



# STATISTICAL ANALYSIS OF DCP DATA TO EVALUATE RESILIENT MODULUS OF RECLAIMED STABILIZED BASE

MULTIPLE LOCATIONS, VERMONT

Jacob Wimett, P.E., Associate  
Mangtao Du, P.E. Principal  
GEODesign, Inc.

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Research Project  
Reporting on Project VTRC 22-01

Final Report 2022-03

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<b>16. Abstract</b> The purpose of this study is to determine through statistical analysis if the dynamic cone penetrometer (DCP) can be used as a reliable method of quality assurance to evaluate in-situ resilient modulus ( $M_R$ ) of a reclaimed stabilized base (RSB) in full depth reclamation (FDR) projects. DCP data collected by contractors from the RSB layer at the time of placement and compaction from five separate full-depth reclamation projects with RSBs was provided for this analysis. For comparison to the DCP data, $M_R$ determined from falling weight deflectometer (FWD) testing was obtained on three of these projects about 10 to 18 months following construction.			
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GEODesign, Inc.  
85 Granite Shed Lane,  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

**FINAL REPORT  
STATISTICAL ANALYSIS OF DCP DATA TO EVALUATE  
RESILIENT MODULUS OF RECLAIMED STABILIZED BASE  
MULTIPLE LOCATIONS, VT**

**Prepared for:**

Callie Ewald/Stephen Madden  
Geotechnical Engineers  
Vermont Agency of Transportation

Dr. Emily Parkany, P.E.  
Research Manager  
Vermont Agency of Transportation

**Prepared By:**

GEODesign, Inc.  
85 Granite Shed Lane, Unit #1  
Montpelier, VT 05620

File No. 750-013  
September 28, 2022



GEODesign, Inc.  
85 Granite Shed Lane,  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

September 28, 2022  
File No. 750-013

Dr. Emily Parkany, P.E.  
Vermont Agency of Transportation  
Research Manager  
219 North Main St.  
Barre, VT 05641

Cc: Callie Ewald, P.E.  
Tanya Miller  
Stephen Madden

Re: Statistical Analysis of DCP Data to Evaluate Resilient Modulus of a Reclaimed Stabilized  
Base  
Multiple Locations, VT

Dear Dr. Parkany,

Enclosed is our report for the statistical analysis of dynamic cone penetrometer data provided by VTrans for multiple reclaimed stabilized base projects across Vermont. As has been previously discussed at earlier team meetings, we anticipate this work may continue with a future project with tighter constraints with regards to collection of both dynamic cone penetrometer data, as well as comparative falling weight deflectometer and laboratory determined resilient modulus data. Recommendations for carrying out a next phase of this project are included herein. GEODesign is available to assist with this next phase if requested.

Sincerely,  
GEODesign, Inc.

A handwritten signature in black ink, appearing to read "JWimett".

Jacob Wimett, P.E.  
Associate

A handwritten signature in blue ink, appearing to read "Mangtao Du".

Mangtao (Monty) Du, P.E. (CT, NY)  
Principal / Reviewer

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## 1.0 SUMMARY

The purpose of this study is to determine through statistical analysis if the dynamic cone penetrometer (DCP) can be used as a reliable method of quality assurance to evaluate in-situ resilient modulus ( $M_R$ ) of a reclaimed stabilized base (RSB) in full depth reclamation (FDR) projects. DCP data collected by contractors from the RSB layer at the time of placement and compaction from five separate full-depth reclamation projects with RSBs was provided for this analysis. For comparison to the DCP data,  $M_R$  determined from falling weight deflectometer (FWD) testing was obtained on three of these projects about 10 to 18 months following construction.

While the  $M_R$  values determined by DCP were relatively repeatable within a given project, statistical analysis on the provided data did not determine a meaningful correlation between the  $M_R$  values determined by DCP and those determined by FWD. However, it is our opinion that this is likely due to data collection between the two methods having taken place at different times, conditions, and locations. The  $M_R$  value of a stabilized material changes with curing time, moisture conditions, location specific subgrade and section thickness, and confinement of the layer, among other factors. Thus, it is unsurprising that  $M_R$  values determined with the DCP within hours or days of placement and compaction of the RSB layer and prior to paving did not correlate well with  $M_R$  values determined by FWD testing performed 10 to 18 months after construction and at different locations than the DCP tests. Furthermore,  $M_R$  values obtained from correlation with FWD data typically require verification with laboratory determined  $M_R$  values through a correction factor, for use in the AASHTO structural number method of pavement design. This correction factor is variable and recommended to be developed based on site specific conditions. No laboratory testing was done as part of this study to develop the associated correction factor for FWD.

Our recommendations are to conduct further data collection and evaluation on a future full-depth reclamation project with a reclaimed stabilized base to collect comparative data in a more controlled manner and at the same times, locations, and conditions. This further data collection will be beneficial in determining whether the DCP can be used as a reliable tool to evaluate the  $M_R$  of an RSB.

## 2.0 DATA COLLECTION

### 2.1 Information from Other State DOTs

Members of Departments of Transportations (DOTs) from Indiana, Missouri, Texas, Pennsylvania, Minnesota, and Ohio were asked about their use of the DCP in current or past projects to see what information relevant to this study may be readily available. These DOTs were chosen based on available published literature that implied these DOTs had familiarity in using the DCP. In particular, the following questions were asked:



1. Have they performed any lab or field testing on  $M_R$  of a stabilized base?
2. Have they performed any DCP testing on a stabilized base?
3. Have they looked into any direct correlation between DCP and  $M_R$  for a stabilized base?
4. Can they share any construction specifications that include DCP (data collection or acceptance testing or related to performance)?

Responses were received from all states queried except Texas. While responses did not provide any specific information relevant to DCP testing of RSBs, they provided some relevant information such as how other DOTs use the DCP and values assumed for RSB materials. Responses are summarized below:

#### Indiana DOT (INDOT)

- INDOT Design Manual uses 80,000 psi for  $M_R$  of an aggregate drainage layer.
- FDR  $M_R$  values for INDOT typically range from 60,000 to 80,000 psi. Unclear if this applies to stabilized material. Geotechnical Engineer determines the value.
- DCP testing is only used for untreated soil embankment construction. No information on testing of RSBs.

#### Minnesota DOT (MnDOT)

- Unaware of research performed on using DCP for design or acceptance of stabilized FDR.
- MnDOT does specify that material below the RSB meet a DCP Penetration Index of 10 mm/blow. Provided links to spreadsheets used that depict using 2 blows as seating blows.
- Provided links to several studies, including one which was a compilation of Appendices from a report on the use of fly ash stabilization for reconstruction of Bituminous Roads. This included a study in which DCP was used as a field tool in evaluating the  $M_R$  of the stabilized material. This study used different correlation between DCP Penetration Index and “Modulus” attributed to Davich et al. 2006 that is reportedly used by MnDOT ( $E=10^{3.05-(1.06\log(DPI))}$ ). We checked this correlation vs. those used in this study and found them to provide a slightly lower  $M_R$  (generally on the order of 80% to 95% within the range of typical DCP Penetration Index values observed in this study).
- Provided a link to a study on fly-ash stabilization for low volume roads. In this study the DCP was used to test the  $M_R$  of a fly-ash stabilized surface after approximately 7 days of curing and prior to paving. The effect of curing was evident. This study also noted that the CBR to  $M_R$  correlation being used in our study tended over-estimated the  $M_R$  for fly-ash stabilized materials.

#### Missouri DOT (MODOT)

- DCP testing only performed on un-stabilized materials at MoDOT. Not aware of any laboratory  $M_R$  testing having been done on stabilized base material.

#### Pennsylvania DOT (PennDOT)

- PennDOT has not performed DCP testing on stabilized bases and does not have  $M_R$  testing for stabilized bases. They have not investigated a correlation between DCP and  $M_R$ .

#### Ohio DOT (ODOT)

- ODOT has not done lab or field-based  $M_R$  testing on RSBs.
- ODOT has not done DCP testing on the granular base layer of their pavement (only subgrade).
- ODOT uses the USACE formula to correlate DCP to California bearing ratio (CBR) for subgrade which is then correlated to  $M_R$ .
- ODOT uses DCP exclusively in design. It is not used in construction.

## **2.2 DCP Data**

In order to collect the data for the statistical analysis of this study, VTrans issued a specification outlining a procedure for contractors to collect DCP data on reclaimed stabilized base materials during construction. A copy of this specification is included in Appendix A. Key data collection requirements of this specification include:

- Testing is to be done in accordance with ASTM D6951, “Standard Test Methods for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications”
- Testing is to be conducted every 1,000 linear feet and within the limits of the RSB layer.
- Each testing location will receive four tests. Two tests in each directional width of roadway, with tests performed 4-feet and 10-feet from the road centerline in each direction.
- Testing is to be conducted following the completion of the reclaimed stabilized base layer and prior to the installation of subsequent surface courses.

Raw DCP data collected by different Contractors on the RSB of five recently completed projects was provided to GEODesign for evaluation.

The projects for which we received raw DCP data from VTrans are depicted in Table 1 below. Raw DCP data as provided to GEODesign is attached to the electronic copy of this report (Appendix B):

**Table 1: Raw DCP Data Provided By VTrans**

<b>Project</b>	<b>Location</b>	<b>Testing Dates</b>	<b>Stabilization Method</b>	<b># of DCP Data Sets Provided</b>	<b>Data Format</b>
<b>Stowe-Morristown STP PS19(3)</b>	VT Route 100	July to September, 2020	Asphalt Emulsion	114	<ul style="list-style-type: none"> <li>• <b>Cell Phone Screen Shots</b></li> <li>• <b>Excel Tabular Format</b></li> </ul>
<b>Richford-Jay STP 2914(1)</b>	VT Route 105	July, 2021	Asphalt Emulsion	313	<ul style="list-style-type: none"> <li>• <b>Word Document Graphs</b></li> </ul>
<b>Cavendish-Weathersfield STP 0146(14)</b>	VT Route 131	June, 2021	Cement	105	<ul style="list-style-type: none"> <li>• <b>Cell Phone Screen Shots</b> <ul style="list-style-type: none"> <li>• <b>Word Document Graphs</b></li> </ul> </li> </ul>
<b>Essex-Richmond STP 2931(1)</b>	VT Route 117	August, 2018	Asphalt Emulsion	180	<ul style="list-style-type: none"> <li>• <b>Microsoft Excel Tabular Format</b></li> </ul>
<b>Johnson-Morristown STP 2919(1)</b>	VT Routes 15, 100, and 15A	August-September, 2021	Asphalt Emulsion	109	<ul style="list-style-type: none"> <li>• <b>PDF File Tabular Format</b></li> </ul>

Particular notes on unusual data sets from each project are as follows:

**Stowe-Morristown**

- One data set (15+00 4'L) was significantly softer than the others (computed  $M_R$  was only 7.5% of the Stowe-Morristown RT average). It appears as if the test was performed through a material that was not a placed and compacted RSB.

**Richford-Jay**

- 2 data sets (147+50 2'R and 423+10 2'R) were observed significantly softer than the others (computed  $M_R$  was only 17% and 32% of the Richford-Jay RT average). It appears as if the 2 data sets were performed through a material that was not a placed and compacted RSB.
- Files for 8 data sets locations (200+00 6'L, 206+00 6'L, 230+00 2'L, 230+00 8'L, 302+40 4'R, 302+40 8'R, 308+60 2'R, and 308+60 8'R) were given with no data provided.
- 1 data set (219+10 4'L) was continued after refusal (less than 2mm of movement for 5 blows). This test should have been terminated.

**Cavendish-Weathersfield**

- One data set (35+00 7'R) was reported to be located under the same date and location as a separate data set but had different values.

- One data set (48+51 3'L) was significantly softer than the others, (computed  $M_R$  was only 6.4% of the Stowe-Morristown RT average) It appears as if the entire test was performed through a material that was not a placed and compacted RSB.

#### Essex-Richmond

- 72 of the data sets did not contain station or offset information. These sets were not used in analysis that differentiated between traveled lanes.

#### Johnson-Morristown

- Station H142+00 Offsets 10'L and 10'R had identical data sets. It was unclear which was correct so these were not included in our analysis of individual traveled lanes.
- VTrans staff reported that DCP testing was performed using the smaller 4.6 kg hammer. While we have corrected this data using recommended factors, this size DCP hammer is only intended for soft soils and is not appropriate for a stabilized base material. This data is only used for comparisons within the Johnson-Morristown set.

### 2.3 FWD Data

For a comparative analysis, field measurements of  $M_R$  were collected from three of these projects in the Spring of 2022 using an FWD. FWD data collection and reduction was provided by Infrasense of Woburn, MA. A summary of the data collection methods is as follows:

- Ground penetrating radar (GPR) for each project was collected along the centerline of each traveled lane at normal driving speeds in November of 2021. Thicknesses assumed from the GPR were used in the backcalculation of  $M_R$  from the FWD testing.
- FWD testing was performed in May 2022 using a tow behind trailer mounted FWD at approximately 500-foot intervals in each lane of travel. Test intervals were spaced out to 750-feet in the northbound lane of the Richford-Jay project due to incoming inclement weather. FWD test offsets from the centerline were not provided.

The projects for which we received raw FWD data from Infrasense are depicted in Table 2 below. Refer to Appendices C through E for the raw FWD data for each of these projects respectively. A more comprehensive discussion of the FWD data collection is provided in the Infrasense report included in Appendix F:

**Table 2: FWD Data Provided by Infrasense**

<b>Project</b>	<b>Location</b>	<b>Testing Dates</b>	<b>Stabilization Method</b>	<b># of FWD Tests Provided</b>	<b>Approximate Elapsed Time Since RSB Placement</b>
<b>Stowe-Morristown STP PS19(3)</b>	VT Route 100	May 18, 2022	Asphalt Emulsion	162	<b>20-22 Months</b>
<b>Richford-Jay STP 2914(1)</b>	VT Route 105	May 19, 2022	Asphalt Emulsion	135	<b>10 Months</b>
<b>Cavendish-Weathersfield STP 0146(14)</b>	VT Route 131	May 17, 2022	Cement	193	<b>11 Months</b>

### 3.0 DATA REDUCTION TO $M_R$ VALUES

#### 3.1 DCP Data Reduction to $M_R$

DCP testing results were provided in several different formats including Microsoft Excel tabular data, graphs in Microsoft Word format, and photographs of cell phone screens containing data. GEODesign reduced the data into a common tabular format using the following approach:

1. ***The initial blows of each set are discounted.*** This approach helps adjust for lack of surface confinement and is generally considered common practice. For the Johnson-Morristown and Essex-Richmond projects where data was only reported in groups of 5 or 10 blows respectively, the initial group of blows was discounted from our evaluation. For the other three projects, the initial two blows were discounted as seating blows.
2. ***Discrete data points are grouped into “readings” a minimum of 20-mm apart.*** It is recommended practice to maintain 25-mm of travel between measurements to avoid error associated with bouncing on large diameter particles. To meet this criterion, we grouped individual discrete blows from the raw data together into “readings” as needed to provide at least 25-mm of travel per reading. After performing these groupings, for some data sets the last few blows would add up to between 20-mm and 25-mm of travel. Using guidance from the Army Corps of Engineers (which recommends a 20-mm minimum travel between readings be considered), we chose to include these points in our analysis.
3. ***Discount Outliers.*** GEODesign used our engineering judgement and familiarity with performing DCP tests to discount significant outliers from the data sets. These are typically locations where it is inferred that the test punctured through the RSB layer and

into the underlying material, or an obvious deficiency in compaction was noted. This is reasonable as we are looking to judge the repeatability of the DCP in RSB, and it would be improper to consider outliers due to potential test data from non-RSB layers or non-compacted zones as part of this evaluation.

