
Station # 653+71

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	36	36	12	18.1
3	29	65	10	23.0
3	24	89	8	28.4
3	26	115	9	26.0
3	20	135	7	34.9
10	80	215	8	28.4
10	78	293	8	29.3
10	82	375	8	27.7
10	73	448	7	31.5

Comments: Base 102 mm
Subgrade starts @ 610 mm
Core 229 mm

Core # M6
Station # 652+74

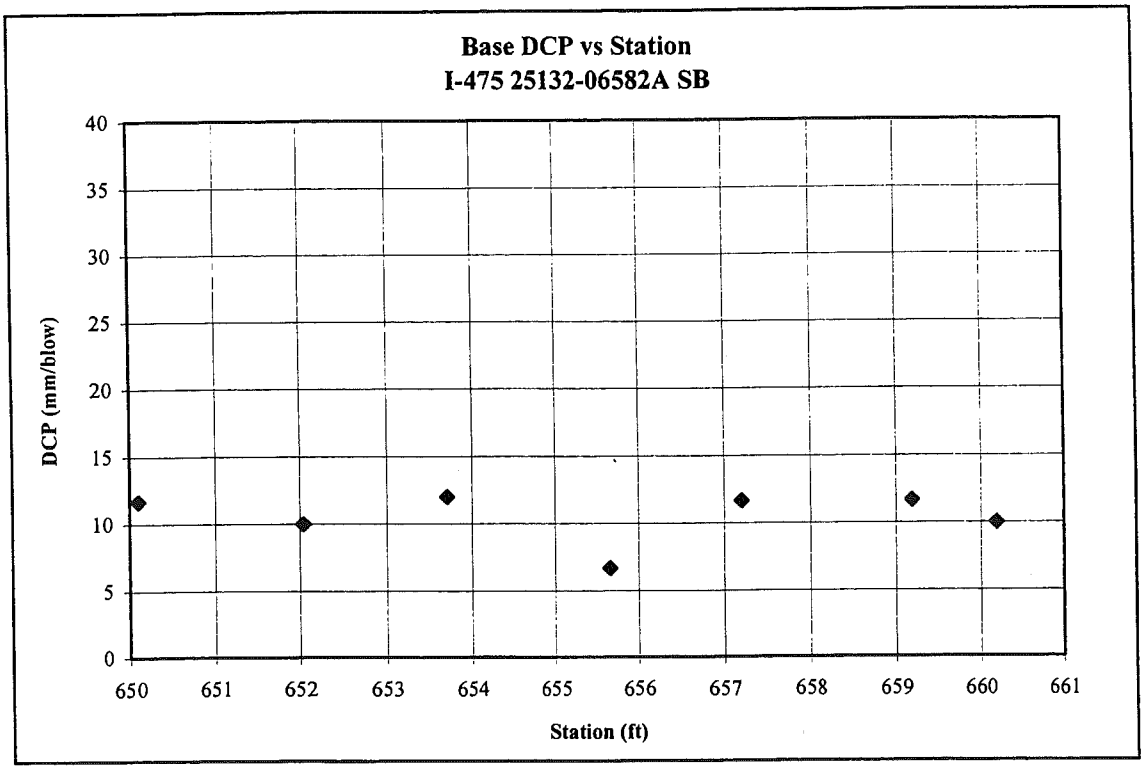
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	30	30	10	22.2
3	30	60	10	22.2
3	15	75	5	48.1
3	15	90	5	48.1
3	25	115	8	27.2
3	15	130	5	48.1
3	15	145	5	48.1
10	60	205	6	39.3
10	45	250	5	54.2
10	55	305	6	43.3
10	60	365	6	39.3