4. **Compute an Average DCP Penetration Index Per Test.** For each of the readings, a DCP Penetration Index is computed using the formula:

$$PI = \text{Penetration in mm} / \# \text{ Blows}$$

The individual penetration indices are then averaged at each test location for the representative penetration index of the RSB layer.

5. **Compute an Average CBR.** The average CBR is then computed from the average DCP Penetration Index using the formula:

$$CBR (\%) = 292 / PI^{1.12}$$

This is a widely used conversion for all soils, with the exception of lean clays, with a CBR less than 10 and fat clays. This correlation is recommended by ASTM D6951.

6. **Correlate an Average  $M_R$ .** The average CBR value is then correlated to  $M_R$  at each test location using the formula:

$$M_R (\text{psi}) = 2555 \times CBR^{0.64}$$

This formula was developed by the Transportation and Road Research Laboratory and is an industry standard correlation between CBR and  $M_R$ . While other correlations between  $M_R$  and CBR have been proposed, and all correlations must be used with an acknowledgement of some degree of uncertainty, this formula has been presented for use by the US Army Corps of Engineers (USACE), the Federal Highway Administration (FHWA), the National Cooperative Highway Research Program (NCHRP), and the American Association of State Highway Transportation Officials (AASHTO).

### 3.2 FWD Data Reduction to $M_R$

Data reduction of the FWD data to  $M_R$  was included as part of the Infrasense FWD testing program. Individual layer modulus values were reported to have been computed using a Modulus version 6.0 software based on layer thicknesses estimated by their GPR survey. Refer to the Infrasense report included in Appendix F for further description of their calculation methods.

### **3.3 Data Reduction for Comparison of $M_R$ Determined by DCP vs. FWD**

For the Stowe-Morristown, Richford-Jay, and Cavendish-Weathersfield projects where we were provided both FWD and DCP data, further data reduction was performed to evaluate their potential correlations. Since DCP and FWD tests were not taken at the same locations, the averages of each were taken over 3000-foot stretches of road to create comparative data points for use in our analysis. The 3,000-foot spacing was chosen as this was the minimum stretch to assure multiple DCP tests per traveled lane were included in each comparative average. Exceptions include Stations A 090+00 to A 120+00, A 120+00 to A 150+00 for the Stowe-Morristown project for which there was only one DCP test in each stretch.

Additionally, the DCP data collected between Stations 061+00 to 296+00 for the Cavendish-Weathersfield project was not provided to GEODesign, and therefore this stretch of road was excluded in this study.

This further data reduction resulted in the following data points for our comparative analysis:

STOWE - MORRISTOWN

Stowe-Morrystown 3000-ft Groupings Left (LT) -  
Southbound

Road Section	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
21000-24000	7.2	23,546	185,150
24000-27000	7.8	22,722	203,183
27000-30000	8.0	21,861	197,683
30000-33000	6.6	25,047	268,283
33000-36000	6.5	25,375	264,317
36000-A03000	6.9	24,191	374,800
A03000-A06000	9.7	19,089	203,450
A06000-A09000	9.5	19,352	246,667
A09000-A12000	9.4	19,470	227,633
A12000-A15000	5.9	27,083	211,300
A15000-A18000	6.8	24,728	143,333
A18000-A21000	7.3	23,292	178,200
A21000-A24000	6.4	25,708	138,400
Average	7.5	23,189	218,646
Standard Deviation	1.3	2,592	61,666

Stowe-Morrystown 3000-ft Groupings Right (RT) -  
Northbound

Road Section	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
21000-24000	8.0	22,017	182,150
24000-27000	6.9	24,578	135,857
27000-30000	7.2	23,585	131,740
30000-33000	7.6	22,953	235,200
33000-36000	7.1	24,198	264,317
36000-A03000	6.5	25,270	316,886
A03000-A06000	8.4	21,053	266,933
A06000-A09000	8.7	20,747	216,400
A09000-A12000	6.9	24,207	227,017
A12000-A15000			140,300
A15000-A18000	8.2	21,786	71,983
A18000-A21000	7.8	22,924	161,540
A21000-A24000	6.5	25,263	213,600
Average	7.5	23,215	197,225
Standard Deviation	0.7	1,560	67,778



RICHFORD - JAY

Richford-Jay 3000-ft Groupings Westbound

Road Section	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
13000-16000	6.3	26,083	133,725
16000-19000	6.6	24,959	210,300
19000-22000	7.9	22,372	109,067
22000-25000	8.1	21,589	65,925
25000-28000	9.1	20,162	106,000
28000-31000	6.2	26,215	92,300
31000-34000	6.8	24,668	138,275
34000-37000	6.7	24,876	108,240
37000-40000	8.4	21,120	220,700
40000-43000	7.0	24,505	146,180
43000-46000	7.0	24,852	116,925
46000-J00200	7.1	24,057	112,475
J00200-J03200	7.7	22,413	140,500
Average	7.3	23,682	130,816
Standard Deviation	0.9	1,938	43,410

Richford-Jay 3000-ft Groupings  
Eastbound

Road Section	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
13000-16000	6.1	26,754	51,480
16000-19000	7.5	22,825	82,683
19000-22000	6.9	24,377	44,567
22000-25000	6.8	24,547	39,320
25000-28000	7.5	22,794	106,000
28000-31000	6.2	26,300	59,350
31000-34000	7.0	24,048	22,767
34000-37000	9.0	19,974	17,133
37000-40000	7.7	22,557	23,300
40000-43000	8.3	21,330	27,800
43000-46000	7.3	23,273	20,450
46000-J00200	7.6	22,708	20,800
J00200-J03200	7.4	23,291	31,875
Average	7.3	23,444	42,117
Standard Deviation	0.8	1,832	26,944

CAVENDISH-WEATHERSFIELD

**Note - No DCP Data Included STA. 061+00 to 296+00**

Cavendish-Weathersfield 3000-ft Groupings -  
 Westbound

	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
29600 - 32600	7.8	23,153	1,453,150
32600 - 35600	7.5	23,150	1,790,600
35600 - 38600	6.8	25,056	1,165,917
38600 - 41600	7.9	22,139	952,367
41600 - W1200	7.5	23,244	1,563,833
W1200 - W3200	9.1	19,953	1,243,925
W3200 - END	5.8	27,599	1,252,557
AVG	7.5	23,470	1,346,050
STDEV	1.0	2,379	277,828

Cavendish-Weathersfield 3000-ft Groupings -  
 Eastbound

	DCP PI	DCP M <sub>R</sub>	FWD M <sub>R</sub>
29600 - 32600	6.5	25,614	1,206,667
32600 - 35600	6.3	25,924	1,053,033
35600 - 38600	6.4	25,759	1,182,533
38600 - 41600	7.5	23,262	1,532,450
41600 - W1200	8.5	21,653	1,267,650
W1200 - W3200	9.4	20,136	1,207,667
W3200 - END	7.0	24,549	1,432,863
avg	7.4	23,842	1,268,980
stdev	1.2	2,255	162,288

## **4.0 STATISTICAL ANALYSIS**

### **4.1 Evaluation of Repeatability**

To evaluate the repeatability of the DCP vs. the FWD we evaluated the coefficient of variation within the computed  $M_R$  values for each traveled lane at each site. While the RSB is a processed-in-situ material, we do expect inherent variability within the product. To reduce the effect of outliers due to variability, we also evaluated a subset of data limited to tests within 1.5 standard deviation from the mean. For each set of data,  $M_R$  computed by DCP exhibited less variation than  $M_R$  computed by FWD as depicted in Table 3 below.

**Table 3: Mean, Standard Deviation, Coefficient of Variance, and Sample Size for M<sub>R</sub> Testing Methods**

PROJECT	DIRECTION	Length of Project	ALL DATA DCP M <sub>R</sub> RSB (psi)	OUTLIERS REMOVED <sup>2</sup> DCP M <sub>R</sub> RSB (psi)	ALL DATA FWD M <sub>R</sub> RSB (psi)	OUTLIERS REMOVED <sup>2</sup> FWD M <sub>R</sub> RSB (psi)
Cavendish-Weathersfield <sup>1</sup>	Eastbound	8.953 Miles (47,275 Ft.)	Mean = 23541 SDev. = 3638 <b>COV = 16%</b> Sample Size = 44	Mean = 24572 Sdev. = 2731 <b>COV = 11%</b> Sample Size = 38	Mean = 959901 SDev. = 732904 <b>COV = 76%</b> Sample Size = 95	Mean = 959901 Sdev. = 732904 <b>COV = 76%</b> Sample Size = 95
	Westbound		Mean = 22516 SDev. = 4267 <b>COV = 19%</b> Sample Size = 58	Mean = 23217 SDev. = 3518 <b>COV = 15%</b> Sample Size = 54	Mean = 959901 SDev. = 732904 <b>COV = 76%</b> Sample Size = 96	Mean = 959901 SDev. = 732904 <b>COV = 76%</b> Sample Size = 96
Richford-Jay	Eastbound	7.438 Miles (39,274 Ft.)	Mean = 23981 SDev. = 3598 <b>COV = 15%</b> Sample Size = 152	Mean = 24276 SDev. = 3352 <b>COV = 14%</b> Sample Size = 146	Mean = 36153 SDev. = 36833 <b>COV = 102%</b> Sample Size = 78	Mean = 25906 SDev. = 17520 <b>COV = 68%</b> Sample Size = 71
	Westbound		Mean = 23935 SDev. = 4047 <b>COV = 17%</b> Sample Size = 150	Mean = 24332 SDev. = 3708 <b>COV = 15%</b> Sample Size = 143	Mean = 128857 SDev. = 78841 <b>COV = 61%</b> Sample Size = 55	Mean = 159652 SDev. = 35868 <b>COV = 22%</b> Sample Size = 26
Stowe-Morristown	Northbound	7.550 Miles (39,861 Ft.)	Mean = 23457 SDev. = 3562 <b>COV = 15%</b> Sample Size = 56	Mean = 23803 SDev. = 2983 <b>COV = 13%</b> Sample Size = 53	Mean = 193356 SDev. = 141926 <b>COV = 73%</b> Sample Size = 81	Mean = 155450 SDev. = 104013 <b>COV = 67%</b> Sample Size = 70
	Southbound		Mean = 22290 SDev. = 4586 <b>COV = 21%</b> Sample Size = 54	Mean = 23413 SDev. = 3021 <b>COV = 13%</b> Sample Size = 49	Mean = 217699 SDev. = 115393 <b>COV = 53%</b> Sample Size = 79	Mean = 201431 SDev. = 98571 <b>COV = 49%</b> Sample Size = 74

PROJECT	DIRECTION	Length of Project	ALL DATA DCP M <sub>R</sub> RSB (psi)	OUTLIERS REMOVED <sup>2</sup> DCP M <sub>R</sub> RSB (psi)	ALL DATA FWD M <sub>R</sub> RSB (psi)	OUTLIERS REMOVED <sup>2</sup> FWD M <sub>R</sub> RSB (psi)
Essex-Richmond	* Due to a large amount of data not including station and offset, data for this project was not split between traveled lanes.	6.77 Miles (35,744 Ft.)	Mean = 30779 SDev. = 8680 <b>COV = 28.2%</b> Sample Size = 180	Mean = 30981 SDev. = 6760 <b>COV = 21.8%</b> Sample Size = 168	Data not available	Data not available
Johnson – Morristown	Eastbound	11.515 Miles (60,810 Ft.)	Mean = 27447 SDev. = 9987 <b>COV = 36%</b> Sample Size = 54	Mean = 27963 SDev. = 7282 <b>COV = 26%</b> Sample Size = 52	Data not available	Data not available
	Westbound		Mean = 33647 SDev. = 8298 <b>COV = 25%</b> Sample Size = 53	Mean = 34775 SDev. = 7097 <b>COV = 20%</b> Sample Size = 50	Data not available	Data not available

<sup>1</sup> FWD based M<sub>R</sub> values from Cavendish-Weathersfield are significantly higher, possibly due to the use of cement as the stabilizing agent. All other projects were stabilized using emulsified asphalt.

<sup>2</sup> The data within these columns is a subset including only data points within 1.5 standard deviations of the mean to limit the influence of outliers.

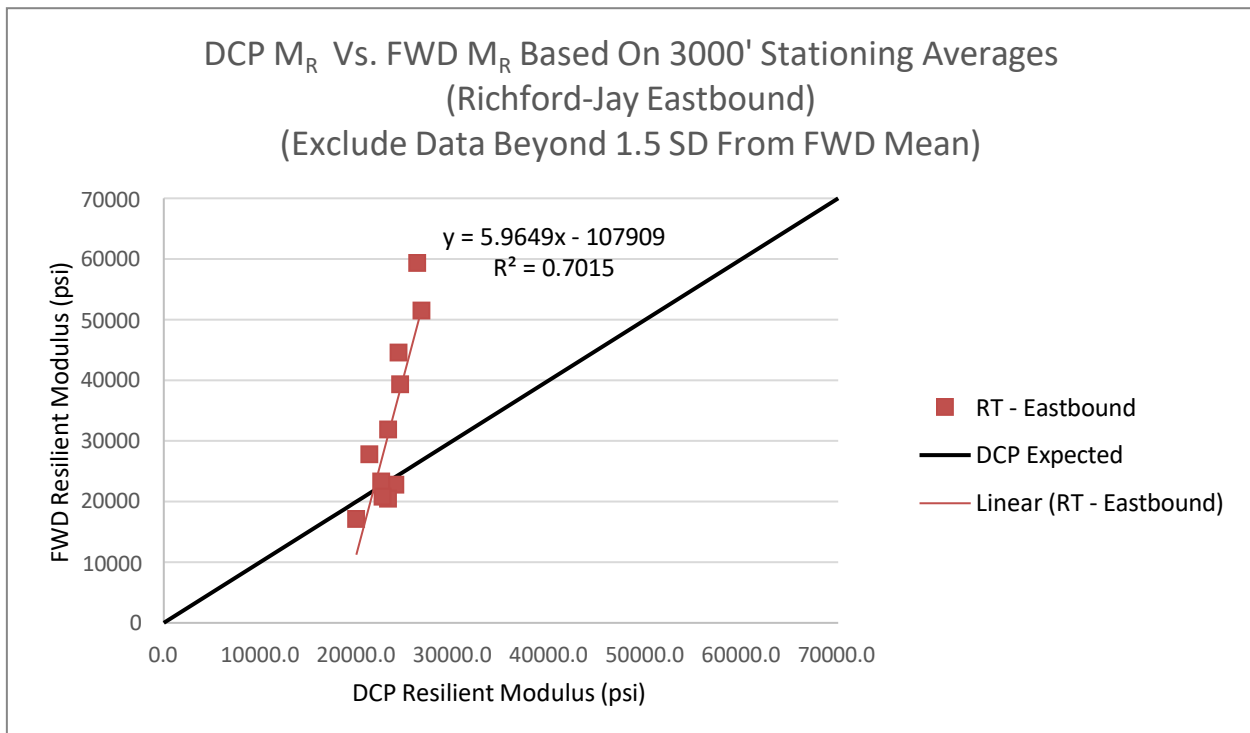
## 4.2 Comparative Analysis of $M_R$ Determined by FWD vs. DCP

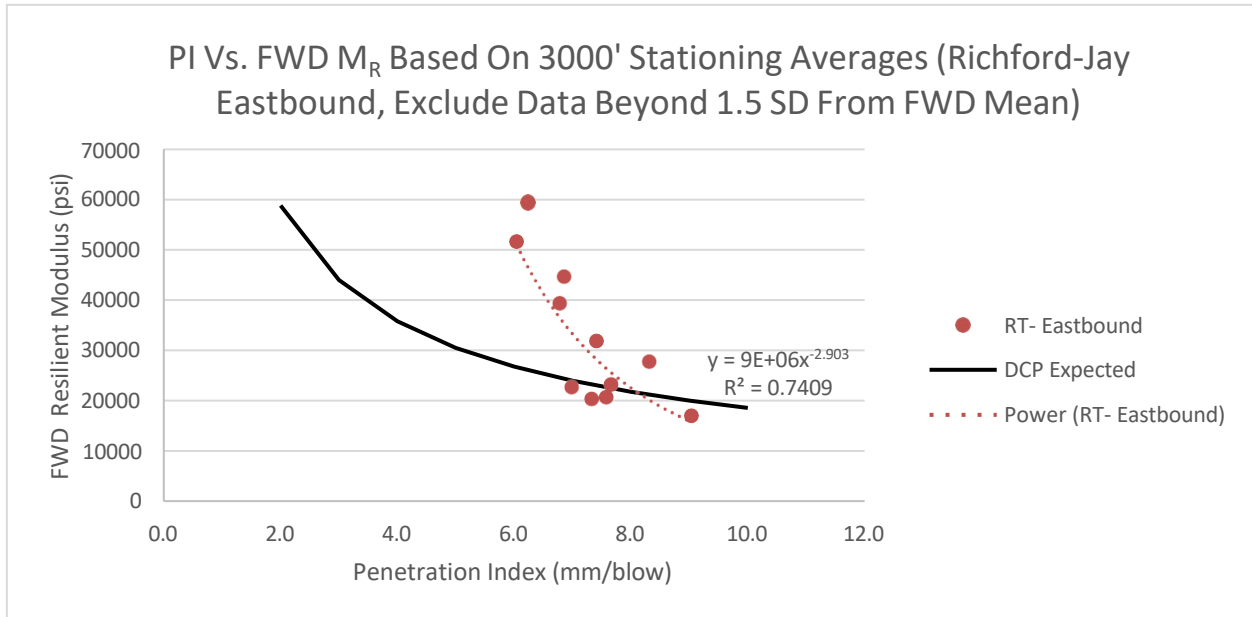
In general, no meaningful correlation was observed between the FWD and DCP determined  $M_R$  values for the 3,000-foot station averages at the three projects (Stowe-Morristown, Richford-Jay, and Cavendish-Weathersfield) for which we were provided both FWD and DCP data.

For each of these projects, the FWD data are plotted against DCP data, together with regression curves representing best fit correlation curves using the least square method.

The  $R^2$  value presented in the plots represents the coefficient of determination and is a statistical measure of how close the data fit to the least square line. In general, the closer the  $R^2$  value is to 1, the better the model fits the data, and the more likely it is that there is a true correlation between variables. Plots and tabular data used for the comparative analysis are presented below at the end of this section.

The one exception appears to be the Eastbound Lane for the Richford-Jay project where the FWD determined  $M_R$  was significantly lower than other areas tested, but much closer to the DCP determined  $M_R$ . There appears to be a meaningful correlation between the two data sets at this location. This strong correlation held true both for direct  $M_R$  comparison as well as comparing DCP Penetration Index directly to the FWD modulus (a power function is used for this correlation based on the DCP to  $M_R$  conversion formula). This appears to be an exception of all the data sets.





To check the strength of the correlation between the FWD  $M_R$  and DCP  $M_R$  for this particular data set, we computed the Pearson Correlation Coefficient ( $r$ ). The Pearson Correlation Coefficient is a commonly used statistic to measure the strength of correlation between two data sets, and is computed by:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

where  $x$  and  $y$  are the individual values of each data set, and  $\bar{x}$  and  $\bar{y}$  are the averages of each set.

For the DCP  $M_R$  and FWD  $M_R$  data sets from the Eastbound Lane of the Richford-Jay project the computed Pearson Correlation Coefficient's were as follows:

Based on DCP  $M_R$  and FWD  $M_R$

- All data:  $r = 0.26$
- With outliers excluded:  $r = 0.84$

Based on DCP PI and FWD  $M_R$

- All data:  $r = -0.28$
- With outliers excluded:  $r = -0.79$

Commonly accepted guidelines for interpreting the Pearson Correlation Coefficient are as follows:

Strength of Association	Coefficient, $r$	
	Positive	Negative
Small	.1 to .3	-0.1 to -0.3
Medium	.3 to .5	-0.3 to -0.5
Large	.5 to 1.0	-0.5 to -1.0

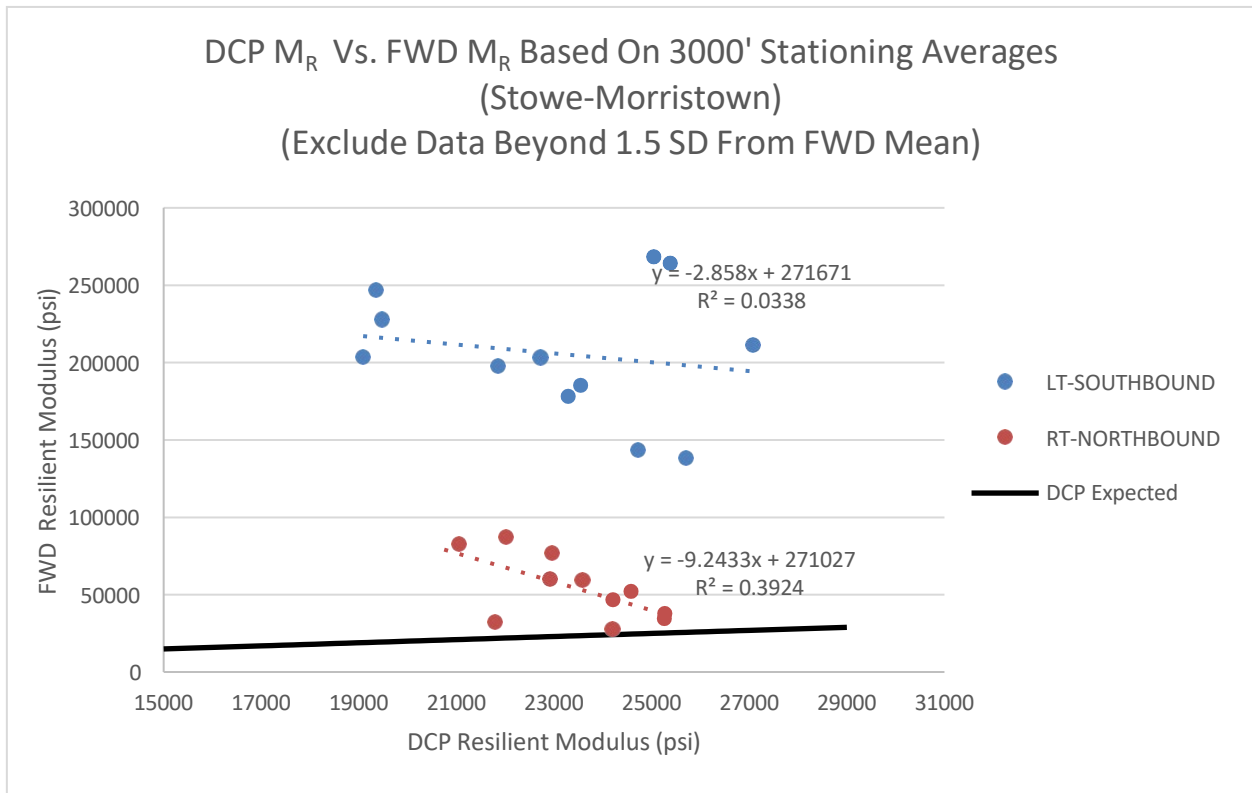
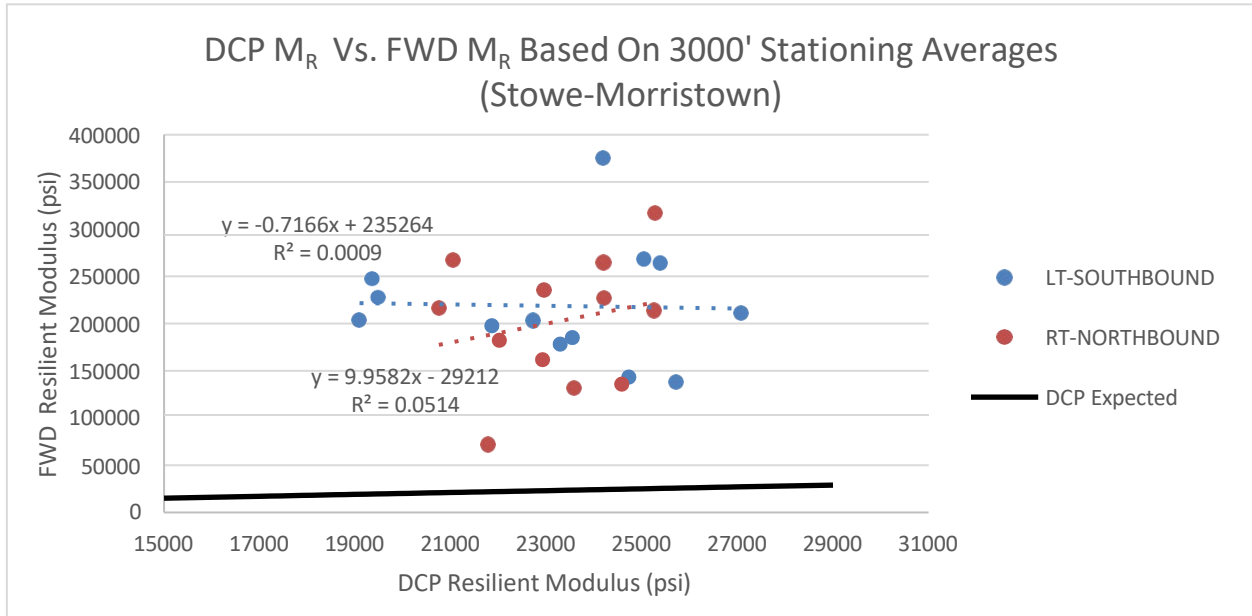
Given the above, there appears to be a small strength of association between the full data sets of DCP and FWD data at this location, but a strong strength of association when outliers are excluded.

The reasoning for this exception is unknown. Test methods were reported to be the same as in other test sites, and a similar length of time had elapsed between the DCP and FWD testing. We are unaware of any reported discrepancies in material placement or construction methods in the Eastbound lane of the Richford-Jay project compared to other locations where testing was performed.