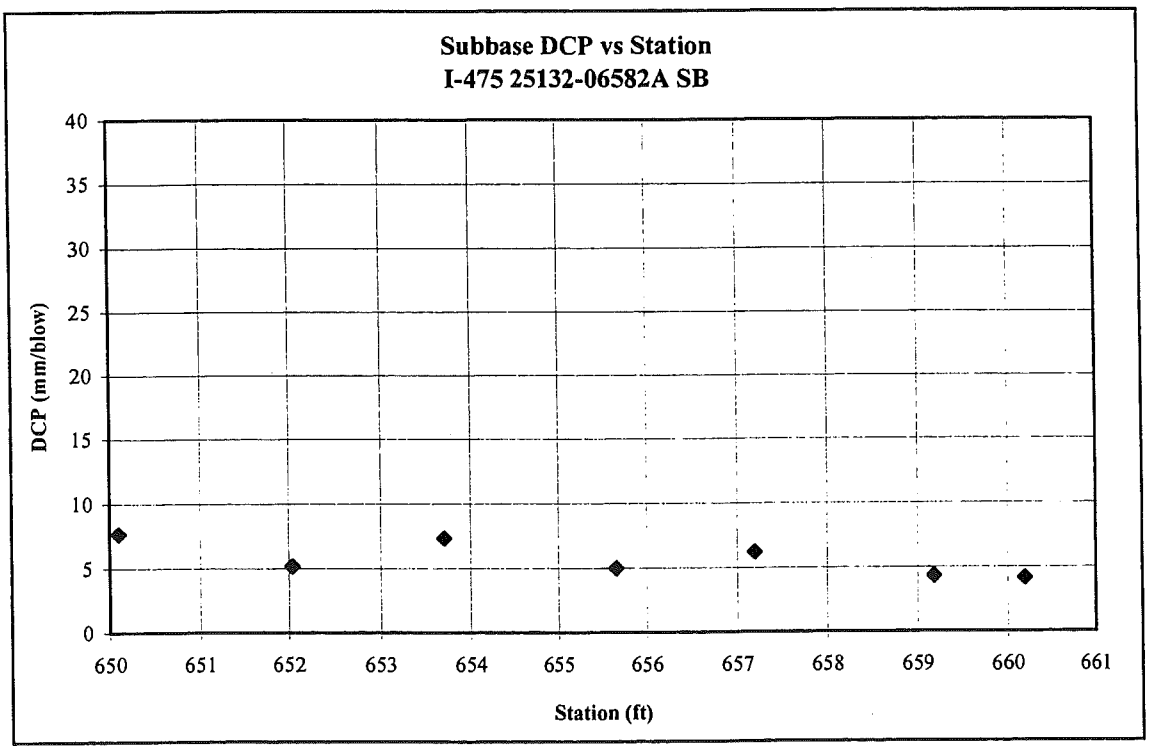
Comments: No Donut
Core 248 mm

Core # M7
Station # 650+10

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	35	35	12	18.6
3	25	60	8	27.2
3	30	90	10	22.2
3	25	115	8	27.2
3	25	140	8	27.2
10	70	210	7	33.0
10	65	275	7	35.9
10	65	340	7	35.9
10	60	400	6	39.3

Comments: Base 102 mm, 686 mm to subgrade
Core 254 mm


Base DCP vs Station
I-475 25132-06582A SB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
650
651
652
653
654
655
656
657
658
659
660
661
Station (ft)


Subbase DCP vs Station
I-475 25132-06582A SB
DCP (mm/blow)
40
35
30
25
20
15
10
5
0
650
651
652
653
654
655
656
657
658
659
660
661
Station (ft)

DCP DATA

Control Section: 47065-28215A
Direction: Eastbound
Date Tested: 7/31/97

Core # C1
Station # 650+02

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	45	45	15	14.1
3	25	70	8	27.2
3	20	90	7	34.9
3	10	100	3	75.8
10	40	140	4	61.8
10	40	180	4	61.8
10	50	230	5	48.1
10	45	275	5	54.2

Comments: Base 102 mm, 711 mm to subgrade
Core 267 mm

Core # C2
Station # 670+00

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	35	35	12	18.6
3	20	55	7	34.9
3	20	75	7	34.9
3	15	90	5	48.1
10	40	130	4	61.8
10	40	170	4	61.8
10	40	210	4	61.8
10	40	250	4	61.8