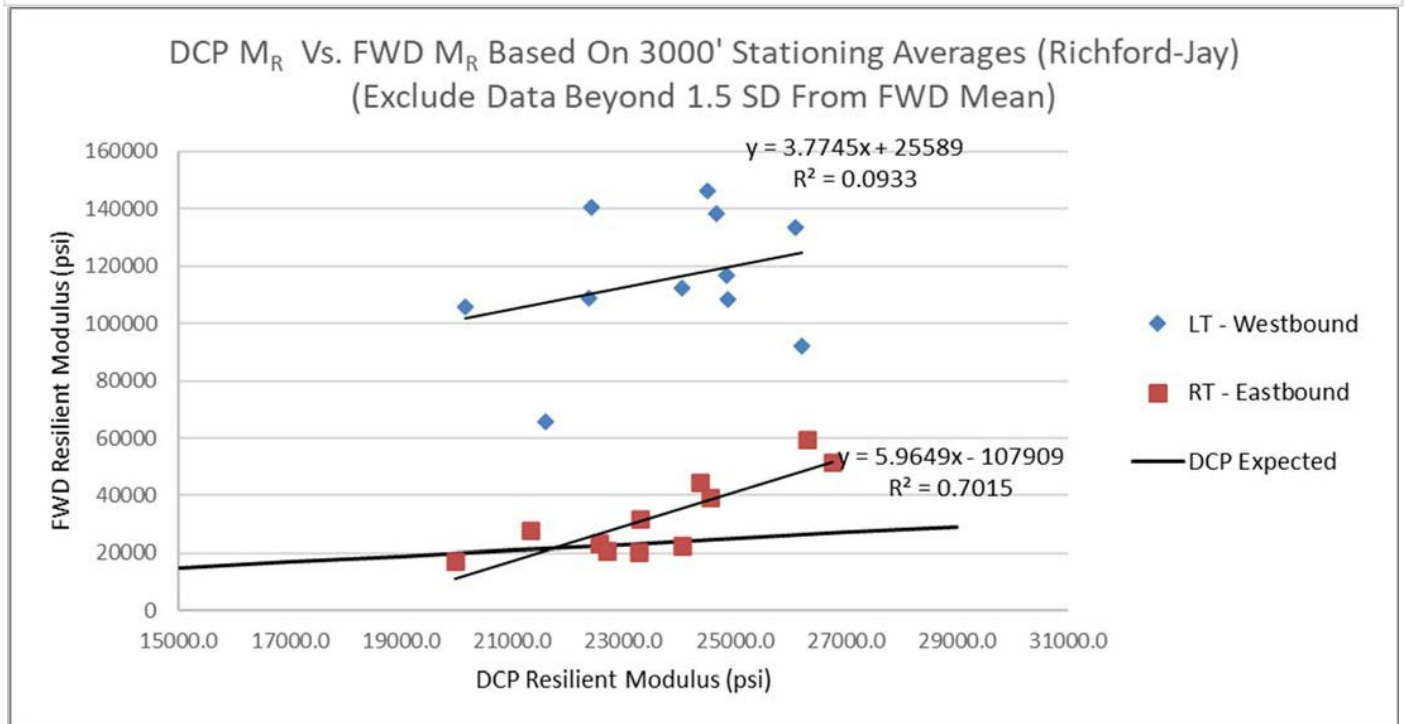
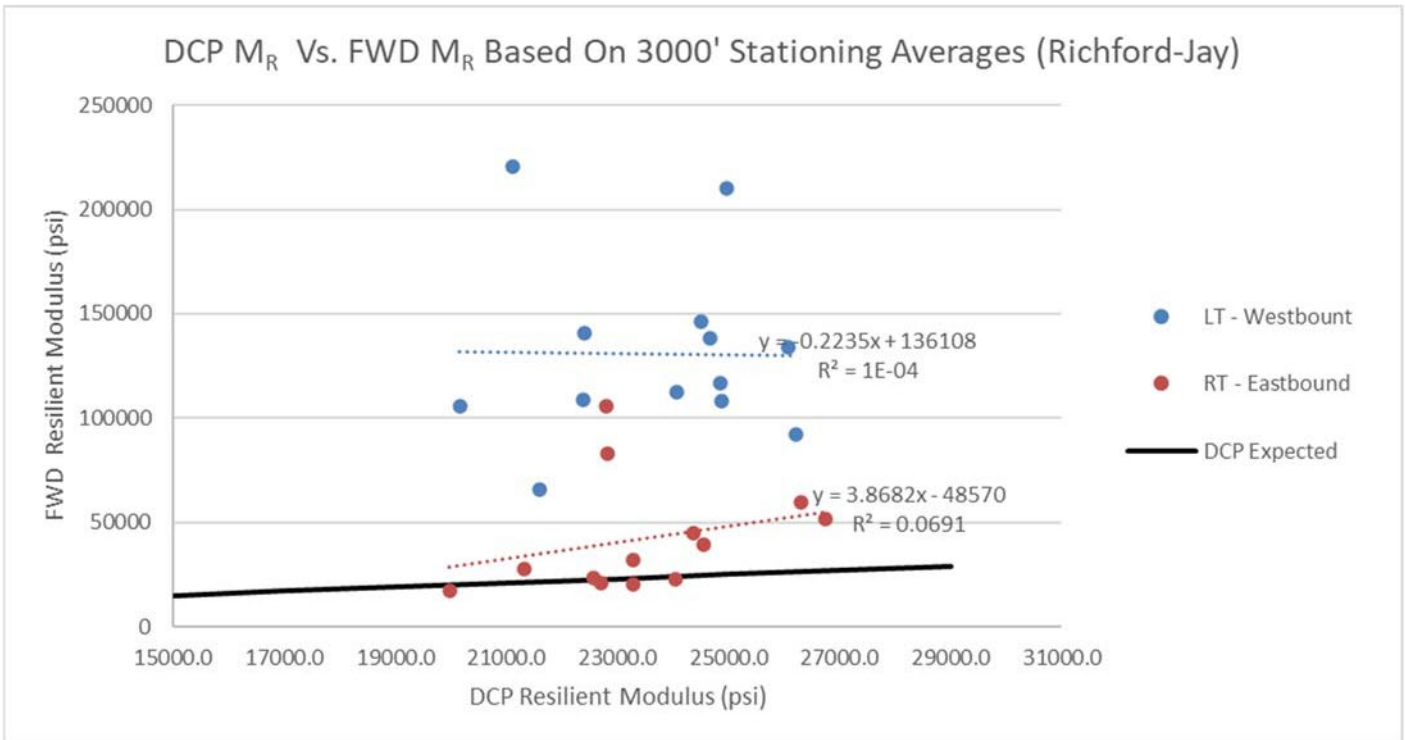
Data analyses for the other two sites are illustrated in figures below. As shown, no meaningful correlation is apparent from the data of those sites.



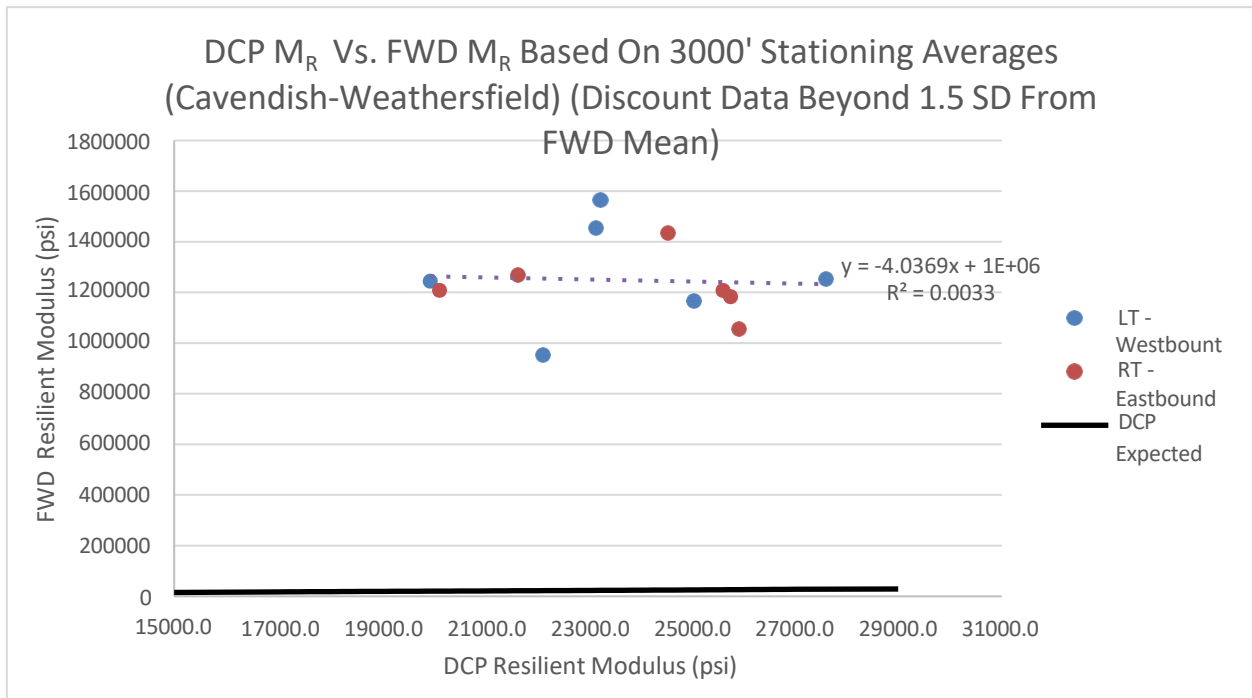
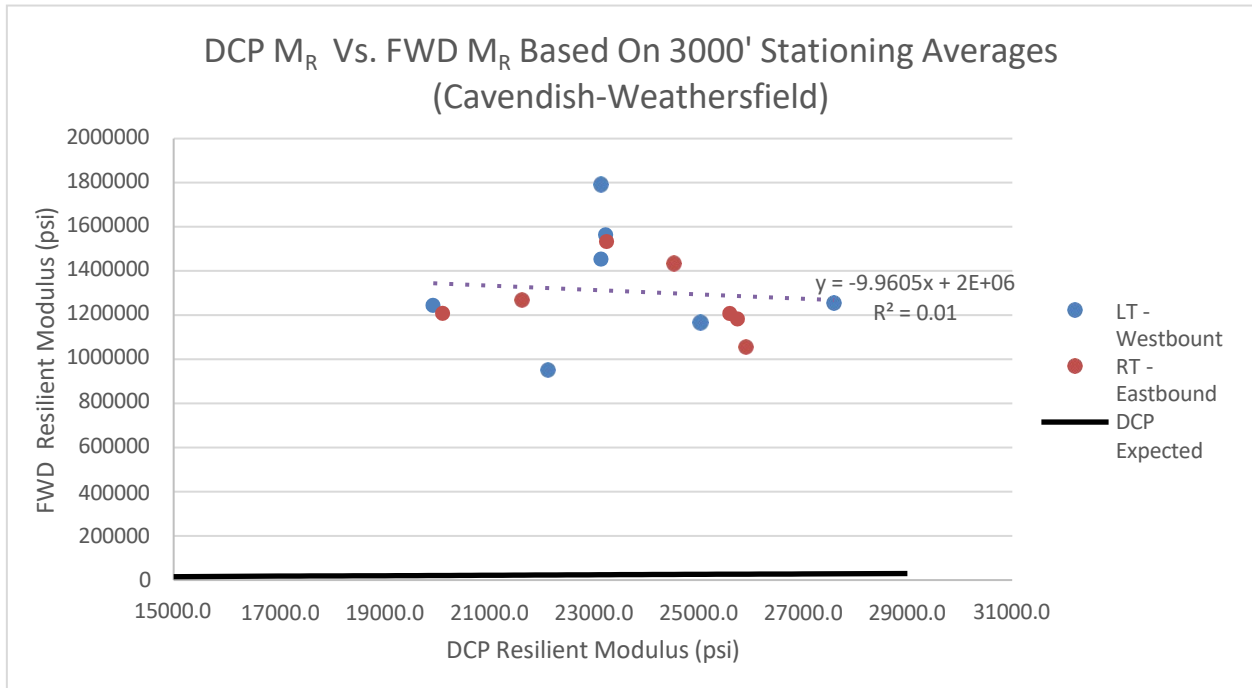
STOWE-MORRISTOWN



RICHFORD-JAY



CAVENDISH-WEATHERSFIELD



## 5.0 SUMMARY OF ANALYSIS RESULTS

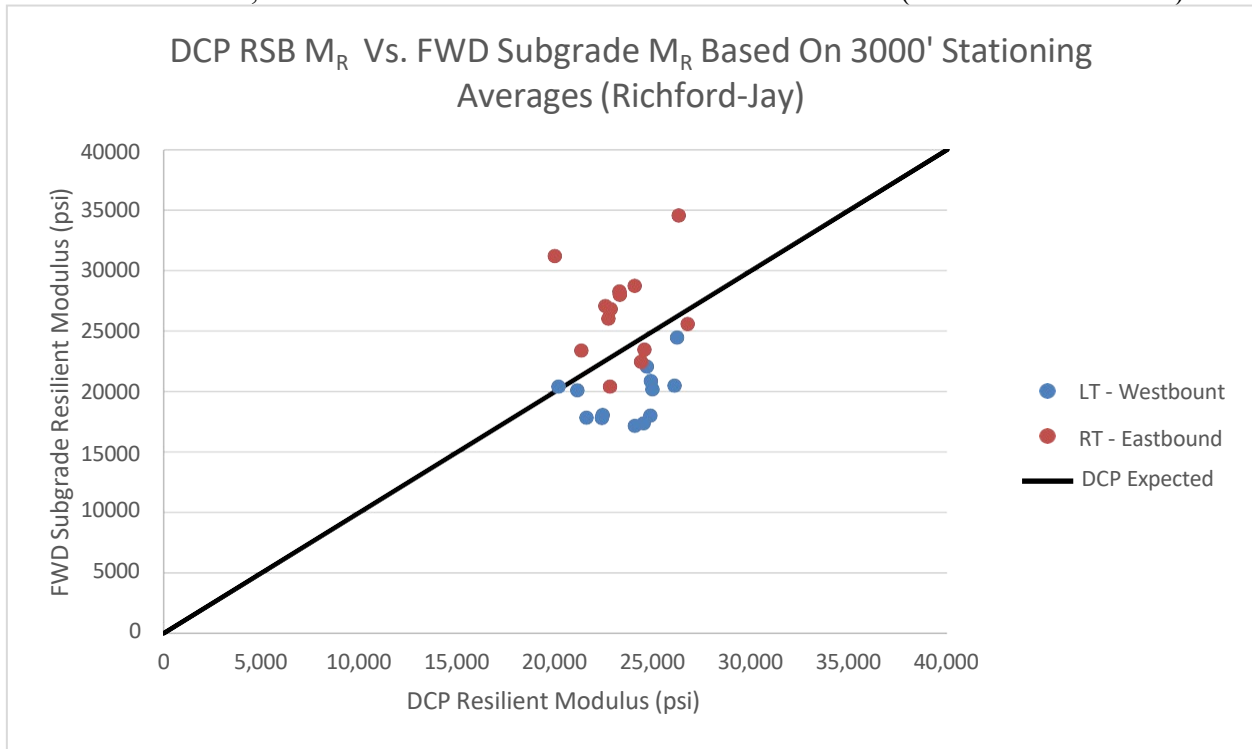
Although the analyses performed in this study did not show a correlation between the  $M_R$  determined by DCP vs. FWD, it is our opinion that the data provided in this study was not sufficient to determine the strength of correlation between the two methods or to provide an opinion on the suitability of the DCP for future use as a tool to evaluate in-situ  $M_R$  of an RSB material. This was due to discrepancies in testing conditions and deficiencies in testing methods for both the FWD and DCP testing. Of note were the following issues which make the data sets relatively incompatible:

- A. **DCP testing was performed too soon after placement and compaction.** From a review of published literature, an emulsified granular material generally will be expected to undergo a significant increase in stiffness during the first month after placement and will continue to gain strength for about 6-months. Furthermore, literature also suggests an initial decrease in strength may be realized as a result of the emulsion process.

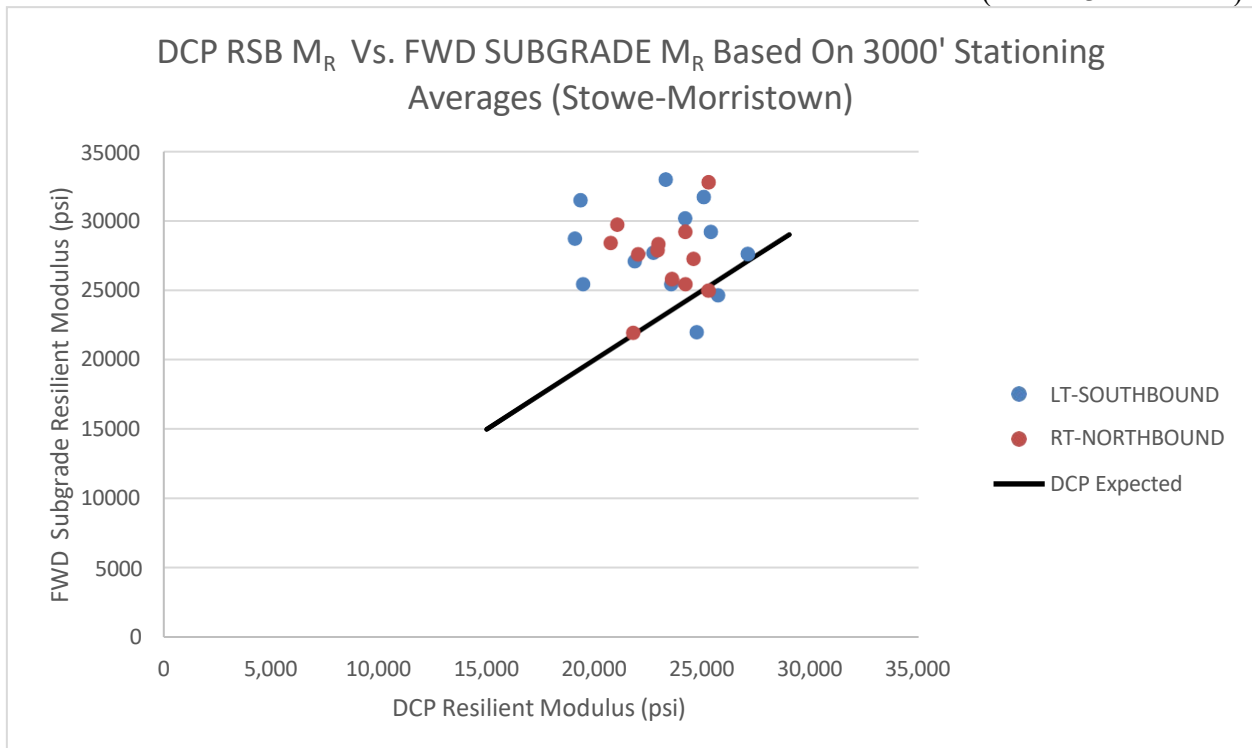
Most of the DCP Data provided for this study was reported to have been generally collected the same day that the material was reclaimed, emulsified, and compacted or within “a few days” afterwards based on reports from VTrans. Conversely, FWD testing was performed 10 to 22 months after construction after the RSB layer had essentially finished curing. Based on this, it is unsurprising that the modulus results from DCP testing were significantly lower than that observed from the FWD testing. In our opinion, this factor is by far the main contributor of the apparently significant data discrepancy between the FWD and DCP data sets.

To evaluate the above conjecture, we compared the DCP test results that were performed on fresh, uncured RSB to the FWD test results for material reported as “subgrade”, which per the FWD reports generally consists of materials below the RSB layer. According to the geotechnical reports and construction plans for these projects, the “subgrade” material through which the FWD tests were conducted was primarily the 2- to 3-foot-thick layer of existing base/subbase material that is left in-place during pavement reclamation operations, with a portion of the upper material mixed with asphalt from the first-pass of the pavement reclamation. Since the RSB is a similar material except that a stabilizing agent is added, it would be reasonable to expect that the DCP  $M_R$  of RSB prior to curing would be similar to the FWD  $M_R$  of the un-stabilized “subgrade” material. Upon comparing these test results, it appears that this expectation is generally valid as depicted in the following plots:

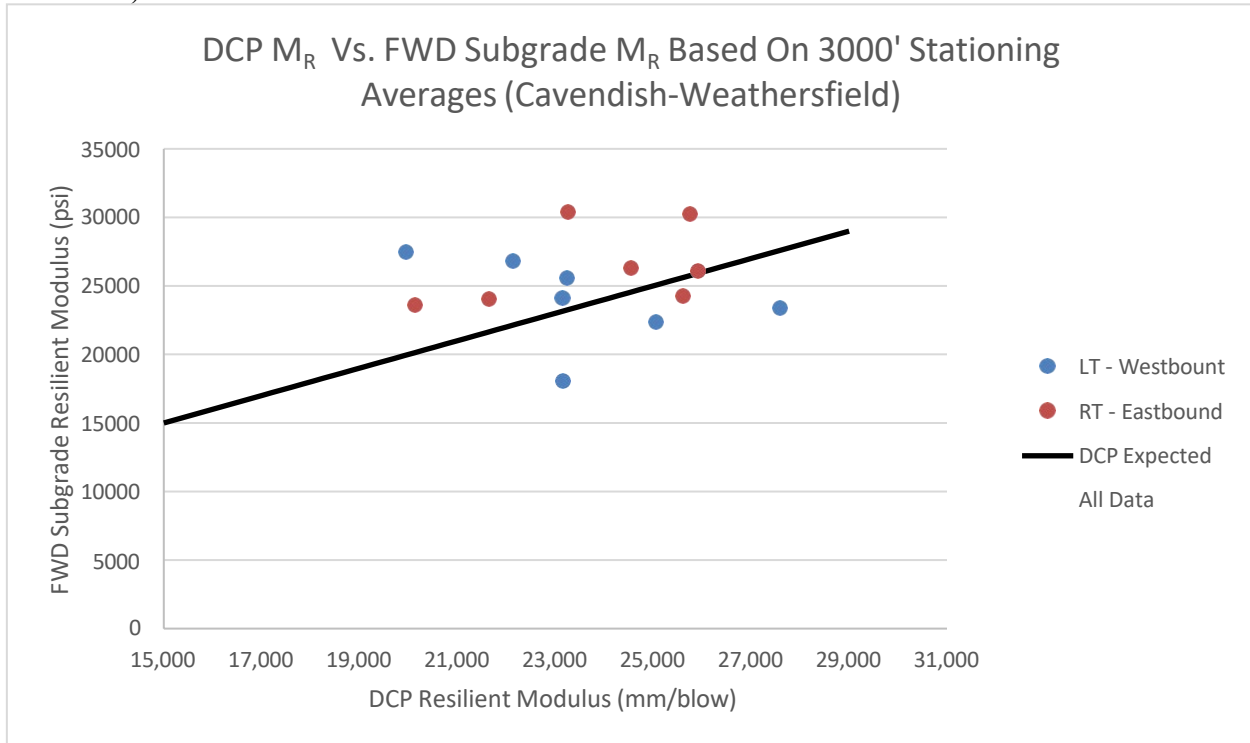
**RICHFORD-JAY, DCP UNCURED BASE VS. FWD SUBGRADE (Est. 2' – 3' Old Base)**



**STOWE-MORRISTOWN DCP UNCURED BASE VS. FWD SUBGRADE (Est. 2'-3' Old Base)**



CAVENDISH-WEATHERSFIELD, DCP UNCURED BASE VS. FWD SUBGRADE (Old Base Unknown)



- B. **DCP testing was performed before paving while FWD testing was performed after paving.** Confinement provided by the overlying asphalt will have a significant effect on the  $M_R$  of an underlying base layer. A suitable comparison cannot reasonably be expected by performing comparative tests under these two different conditions.
- C. **GPR may not be appropriately sensitive for determining layer thicknesses to use in FWD backcalculation.** Backcalculated Moduli are highly sensitive to layer thickness input, with a 10% change in layer thickness potentially resulting in a 20% or more change in computed modulus (FHWA). From our prior experience comparing coring and borehole data with GPR determined thickness, it is quite possible for measurements of layer thickness based on the GPR to be off by 10% or more. Considering that the scatter of the current data sets far exceeds 20%, the GPR induced inaccuracy is likely not the main source of this scatter. However, this issue should be recognized and reconciled for future work.
- D. **DCP testing was not always performed in a consistent manner.** In particular the following inconsistencies between testing were noted:
- DCP testing was reportedly not always performed with the full 8-kg hammer;

- Elapsed time between placement and compaction of the RSB and DCP testing wasn't documented, but based on anecdotal reports wasn't consistent;
- DCP testing was typically terminated prior to penetrating the full thickness of the RSB. This is likely to lead to erroneous test averages for the full layer thickness.

- E. **FWD and DCP data sets for statistical comparison were not obtained at the same location.** Natural variations in the material, changes in layer thicknesses due to road grading, the strength of the underlying subgrade soils and ground moisture conditions among other factors all have an effect on the  $M_R$  of a base material at any given location. Each of these parameters has the potential to vary significantly over any given stretch of roadway. FWD tests and nearest DCP tests for comparison for this project were often hundreds of feet apart, thus variations in site conditions between locations is likely.
- F. **Laboratory testing was not performed for modulus confirmation.** Laboratory based  $M_R$  testing is recommended in the determination of  $M_R$  values for use in the 1993 AASHTO structural number method of pavement design. Literature suggests that backcalculated  $M_R$  values from FWD need to be correlated to lab-based values through a constant referred to as a “C-value”. This constant can vary widely due to numerous factors, including layer thickness, pavement section composition, and the spacing of the FWD sensors during testing. Published C-values for unbound granular base materials below asphalt can vary widely from 0.62 to 1.43 (FHWA). It is strongly recommended that a site-specific C-value be determined for comparing the FWD modulus through a laboratory based repeated load triaxial compression test at an equivalent in situ stress state.

## 6.0 RECOMMENDATIONS

### 6.1 Recommendations for DCP Testing of Cement Stabilized RSBs

FWD testing suggested  $M_R$  values of the cement-stabilized site over 900 ksi. While the variation in the test values was high and concerns regarding the testing performed on this project have been documented, a review of published literature indicates that values exceeding 1,000 ksi may be expected for FDRs using cement. This stiffness is beyond the usable range of the DCP. Generally, a material with an expected  $M_R$  greater than about 190 ksi will be outside the useful range of the DCP due to refusal criteria. For this specific project, DCP testing was likely only able to be completed since it was done the same day as placement and compaction of the RSB, and therefore prior to effects from curing.

### 6.2 Recommendations for DCP Testing of Emulsified Asphalt Stabilized RSBs

Based on the results of this study and a review of published literature, it is recommended that further testing be done on RSBs that use emulsified asphalt as the stabilizing agent. Further testing should be done in a manner that allows for both DCP and FWD tests to be performed simultaneously after the RSB has cured, and at the same locations and with greater control over

the testing methods. DCP is frequently used as a tool to determine layer thicknesses, and as such is complementary to the FWD testing as it will allow for better definition of layer thicknesses for the computation of FWD determined  $M_R$ . A recommended outline for such testing is provided in Section 7 below.

### **6.3 Recommendations for Modifications to the Current VTrans DCP Specification.**

While current data is insufficient for finalizing of a performance-based DCP specification for emulsified asphalt RSBs, changes to the current specification are recommended. These changes are provided in Appendix L. Key points of the specification edits include:

- A requirement that testing be performed using the full 8-kg hammer;
- A minimum elapsed time between reclamation/compaction and DCP testing;
- Inclusion of a requirement for 2-seating blows, which is particularly important when the DCP test is performed on the top of the base layer prior to paving (e.g. confinement due to asphalt is not present).
- A requirement that the test be performed within 10-minutes of coring if performed through asphalt.
- A requirement of a minimum 25mm of travel between readings.
- A requirement that the test be extended through the full thickness of the RSB layer or refusal.

### **6.4 Possibility for DCP Use in Performance-Based Specification.**

Because time is necessary for a stabilized base material to cure, field tests to measure  $M_R$  may not be inherently practical if the intent is to use the testing as an immediate measure of Contractor performance. Specifications would have to be written in a manner that allow for testing to be performed following completion of construction with an incentive for the Contractor to strive for successful results. We have authored contracts on successful projects in the past where confirmation testing following completion of a project has been used in conjunction with a pay retainage. This pay retainage is typically a percentage of the total contract price that is withheld until a satisfactory inspection of the work has been completed. Such inspection could be made contingent upon successful testing performed after project completion. Performing the field testing outlined in Section 6.2 above over a period of several months could assist in determining an appropriate time period between completion of construction and testing for adequate performance.

We would further suggest consideration be given to requiring DCP testing to extend through the pavement section and into the underlying subgrade. This would be valuable in identifying outliers in testing data related to underlying subgrade instead of the RSB material.



## 7.0 POTENTIAL ADDITIONAL WORK / FUTURE PROJECT PHASE

Additional field and lab study is needed to evaluate the DCP as a tool to adequately determine the  $M_R$  of a reclaimed stabilized base. While the full development of a complete testing program was not part of our current scope, it is recommended that subsequent testing be conducted in a manner that follows this general outline:

- A. **Collect samples of RSB material during construction and perform for laboratory  $M_R$  and property testing.** Samples for laboratory  $M_R$  testing (AASHTO T 307) should be collected from the base course material after reclamation but prior to compaction. Station and offset of samples collected should be recorded so future field testing can be performed at adjacent locations. Laboratory testing should be performed on cured samples compacted to the same moisture and density condition as the material in the field. Strength testing (i.e. CU Triaxial) on the reclaimed stabilized materials is recommended to determine classical materials properties (cohesion and friction angle) of the RSB material.
- B. **Perform field testing after completion of paving and allowing for curing.** Field testing is recommended to consist of both FWD and DCP testing and be performed after allowing for suitable time for curing of the RSB layer. Given a lack of local testing data regarding curing times for RSB's following paving, testing at multiple time intervals should be conducted if possible. This will assist in determining an appropriate minimum time to reach required design strength, and guide the decision on how to use this testing for a potential future performance-based specification. Our initial suggestion on the time frame for field testing are:
  - 2-weeks after paving;
  - 1-month after paving;
  - 2-months after paving;
  - 6-months after paving; and,
  - 1-year after paving.

If budgetary or time constraints do not allow for such a process, field testing should be performed at the 1-year mark to assure reasonable curing has occurred. While this won't provide insight on a possible time period to hold contractors to in a future performance-based specification, it will be sufficient to determine if the DCP is suitable tool for evaluating the  $M_R$  of RSB.

- C. **Perform FWD and DCP tests simultaneously.** Given the portability of the DCP equipment, performing these tests simultaneously should be fairly easy to accomplish. The following steps for the field-testing program are recommended:
  - i. **Conduct FWD testing first.** Mark the pavement where the test is performed. While test intervals along the test section of highway can be determined at a later date, at a minimum it is recommended to ensure test locations occur adjacent to where

laboratory  $M_R$  samples were obtained to minimize the influence of spatial variability on the correlation of test results.

- ii. **Core a hole through the pavement at the marked FWD test location to perform DCP testing.** Core holes should be limited to the depth of asphalt. Measure the core for use in FWD backcalculation.
- iii. **Perform DCP testing immediately upon completion of coring.** DCP testing should be performed as soon as coring is completed to prevent water from the coring rig from disturbing the underlying material which can have an impact on measured  $M_R$ . DCP testing should be performed in accordance with the additional recommendation to the current VTrans specification that we provide in Section 6.3 and Appendix L.
- iv. **Extend the DCP to the end of the rod stroke or refusal.** Extending the DCP test to the extent possible will not only ensure the RSB layer is penetrated, but can be used to confirm the thickness of the RSB layer, as well as provide thicknesses of underlying layers if present for use in the FWD calculation. This will also assist in judging the quality of the subgrade which may assist in determining causes of significant outliers in  $M_R$  values between test locations.
- v. **Auger or dig out RSB at the test location to confirm layer thickness.** The DCP testing alone will likely provide a sufficient thickness of the RSB layer. However, checking this at various locations at the start of the testing to verify the reliability of thickness determination by the DCP penetration index is recommended.

It is recommended that the results of the DCP testing should be compared to FWD  $M_R$  for correlations to both DCP  $M_R$  as well as DCP PI. Since there is a lack of published information regarding the applicability of current industry standard correlations to use on RSB materials stabilized with emulsified asphalt, the results of a potential future study as outlined above may indicate a new correlation is warranted.