Comments: Base 102 mm, 864 mm to subgrade
Core 279 mm

Core # C4
Station # 720+00

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	70	70	23	8.6
3	35	105	12	18.6
3	20	125	7	34.9
3	15	140	5	48.1
10	50	190	5	48.1
10	50	240	5	48.1
10	45	285	5	54.2
10	50	335	5	48.1

Comments: Base 102 mm
Subgrade starts at 813 mm
Core 254 mm

Core # C5
Station # I-96 BL

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	45	45	15	14.1
3	20	65	7	34.9
3	25	90	8	27.2
3	20	110	7	34.9
10	50	160	5	48.1
10	45	205	5	54.2
10	45	250	5	54.2
10	45	295	5	54.2

Comments: Base 102 mm
Core 279 mm

Core # C6
Station # 788+24

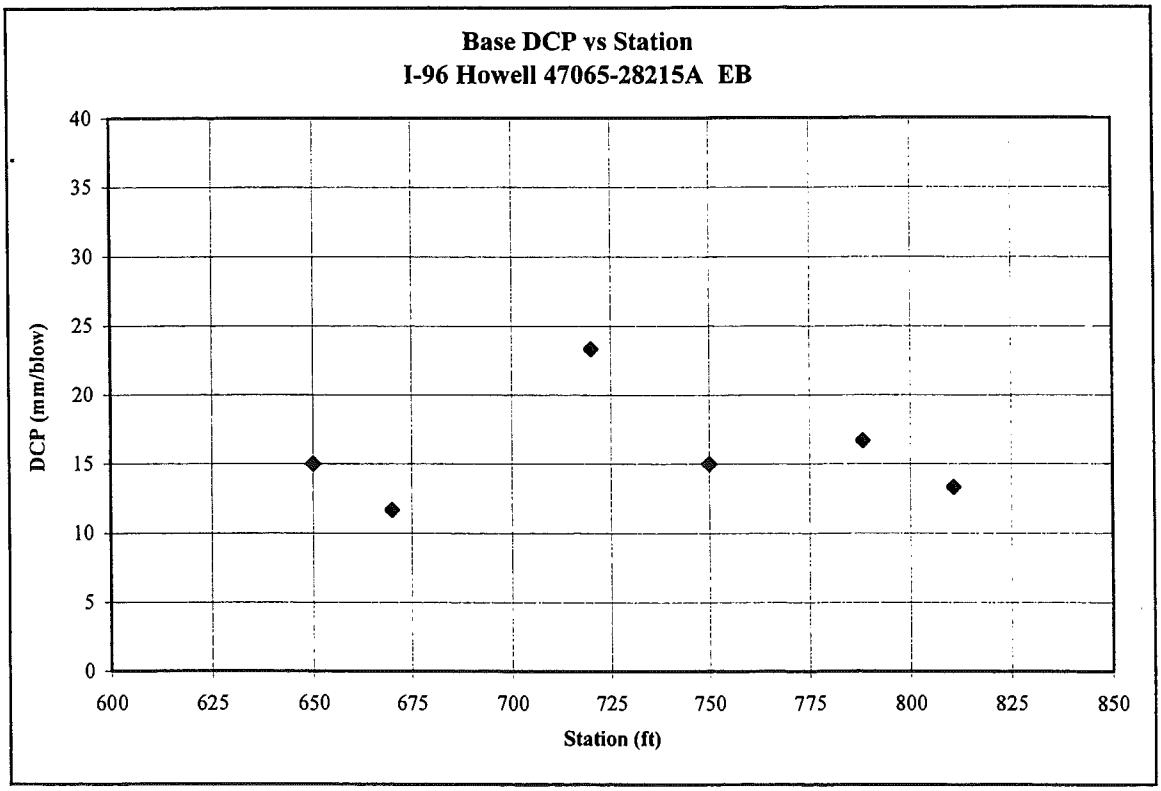
DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	50	50	17	12.5
3	25	75	8	27.2
3	20	95	7	34.9
3	10	105	3	75.8
10	40	145	4	61.8
10	50	195	5	48.1
10	50	245	5	48.1
10	40	285	4	61.8