## 8.0 LIMITATIONS

This Report is subject to the limitations included in Appendix M

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GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX A – CURRENT VTRANS DCP SPECIFICATION

DYNAMIC CONE PENETROMETER (DCP) TESTING

1. DESCRIPTION. Work under this item requires the Contractor to perform dynamic cone penetrometer testing of the reclaimed stabilized base layer and reporting results.
2. TESTING.
  - (a) Dynamic cone penetrometer testing shall be done in accordance with the provisions outlined in ASTM D6951, "Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications". Testing locations shall be conducted every 1,000 linear feet along the proposed highway alignment and within the limits of the reclaimed stabilized base layer. Testing locations will be determined by the Engineer.
  - (b) Each testing location will receive four individual tests. Tests shall be positioned such that each directional width of the roadway receives two separate tests. Tests shall be four feet and ten feet offset and perpendicular to the roadway centerline.
  - (c) Testing shall be conducted following the completion of the reclaim stabilized base layer and prior to the installation of any subsequent surface courses.
  - (d) Test reports shall be provided to the Engineer immediately following testing at each testing location. A complete test report summarizing every test within the project limits should also be provided to the Engineer. The reports shall include, but not be limited to, the following information: date; time; station and offset; mile marker; depth change between blows in graphical format; total depth of penetration with each data point in graphical format; and CBR (Californian Bearing Ratio)% versus depth in graphical format.
3. METHOD OF MEASUREMENT. The accepted quantity of Special Provision (Dynamic Cone Penetrometer Testing) will be paid for at the Contract unit lump sum price. Payment will be full compensation for all dynamic cone penetrometer equipment, labor, testing, test reports, and any incidentals necessary to complete, collect and report the data tested. All necessary traffic control needed to complete the work will be incidental to item 641.11 – Traffic Control, All-Inclusive.
4. BASIS OF PAYMENT. The quantity of Special Provision (Dynamic Cone Penetrometer Testing) will to be paid for at the Contract lump sum price. Partial payments will be made as follows:
  - (a) 80% of the Contract lump sum price will be paid upon the completion of the required testing.
  - (b) 20% of the Contract lump sum price will be paid upon receiving a complete report of the testing results.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Dynamic Cone Penetrometer Testing)	Lump Sum



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX B – RAW DCP DATA (VIA ELECTRONIC TRANSMISSION)

To get to Appendix B:

1. Please go to: [Completed Research | Agency of Transportation \(vermont.gov\)](http://www.vermont.gov/completed-research)
2. Find the Dynamic Cone Penetrometer Analysis Report
3. Click on the link that Says Appendix B to get the Zip file of DCP Data used in the report



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX C – RAW FWD DATA FOR STOWE-MORRISTOWN STP PS19(3)





GEOdesign, Inc.
85 Granite Shed Lane, Unit 1
Montpelier, VT 05602
(802) 674-2033

Table with columns: Station, Load (lbs), Measured Deflection (mils): R1-R5, R7, R6, R7, Calculated Modulus Values (ksi): SURE(E1), BASE(E2), SUBBI(E3), SUBG(E4), Absolute ERR/Sens, Depth to Bedrock, ATAF, Adjusted to 68 F. Rows range from Station 0 to 18500.

VT100 Northbound (1 of 2)

Appendix C – Raw FWD Data for Stowe-Morristown STP PS19(3)

Station	Load (lbs)	Measured Deflection (mil):							Calculated Modulus Values (ksi):				Absolute ERR/Sens	Depth to Bedrock	ATAF	Adjusted to 68 F	
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)					
19001	9255	7.29	6.09	5.37	4.76	3.71	2.78	2.17	1024.9	266.5	25	28	9.24	1.64	300	0.816215	836.5383888
19500	9245	5.17	4.29	3.78	3.31	2.65	2.02	1.55	1099.5	500	33.3	39.4	13.002	1.45	300	0.816364	897.5917358
20001	9223	6.76	5.82	5.13	4.55	3.65	2.78	2.17	1570	111.1	125.5	25.2	8.316	1.53	300	0.816467	1281.853577
20501	9398	5.7	4.67	4.08	3.63	2.87	2.16	1.72	837.3	494.9	34.9	36.7	12.111	1.52	300	0.819003	685.7511442
21001	9234	6.88	5.98	5.39	4.85	3.95	3.01	2.36	1570	104.9	197.7	22.3	7.359	1.92	300	0.819172	1286.100411
21501	9321	5.53	4.75	4.13	3.64	2.91	2.21	1.81	1570	108.6	310.3	30.8	10.164	2.13	300	0.819345	1286.371227
22001	9299	5.17	4.5	3.99	3.61	2.87	2.2	1.53	1570	159.4	159.4	33.2	10.956	2.6	300	0.819609	1286.786731
22500	9288	6.22	5.42	4.81	4.27	3.48	2.62	2.06	1570	119.7	119.7	27.9	9.207	2.12	300	0.81979	1287.06987
23000	9299	6.5	5.56	4.99	4.59	3.87	3.01	2.29	1097.2	500	47.6	24.6	8.118	1.11	300	1.043038	1144.42177
23501	9277	6.7	5.74	5.07	4.57	3.76	2.76	2.07	1570	124.2	78.4	26.6	8.778	2.54	300	1.043397	1638.133649
24001	9310	7.7	6.34	5.42	4.8	3.76	2.88	2.15	664.4	286.5	32	27.2	8.976	2.06	300	1.043762	693.4753873
24501	9179	6.57	5.41	4.63	4.09	3.15	2.3	1.78	1011.4	241.1	31.7	33.2	10.956	1.68	300	1.04432	1056.22495
25000	9223	6.66	5.31	4.69	4.19	3.38	2.56	1.99	650	388.1	52.3	29.2	9.636	1.47	300	1.044699	679.0542047
25501	9223	7.57	6.31	5.56	5.02	4.08	3.07	2.38	859.4	291.5	41.4	24	7.92	1.36	300	1.045278	898.3119507
26000	9179	7.6	6.53	5.9	5.33	4.39	3.26	2.5	1570	141.7	72.4	21.3	7.029	1.51	300	1.046078	1642.341701
26501	9223	9.4	8.06	6.94	6.15	4.8	3.59	2.77	1373.2	57.7	57.7	20.2	6.666	1.69	300	1.046708	1437.34005
27000	9234	8.33	6.93	6.07	5.26	4.17	3.15	2.22	751.2	242	24.8	24.6	8.118	1.4	300	1.047367	786.7818085
27500	9135	6.54	5.23	4.53	4.05	3.29	2.52	1.97	650	332.5	71.6	29.2	9.636	1.42	300	1.048052	681.2337194
28000	9080	8.32	7.27	6.45	5.6	4.49	3.22	2.44	1570	61.3	73.8	21.3	7.029	1.64	300	1.049007	1646.941618
28546	9245	8.52	7.11	6.15	5.47	4.19	2.83	1.98	1570	50	40.9	25.8	8.514	2.18	124.4	1.049755	1648.115699
29001	9245	6.07	5.18	4.52	4.16	3.13	2.13	1.68	1570	158.1	32.6	35.8	11.814	3.03	300	1.05053	1649.331439
29501	9212	8.08	7.02	6.25	5.59	4.52	3.31	2.44	1570	99.6	62.9	21.2	6.996	1.58	199.3	1.05133	1650.58856
30000	9212	6.13	4.96	4.28	3.87	3.13	2.39	1.81	677	368.4	83.3	30.6	10.098	1.48	300	1.052157	712.3104098
30501	9124	10.06	8.59	7.55	6.74	5.37	3.86	2.84	1516.4	50	42.9	18.5	6.105	1.64	213.7	1.05301	1596.784431
31000	9223	10.01	8.38	7.3	6.54	5.11	3.69	2.82	966.7	125.3	23.9	20.2	6.666	1.79	300	1.054187	1019.082834
31502	9157	9.1	7.86	6.9	6.19	4.91	3.55	2.68	1570	101.3	21.3	21.3	7.029	1.44	300	1.054793	1656.024883
32000	9168	10.01	8.33	7.07	6	4.5	3.15	2.33	1128	52.3	24.7	24.1	7.953	1.67	300	1.056038	1191.2110836
32500	9223	12.59	10.3	8.44	7.22	5.25	3.61	2.71	716	51.8	17.3	21.3	7.029	2.21	300	1.057328	757.0465676
33000	9245	8.8	7.18	6.04	5.16	3.92	2.8	1.94	1107.2	51.2	63.9	26.1	8.613	1.57	300	1.057989	1171.405391
33501	9146	11.47	9.44	7.97	6.8	5.09	3.59	2.7	875.4	51	24.4	20.9	6.897	1.75	263.2	1.059344	927.3501327
33921	9179	9.88	7.69	6.43	5.54	3.89	2.49	1.71	650	125.4	10.3	34.2	11.286	2.68	80.9	1.060038	689.0249744
34501	9113	9.4	7.33	5.99	4.93	3.49	2.39	1.87	787.8	51.3	34.6	30.7	10.131	2.11	82.6	1.128644	889.1460215
35000	9080	6.08	4.95	4.37	3.86	3.11	2.24	1.5	808.9	500	17.3	37	12.21	1.26	90.5	1.130294	914.2951184
35501	9168	8.27	6.48	5.41	4.73	3.54	2.55	1.91	650	153.5	33	29.5	9.735	2.12	300	1.131137	735.2388044
36000	9113	9.22	7.3	6.25	5.48	4.33	3.21	2.48	857.9	51.9	191.5	21.2	6.996	1.93	300	1.132421	971.5042278
36501	9453	10.25	8.07	6.72	5.76	4.27	2.98	2.2	650	99.3	24.4	26	8.58	1.96	178.8	1.158971	753.330999
37000	9234	8.11	6.62	5.71	5.07	4.09	3.02	2.27	650	292.6	26.1	25.5	8.415	1.36	300	1.159535	753.6975448
37501	9266	7.63	6.33	5.48	4.83	3.83	2.79	2.08	875.2	248.9	25.2	27.7	9.141	1.29	220.9	1.160669	1015.817214
38000	9266	9.7	8.03	6.93	6.13	4.52	3.02	2.08	1340.3	77.2	12.3	27.5	9.075	2.39	167	1.161811	1557.174917
38501	9168	7.35	5.91	5.22	4.71	3.7	2.61	1.84	1570	50	35.5	33	10.89	6.99	124.5	1.164119	1827.66616
39000	9135	13.04	10.16	8.3	6.81	4.75	3.1	2.25	650	50	10.6	26.5	8.745	2.78	76.9	1.166457	758.1971427
39500	9266	11.38	8.8	7.11	5.92	4.18	2.67	1.92	650	56	17	29	9.57	2.27	85.7	1.168231	759.3498693
40001	9277	9.2	6.9	5.67	4.93	3.49	2.22	1.56	650	130.1	13.8	37.5	12.375	3.11	300	1.327025	862.566314
Mean:		7.71	6.44	5.6	4.96	3.89	2.83	2.13	1189.3	193.4	62.4	28.1	2.04	2.04	255.1	1003	
Std. De	v:	1.77	1.42	1.18	1.01	0.75	0.53	0.39	367	141.9	71.1	6.1	2.000301	1.17	130.7	330.6384964	
Var Coe	ff(%):	22.93	22.11	20.99	20.27	19.17	18.55	18.24	30.9	73.4	113.9	21.5	57.69	57.69	51.2		

VT100 Northbound (2 of 2)

Appendix C – Raw FWD Data for Stowe-Morristown STP PS19(3)

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):						Depth to Bedrock	Absolute ERR/Sens	ATAF	Adjusted to 68 F Adj. Surf Modulus
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/Sens	ATAF	Adjusted to 68 F Adj. Surf Modulus						
39801	9201	7.7	5.73	4.79	4.08	2.89	1.93	1.28	365.2	293.5	14.3	47.6	15.708	2.19	82.1	1.310477	478.586				
39251	9245	11.74	8.72	7.23	6.11	4.22	2.74	1.94	284	148.7	10	32.8	10.824	2.33	71	1.312891	372.861				
38751	9190	13.6	10.75	9.14	7.83	5.67	3.65	2.55	523.3	78.6	10	22.3	7.359	2.38	124.6	1.314508	687.882				
38251	9135	10.83	8.41	7.06	5.96	4	2.39	1.54	756.2	66.2	10.6	35.3	11.649	3.17	60.4	1.315319	994.645				
37750	9124	12.51	10.72	9.45	8.35	6.46	4.56	3.35	1125.6	74.2	10	17.7	5.821	1.62	222.1	1.316947	1482.355				
37250	9047	9.19	7.56	6.56	5.78	4.57	3.3	2.48	624.8	220.9	16.6	23.7	7.821	1.27	300	1.319399	824.361				
36750	9113	8.82	6.92	5.8	5.01	3.83	2.82	2.17	492.8	162.7	32.6	26.6	8.778	1.78	300	1.321042	651.009				
36251	9036	10.49	8.4	7.23	6.33	4.94	3.61	2.74	386.8	227.8	15.1	22.1	7.293	1.53	300	1.32269	511.616				
35750	8971	6.17	4.32	3.37	2.59	1.62	0.85	0.47	739.6	97.5	25.9	86.4	28.512	3.67	43.2	1.324344	979.484				
35250	9091	8.72	6.68	5.61	4.82	3.51	2.3	1.56	399.3	235.6	11.7	39	12.87	1.9	123	1.326003	529.473				
34750	9124	9.49	7.46	6.42	5.76	4.72	3.65	2.89	300.6	289.3	47.9	20.1	6.633	1.45	300	1.327667	399.097				
34251	9179	10.13	7.55	5.99	4.94	3.38	2.15	1.37	360.8	133.5	12.3	41	13.53	2.51	65.2	1.330172	479.926				
33744	9014	10.98	8.45	6.6	5.35	3.56	2.31	1.65	514.5	62.1	15.4	34.7	11.451	3.04	55.8	1.331848	685.236				
33251	9113	8.12	6.37	5.3	4.55	3.47	2.53	1.98	551.9	170.5	32.2	29.9	9.867	1.83	300	1.333529	735.974				
32751	9014	9.62	7.87	6.78	5.96	4.72	3.5	2.78	336.3	195.9	23	21.3	7.029	1.4	300	1.336057	716.527				
32250	9091	9.76	7.98	6.91	6.02	4.7	3.47	2.68	642.2	159.4	21.8	21.7	7.161	1.45	300	1.337747	859.101				
31751	9014	9.17	7.03	5.73	4.87	3.64	2.73	2.14	633	52.4	97.8	25.3	8.349	1.95	300	1.339441	847.866				
31251	8993	12.1	9.7	8.23	7.11	5.34	3.86	2.74	418.1	129.3	14.3	20.3	6.699	1.9	300	1.341989	561.085				
30751	9036	10.3	8.32	7.1	6.24	4.84	3.53	2.68	408.5	227.3	14.4	22.8	7.524	1.77	300	1.343691	548.898				
30250	9190	12.76	10.36	8.67	7.45	5.65	3.91	2.87	528.6	95.7	13.1	20.4	6.732	1.57	300	1.377159	727.966				
29751	9058	8.42	6.47	5.45	4.74	3.75	2.83	1.92	376.2	211.4	46.3	26.1	8.613	1.59	300	1.378872	518.732				
29250	9047	9.17	7.05	5.92	5.17	4.11	3.13	2.42	367.9	169.4	52.1	23.2	7.656	1.57	300	1.380583	507.917				
28750	8971	11.51	9.17	7.71	6.5	4.69	3	1.99	687.4	80.4	10	27.9	9.207	1.99	113.8	1.382292	950.188				
28250	9146	9.3	7.15	6.1	5.33	4.09	2.92	2.09	285	337.4	14.7	29.1	9.603	1.72	300	1.383999	394.440				
27750	9025	9.72	7.6	6.38	5.52	4.2	2.99	2.26	373.2	203.7	17.7	26.5	8.745	1.77	300	1.384851	516.826				
27250	9102	8.15	6.17	5.17	4.48	3.38	2.42	1.79	353.5	265.5	23.9	32.8	10.824	1.84	300	1.386553	490.147				
26751	9146	8.89	6.78	5.8	5.13	4.08	3.1	2.42	306.9	263.8	44.5	24	7.92	1.51	300	1.389101	426.315				
26251	9157	8.2	5.89	4.96	4.17	3.16	2.33	1.82	275.5	253.7	34.1	33.6	11.088	1.7	300	1.389948	382.931				
25751	9080	7.73	6.08	5.3	4.74	3.99	3.18	2.64	405.2	271	103.9	22.2	7.326	1.09	300	1.391641	563.893				
25250	9004	10.63	8.59	7.3	6.41	4.81	3.44	2.61	561.7	141.6	14.7	23	7.59	1.96	300	1.395013	783.579				
24751	8993	7.89	6.37	5.57	4.92	3.89	2.94	2.19	556.5	284.7	29.4	25.4	8.382	1.42	300	1.396693	777.260				
24250	8916	10.41	8.24	6.9	5.94	4.48	3.19	2.44	429.1	151	17.1	24.3	8.019	1.83	300	1.398368	600.040				
23751	9135	8.87	6.71	5.53	4.74	3.64	2.68	2.12	342	190.1	33.8	28.5	9.405	1.93	300	1.400872	479.098				
23250	9036	6.98	5.51	4.74	4.13	3.26	2.46	1.9	568.3	262.8	45.7	30	9.9	1.41	300	1.403364	797.532				
22750	9080	8.29	6.43	5.52	4.87	3.86	2.95	2.24	373.2	274.7	41.8	25.3	8.349	1.61	300	1.405018	524.353				
22251	9102	6.68	5.21	4.39	3.83	2.92	2.11	1.57	477.7	354.2	25.7	38.1	12.573	1.93	300	1.408309	672.749				
21751	9014	6.97	5.43	4.55	3.82	2.85	2.04	1.52	737	155.5	35.7	36.6	12.078	1.7	180.6	1.409945	1039.129				
21251	9036	7.54	5.95	5.02	4.39	3.37	2.5	1.96	520.5	242.7	32.1	30.2	9.966	1.91	300	1.412386	735.147				
20750	9069	9.11	6.97	5.84	5.11	3.95	2.94	2.27	312.1	238	29.7	25.9	8.547	1.96	300	1.414812	441.563				

VT100 Southbound (1 of 2)

Appendix C – Raw FWD Data for Stowe-Morristown STP PS19(3)

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):										Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F	
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	BASE(E2)	SUBB(E3)	SUBG(E4)	ATAF	Adj. Surf Modulus								
20251	9004	8.89	6.56	5.32	4.47	3.31	2.34	1.73	325.2	167.6	26.6	32.9	10.857	1.99	160.3	1.41642	460.620								
19750	9113	8.31	6.29	5.16	4.43	3.34	2.5	2.02	429.8	151.5	45.7	29.8	9.834	2.15	300	1.418818	609.808								
19251	9014	7.02	5.4	4.57	4.01	3.19	2.43	1.94	431.8	279.1	57.4	30.1	9.933	1.71	300	1.420406	613.331								
18750	9047	9.25	7.01	5.72	4.91	3.79	2.74	2.07	321.1	182.2	30.3	27.6	9.108	1.85	300	1.422774	456.853								
18250	9069	8.21	6.51	5.49	4.8	3.8	2.85	2.04	507.5	202.3	40.1	25.9	8.547	1.6	300	1.424341	722.853								
17750	9069	6.27	4.83	4.13	3.73	3.06	2.22	1.69	336.6	710.5	36.5	34.5	11.385	1.31	300	1.339877	451.003								
17250	8971	10.2	7.84	6.62	5.79	4.56	3.26	2.43	278.8	230.9	22.3	23	7.59	1.43	255.8	1.340558	373.754								
16751	8927	9.54	7.83	6.93	6.18	4.87	3.46	2.41	508.4	295.1	10	24.2	7.986	1.51	123	1.342676	682.617								
16250	8894	7.62	5.84	4.91	4.24	3.29	2.37	1.76	396.9	263.2	30.1	31.6	10.428	1.49	300	1.344063	533.459								
15751	9058	7.5	6.04	5.26	4.72	3.71	2.77	2.07	460.8	468.5	17.4	30	9.9	1.77	300	1.346126	620.295								
15250	9004	7.13	5.33	4.46	3.86	2.88	2.07	1.48	389.4	280.6	29.4	37.6	12.408	1.93	183.9	1.34749	524.713								
14751	9014	7.14	5.8	5.04	4.54	3.57	2.63	1.96	490.7	512.7	15.2	32.3	10.659	1.73	300	1.393771	683.924								
14251	9234	9.01	6.75	5.51	4.78	3.61	2.59	1.95	292.9	229.7	25.5	30.7	10.131	2.16	300	1.421152	416.255								
13750	9069	7.69	5.72	4.87	4.23	3.35	2.44	1.84	276.5	405.8	31	31.9	10.527	1.36	300	1.492259	412.610								
13250	9080	9.52	7.25	5.97	5.07	3.73	2.69	2.06	397.4	145.7	24.4	28.7	9.471	2.17	139.9	1.493437	593.492								
12750	9091	9.42	7.22	5.9	5	3.76	2.8	2.18	502.7	88.1	50.7	25.8	8.514	1.95	300	1.494599	751.335								
12249	9113	9.4	7.43	6.3	5.5	4.22	3.05	2.3	451.7	203.9	20	25.7	8.481	1.69	300	1.495744	675.628								
11751	9091	8.22	6.66	5.75	5.06	3.92	2.82	2.06	513.9	340.7	11.9	31.4	10.362	1.69	300	1.496872	769.242								
11250	9091	8.71	6.84	5.76	5.04	3.93	2.85	2.23	404.6	252.9	22.9	27.4	9.042	1.66	300	1.497982	606.084								
10751	9036	8.31	6.54	5.62	4.95	3.76	2.61	1.91	361.7	391.6	10.5	35	11.55	1.71	300	1.498531	542.019								
10251	9058	5.49	4.02	3.39	3	2.36	1.8	1.43	423.5	346.4	97.1	40.5	13.365	1.64	300	1.500151	635.314								
9750	9069	18.47	13.52	10.16	7.72	4.63	2.69	1.98	147.5	50	10	26.6	8.778	6.56	41.1	1.501208	221.428								
9250	8993	8.75	6.46	5.33	4.55	3.63	2.54	1.91	272	228.1	33.4	29.2	9.636	1.22	300	1.502761	408.751								
8750	9080	7.92	6.2	5.18	4.5	3.37	2.28	1.52	411.6	316.8	12	40	13.2	1.91	300	1.503773	618.953								
8251	9014	10.9	8.89	7.63	6.67	5.04	3.44	2.46	618.5	142.7	10	24.4	8.052	1.78	300	1.505257	931.002								
7751	9036	9.88	8.11	7.04	6.26	4.97	3.47	2.45	487.9	271.9	10	24.4	8.052	1.38	138.4	1.506223	734.886								
7250	9047	11.57	9.27	7.78	6.66	4.93	3.22	2.26	548.3	111.6	10	26.1	8.613	1.8	195.4	1.50717	826.381								
6749	8905	11.94	9.39	7.83	6.7	5.19	3.74	2.76	372.4	112.8	22	19.6	6.468	1.48	300	1.508098	561.616								
6251	9004	10.19	7.76	6.48	5.57	4.25	2.94	2.22	274.2	230.3	14.5	27.9	9.207	1.57	300	1.509454	413.892								
5751	8927	16.16	12.24	9.73	7.89	5.31	3.44	2.39	311.2	50	10	23.1	7.623	2.56	61.3	1.510333	470.016								
5251	9036	11.66	9.04	7.49	6.26	4.76	3.3	2.37	394	109.1	17.7	23.3	7.689	1.4	300	1.511193	595.410								
4751	9004	10.57	8.47	7.13	6.15	4.69	3.25	2.4	425.1	186.1	11	26.1	8.613	1.66	300	1.512034	642.766								
4246	8960	8	6.34	5.46	4.83	3.79	2.7	2.13	327.8	530	10.9	33.6	11.088	1.68	300	1.512854	495.914								
3751	9004	9.82	7.54	6.16	5.2	3.93	2.65	1.85	346.3	179.4	14.9	31.1	10.263	1.63	120.7	1.513655	524.179								
3250	8938	10.56	8.35	6.98	5.92	4.46	2.98	2.09	423.8	164.5	10.3	28.9	9.537	1.49	128.7	1.514435	641.817								
2751	8971	7.76	6.04	5.07	4.39	3.38	2.45	1.89	450.8	243.1	28.4	31	10.23	1.69	300	1.515195	683.050								
2251	9004	9.15	7.3	6.24	5.35	4.21	2.97	2.14	497.6	207.1	17.9	26.4	8.712	1.06	153.6	1.516653	754.687								
1750	8982	9.04	7.2	6.1	5.19	4.03	2.89	1.65	494.3	191.7	19.6	27	8.91	1.43	300	1.517351	750.027								
1250	9004	7.99	6.72	5.85	5.11	4.08	3	2.2	909	218.8	19.6	25.7	8.481	1.22	176.7	1.51836	1380.189								
751	8949	9.95	7.59	6.32	5.52	4.41	3.24	2.58	280	199.3	34.2	22.6	7.458	1.43	300	1.519005	425.322								
251	8905	10.74	8.81	7.66	6.57	5.06	3.59	2.57	1011.4	50.9	28.6	19.8	6.534	1.68	300	1.544259	1561.863								
Mean:		9.38	7.33	6.16	5.31	4.03	2.86	2.12	455.1	217.7	26.3	29		1.83	231.7		643								
Std. De	v:	2.06	1.63	1.32	1.09	0.8	0.56	0.44	164.7	115.4	18.9	8.7	2.864601	0.68	191		233								
Var Coe	ff(%):	21.93	22.3	21.49	20.61	19.81	19.68	20.89	36.2	53	72	30		37.41	82.4										

VT100 Southbound (2 of 2)



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX D – RAW FWD DATA FOR RICHFORD-JAY STP 2914(1)



GEOdesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):					Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF Adj. Surf Modulus
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF Adj. Surf Modulus				
501	9639	9.15	7.89	6.97	6.24	4.93	3.52	2.64	1353.4	33.9	0	22.9	7.557	1.58	300	0.685297	927.4814346		
1000	9606	6.8	5.76	5.03	4.47	3.59	2.48	1.77	1414.7	75.6	0	31.3	10.329	1.66	135.8	0.685297	969.4901622		
1501	9551	9.35	7.83	6.66	5.77	4.36	2.92	2.08	985.7	24.2	0	27.7	9.141	1.63	141.4	0.685297	675.4975987		
2000	9507	9.23	7.69	6.67	5.95	4.67	3.44	2.69	708.8	108.7	0	22.6	7.458	1.52	300	0.685297	485.7387623		
2500	9540	11.99	10.38	8.96	7.78	5.45	3.2	2.29	686.5	15	0	23.4	7.722	4.61	84.2	0.685297	470.4566314		
3000	9354	8.42	7.21	6.37	5.7	4.78	3.4	2.63	960.9	126	0	21.9	7.227	1.42	300	0.685297	658.5022244		
3501	9464	6.69	5.48	4.7	4.16	3.33	2.37	1.8	802.7	170.6	0	32.4	10.692	1.36	300	0.685297	550.0881835		
4000	9431	7.15	5.97	5.19	4.6	3.67	2.66	2.04	912.4	141.2	0	28.8	9.504	1.31	300	0.685297	625.2653029		
4500	9332	11.23	9.4	7.94	6.86	4.86	3.08	2.05	732.2	15	0	25.8	8.514	2.7	90.8	0.685297	501.7747203		
5000	9234	8.89	7.48	6.46	5.61	4.37	2.96	2.15	1075.5	28.3	0	26.1	8.613	1.44	173.8	0.685297	737.0373008		
5500	9332	12	9.86	8.28	6.98	4.93	2.98	2	600	15	0	25.9	8.547	2.76	89.3	0.685297	411.1784105		
6000	9266	9.57	8.1	6.97	6.06	4.41	2.87	1.96	1004.7	15	0	28.4	9.372	2.16	127.2	0.685297	688.5182484		
6500	9299	9.92	8.16	6.91	5.95	4.41	2.8	1.88	905.6	15	0	29.4	9.702	1.94	102.5	0.685297	620.6052809		
7000	9299	16.72	14.4	12.36	10.68	7.85	4.57	2.78	447.3	15	0	15.3	5.049	4.41	83.2	0.685297	306.533505		
7502	9321	8.45	7.22	6.3	5.69	4.73	3.28	2.52	990.7	102.9	0	22.5	7.425	1.95	300	0.685297	678.9240855		
8001	9223	8.35	7.36	6.67	6.09	5.2	3.8	2.89	1690.7	79.2	0	19.4	6.402	1.49	300	0.685297	1158.632231		
8500	9179	8.81	7.73	6.94	6.33	5.37	3.8	2.88	1706.6	40.3	0	19.7	6.501	1.88	300	0.685297	1169.528459		
9001	9277	8.86	7.68	6.85	6.16	5.04	3.61	2.76	1241	66.9	0	20.7	6.831	1.36	300	0.685297	850.4540124		
9500	9288	7.94	6.96	6.21	5.53	4.62	3.12	2.33	1967.3	15	0	26.5	8.745	1.68	296.4	0.685297	1348.185478		
10001	9277	10.5	9.35	8.37	7.57	6.26	4.35	3.28	1522.6	15	0	18.2	6.006	1.49	300	0.685297	1043.433746		
10501	9245	7.98	6.96	6.23	5.62	4.74	3.28	2.45	1958.8	23	0	23.9	7.887	1.89	296.8	0.685297	1342.360451		
11002	9234	7.49	6.49	5.79	5.22	4.44	3.12	2.39	1327.2	117.7	0	23.3	7.689	1.83	300	0.685297	909.526644		
11500	9277	8.13	7.07	6.24	5.59	4.39	3.1	2.28	1554.7	25.9	0	25.4	8.382	1.57	197	0.685297	1065.431791		
12001	9299	8.08	7.04	6.35	5.56	4.43	3.09	2.27	1733.6	16.9	0	26.7	8.811	1.16	195.7	0.685297	1188.031487		
12500	9157	8.84	7.67	6.76	5.96	4.75	3.25	2.39	1483.9	15.1	0	25.1	8.283	1.27	212.9	0.685297	1016.912739		
13000	9201	10.22	8.87	7.78	6.74	5.3	3.46	2.42	1102.9	15	0	22.8	7.524	1.46	134.2	0.685297	755.8144483		
13500	9201	6.58	5.69	5.05	4.44	3.6	2.54	1.83	1744.1	51.6	0	30	9.9	1.09	146.1	0.714323	1245.850906		
14000	9168	7.12	6.1	5.32	4.66	3.57	2.4	1.64	1616.8	18.2	0	34.4	11.352	1.56	104.4	0.714323	1154.917577		
14500	9004	12.78	10.82	8.32	6.61	4.8	2.73	1.99	422.2	15	0	26.2	8.646	3.5	82.1	0.714323	301.5872098		
15001	9234	10.39	7.84	6.28	5.2	3.5	2.16	1.49	515.5	20	0	35.8	11.814	2.74	60	0.776115	400.0871794		
15501	9201	5.4	4.4	3.76	3.31	2.72	1.82	1.38	994.2	181.4	0	40	13.2	2.06	300	0.776115	771.6133341		
16001	9004	8.18	6.72	5.69	4.88	3.68	2.32	1.64	1048.6	19.3	0	33.7	11.121	1.8	134.6	0.776115	813.8339792		
16500	9157	7.09	5.81	4.84	4.17	3.1	1.91	1.3	1229.8	18.6	0	43	14.19	1.96	103.5	0.776115	954.4659809		
17001	9179	7.91	6.47	5.5	4.74	3.74	2.54	1.88	780.3	78.4	0	29	9.57	1.33	213.1	0.776115	605.6023784		
17500	9157	8.67	7.28	6.26	5.49	4.28	2.92	2.14	1025.8	38.4	0	25.8	8.514	1.59	193.4	0.776115	796.1385617		
18001	9146	8.17	6.81	5.8	5.05	3.87	2.44	1.68	1243.3	15	0	33.9	11.187	1.93	115.2	0.776115	964.9435307		
18500	9102	9.07	7.58	6.46	5.62	4.41	2.81	1.97	1098.4	17.2	0	28.2	9.306	2	134	0.776115	852.4844962		
19001	9069	8.98	7.34	6.18	5.31	4.13	2.68	1.9	873.6	28.8	0	28.1	9.273	1.8	141.1	0.776115	678.0138892		