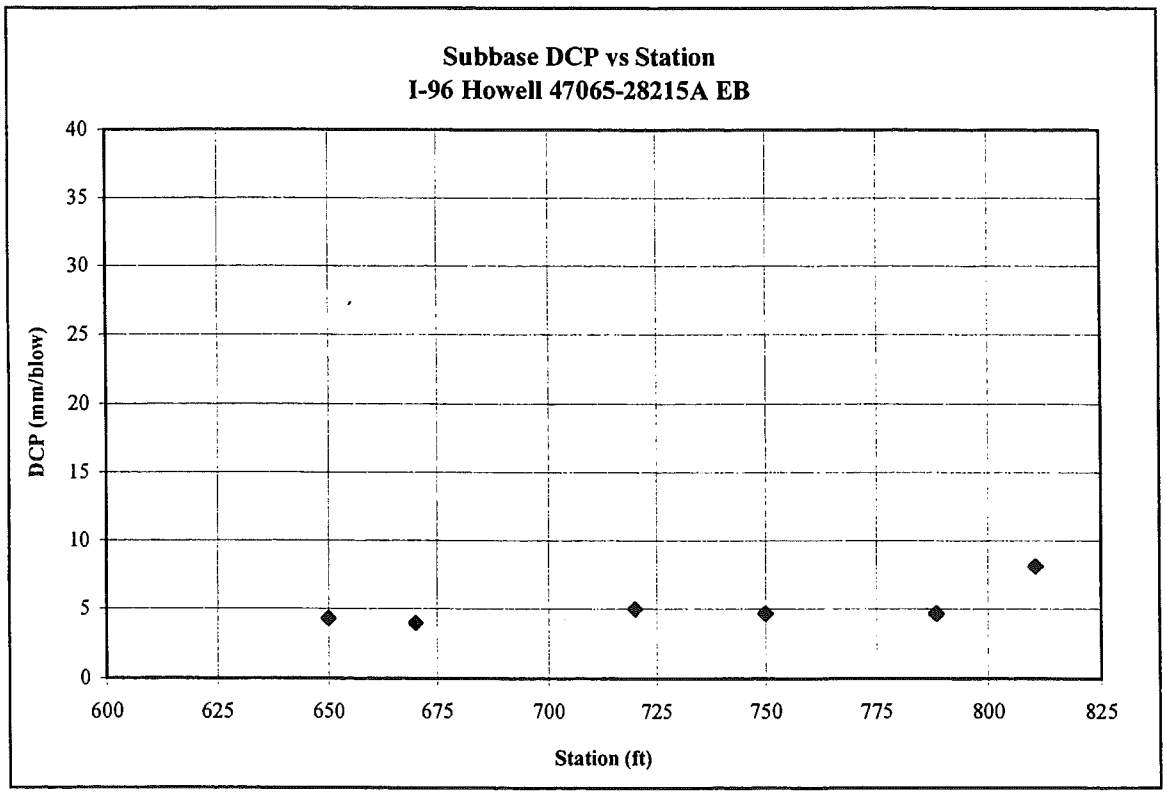
Comments: Base 102 mm
Core 279 mm

Core # C7
Station # 810+63

DCP Blows	Distance (mm)	Depth (mm)	mm/blow	CBR%
3	40	40	13	16.0
3	30	70	10	22.2
3	30	100	10	22.2
3	25	125	8	27.2
10	85	210	9	26.6
10	75	285	8	30.6
10	70	355	7	33.0
10	55	410	6	43.3

Comments:


Base DCP vs Station
I-96 Howell 47065-28215A EB
DCP (mm/blow)
0
5
10
15
20
25
30
35
40
600
625
650
675
700
725
750
775
800
825
850
Station (ft)


Subbase DCP vs Station
I-96 Howell 47065-28215A EB
DCP (mm/blow)
0
5
10
15
20
25
30
35
40
600
625
650
675
700
725
750
775
800
825
Station (ft)