VT105 Eastbound (1 of 2)

Appendix D – Raw FWD Data for Richford-Jay STP 2914(1)

Station	Load (lbs)	Measured Deflection (mil):							Calculated Modulus Values (ksi):					Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F		
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ATAF			Adj. Surf Modulus		
19500	9080	8.74	7.41	6.39	5.69	4.6	3.04	2.22	1149.9	34.1	0	24.3	8.019	2.25	203.1	0.776115	892.454084	
20001	9223	8.72	7.34	6.32	5.49	4.2	2.76	2	1187.3	17	0	29.6	9.768	1.62	170.4	0.776334	921.748671	
20500	9146	8.81	7.3	6.2	5.39	4.18	2.72	1.94	1014.3	24.5	0	28.3	9.339	1.84	148.5	0.776381	787.4832388	
21001	9190	8.72	7.26	6.17	5.33	3.95	2.52	1.73	1082.3	15	0	32.8	10.824	1.88	111.6	0.776425	840.3249962	
21500	9168	9.11	7.67	6.54	5.67	4.21	2.72	1.81	1056.6	15	0	30	9.9	1.82	97.3	0.776473	820.421148	
22001	9047	8.34	6.95	5.92	5.15	4.19	2.57	1.7	1276.1	15.5	0	31.1	10.263	2.66	100.3	0.776524	990.9219485	
22500	9113	8.57	7.15	6.09	5.22	3.84	2.4	1.58	1052.9	15	0	33.8	11.154	1.89	92.9	0.77655	817.6300023	
23001	9146	8.39	6.93	5.89	5.09	4.11	2.52	1.7	1151	19.8	0	31	10.23	2.67	108.2	0.776606	893.8740563	
23501	9014	9.3	7.59	6.41	5.48	4.13	2.67	1.77	845.4	22.5	0	28.5	9.405	1.74	96.1	0.776666	656.5932899	
24002	9069	8.45	6.8	5.65	4.76	3.55	2.26	1.59	805.5	28.1	0	33.3	10.989	1.68	127	0.776729	625.6548233	
24501	9036	10.04	8.34	7.13	6.15	4.63	3.01	2.09	926.5	15	0	26.5	8.745	1.75	123.1	0.776795	719.7001523	
25001	8982	10.89	9.13	7.88	6.83	5.54	3.45	2.39	934.4	15	0	22.1	7.293	2.46	134.8	0.776829	725.8688462	
25500	9102	8.13	6.74	5.72	4.98	3.65	2.41	1.68	1107.7	19.5	0	33.4	11.022	2.03	138.5	0.7769	860.5719515	
26001	9069	9.99	8.61	7.5	6.69	5.2	3.76	2.84	997.8	38.9	0	20	6.6	1.56	300	0.776974	775.2648344	
26501	9069	9.42	7.94	6.81	5.95	4.64	3.05	2.14	1108	16.3	0	26.1	8.613	1.57	133.5	0.777013	860.9299473	
27001	9124	8.55	7.06	6.04	5.33	4.15	2.89	2.08	778.3	75.2	0	25.5	8.415	1.65	153.1	0.777092	604.8106133	
27502	9190	8.32	6.97	5.96	5.25	4.11	2.73	1.94	1122.7	31.5	0	27.9	9.207	1.85	141.6	0.777174	872.5337811	
28000	9234	10.87	9.37	8.11	7.16	5.49	3.74	2.67	1032	15.1	0	21.5	7.095	1.59	154.3	0.777305	802.1782532	
28500	9091	11.83	10.07	8.65	7.54	5.85	3.69	2.62	813.2	15	0	20.6	6.798	2.1	155	0.777395	632.1778459	
29001	9058	8.94	7.63	6.62	5.84	4.63	2.99	2.03	1285.3	15	0	26.6	8.778	1.98	111.5	0.777489	999.3070194	
29501	8960	12.76	10.8	9.33	8.2	6.31	4.15	2.83	762	15	0	18.2	6.006	1.78	119.1	0.777587	592.5209841	
30001	8982	7.78	6.43	5.45	4.73	3.65	2.41	1.71	1098.9	29.1	0	31.4	10.362	1.63	135.5	0.777636	854.5446885	
30501	9135	9.91	8.22	6.89	6.04	4.49	2.84	1.94	911.5	15	0	28.2	9.306	2.14	300	0.777739	708.908701	
31001	9135	8.73	7.19	6.02	5.21	4.02	2.57	1.86	912.5	28	0	29.3	9.669	2	157.8	0.777844	709.7825562	
31501	8960	9.13	7.6	6.44	5.52	4.3	2.7	1.91	997.2	17	0	28.8	9.504	1.84	137.7	0.777952	775.7741641	
32001	8982	8.98	7.67	6.58	5.71	4.65	2.89	2	1208.2	15	0	27	8.91	2.2	128.2	0.778064	940.0571082	
32501	9025	10.19	8.53	7.2	6.23	4.77	3.07	2.08	858.2	18.6	0	24.9	8.217	1.66	109.7	0.778121	667.7836166	
33000	9025	11.92	10.07	8.57	7.49	5.9	3.89	2.85	790	18.7	0	19.4	6.402	1.66	231.2	0.778238	614.8077664	
33501	9025	11.24	9.5	8.07	6.97	5.16	3.49	2.44	788.3	16.5	0	22.4	7.392	1.76	190.2	0.778357	613.5790649	
34000	9135	8.38	6.9	5.79	4.94	3.8	2.38	1.6	979.7	23	0	32.4	10.692	1.87	102	0.77848	762.6769263	
34502	9223	10.59	8.9	7.54	6.57	4.84	3.07	2.26	849	15	0	25.8	8.514	2.16	150.6	0.778606	661.0364591	
35000	9135	9.36	7.65	6.43	5.53	4.02	2.65	1.8	845	20.7	0	29.7	9.801	2	121.9	0.778735	658.0310349	
35501	9113	10.13	8.13	6.75	5.82	4.3	2.83	2.02	642.6	30.9	0	26.4	8.712	2.03	176.1	0.778867	500.4999579	
36001	9157	10.05	8.27	6.88	5.91	4.41	2.85	2.01	794.4	19.5	0	27.5	9.075	1.75	135.6	0.779002	618.8393442	
36500	9058	9.93	8.24	7.02	6.13	4.65	3.1	2.22	893.1	21.4	0	24.8	8.184	1.82	154.9	0.779071	695.788241	
37001	9069	9.38	7.83	6.64	5.78	4.39	2.98	2.43	900.3	27.7	0	25.5	8.415	1.64	300	0.779211	701.523584	
37502	8993	8.21	6.74	5.73	4.97	3.97	2.6	1.76	869.1	53.6	0	27.7	9.141	2.04	105.7	0.779353	677.3360677	
38000	9047	7.28	5.79	4.8	4.09	2.85	1.78	1.08	997	20.2	0	45.2	14.916	2.49	73	0.779499	777.160719	
38501	9080	8.14	6.78	5.86	5.17	4.13	2.88	2.11	883.1	82.6	0	25.4	8.382	1.44	188.8	0.779648	688.5071466	
39001	8982	10.31	8.54	7.24	6.25	4.68	2.89	1.83	828.8	15	0	26.6	8.778	2.09	86.2	0.779724	646.2348415	
39500	8817	12.91	10.46	8.7	7.42	5.67	3.48	2.41	569.8	15	0	21.2	6.996	2.28	124.6	0.779877	444.3737698	
Mean:		9.25	7.76	6.65	5.80	4.48	2.95	2.10	1045.2	35.6	0	27.2	1.92	169.9		773		
Std. Dev		1.71	1.47	1.24	1.07	0.81	0.54	0.42	322.9	36.5	0	5.3	1.8	0.58	76.2		217.8260021	
Var Coef		18.49	18.92	18.58	18.40	18.01	18.17	19.97	30.9	102.5	0	19.6	30.37	44.9				

VT105 Eastbound (2 of 2)

Appendix D – Raw FWD Data for Richford-Jay STP 2914(1)

Station	Load (lbs)	Measured Deflection (mil):							Calculated Modulus Values (ksi):							Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F	
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/E4	ERR/E5	ATAF			Adj. Surf Modulus	
39250	9234	10.97	9.42	8	7.14	5.65	3.47	2.38	1128.3	19.4	0	16.8	5.44	2.28	300	0.785254	886.0018892		
38751	9299	8.33	6.65	5.46	4.61	3.62	2.27	1.68	528.1	127.3	0	24.3	8.019	1.6	129.3	0.78553	414.8384037		
38250	9288	11.63	9.85	8.5	7.53	5.85	3.96	2.77	643.1	87.7	0	14	4.62	1.6	135	0.785814	505.3571496		
37750	9157	9.23	7.61	6.37	5.64	4.22	2.79	1.94	670.6	93	0	19.7	6.501	2.07	300	0.786107	527.1630243		
37250	9179	8.25	6.57	5.5	4.7	3.5	2.42	1.8	511.6	146.2	0	23.4	7.722	2.16	193	0.786407	402.3256874		
36500	9146	7.75	6.44	5.58	4.99	4.07	2.87	2.17	571.5	301.1	0	19.1	6.303	1.15	300	0.786872	449.6973357		
35751	9124	9.91	8.62	7.65	6.86	5.64	3.85	2.54	1246.8	74.5	0	14.1	4.653	1.34	100.3	0.787192	981.4710113		
35001	9047	7.97	6.7	5.83	5.2	4.06	2.81	1.98	851.5	156	0	19.3	6.369	1.46	128.7	0.78752	670.5732196		
34250	9069	9.05	7.65	6.57	5.74	4.47	2.96	2.07	897	78.3	0	18.5	6.105	1.35	128.4	0.787856	706.7065351		
33500	9113	9.8	8.52	7.53	6.73	5.5	3.7	2.67	1413.8	44.1	0	15	4.95	1.41	183.4	0.743937	1051.777786		
32750	9168	8.76	7.53	6.64	5.96	4.95	3.38	2.33	929.7	171.5	0	15.8	5.214	1.38	121	0.744236	691.9159821		
32001	9014	9.9	8.36	7.27	6.38	5.13	3.39	2.43	785.1	96.7	0	15.8	5.214	1.27	167.5	0.744542	584.5397562		
31250	9124	8.45	7.25	6.34	5.7	4.61	3.23	2.39	876.4	181.7	0	16.7	5.511	1.29	231.4	0.744855	652.790759		
30500	9157	10.01	8.35	7.14	6.29	4.98	3.28	2.32	640.1	111.5	0	16.6	5.478	1.44	146.2	0.745014	476.8834241		
29750	8982	8.14	6.65	5.67	4.83	3.67	2.36	1.58	823.5	77.8	0	22.9	7.557	1.43	98.1	0.745337	613.7853513		
29250	9004	8.92	7.47	6.48	5.66	4.4	3	2.07	756.1	115.6	0	18.1	5.973	1.28	115.3	0.745668	563.7994056		
29001	8949	9.53	7.91	6.8	5.97	4.83	3.08	2.16	687.2	107.8	0	17	5.61	1.88	140.8	0.746005	512.6546537		
28250	9004	8.99	7.64	6.63	6.03	4.92	3.38	2.44	673.5	201.6	0	15.6	5.148	1.57	300	0.746524	502.7837209		
27500	9036	8.16	6.73	5.8	5.09	4.05	2.73	2.01	634.5	181.5	0	19.7	6.501	1.25	209.2	0.746878	473.8940861		
26751	9047	10.15	8.41	7.22	6.27	4.77	3.38	2.54	530.6	124.4	0	16.4	5.412	1.96	300	0.747239	396.485022		
26000	9091	8.33	6.78	5.82	5.09	3.99	2.76	2.06	520.8	206.2	0	19.9	6.567	1.32	251.5	0.747607	389.3535934		
25250	9080	8.66	6.98	6.1	5.43	4.43	3.15	2.39	383.2	354.7	0	17.5	5.775	1	300	0.747981	286.6263735		
24500	9058	9.69	7.92	6.75	5.85	4.46	3.11	2.29	490.9	138.3	0	17.8	5.874	1.81	300	0.748171	367.2770587		
23751	9080	7.25	5.79	4.91	4.24	3.19	2.21	1.6	587.7	183.6	0	25.2	8.316	1.9	300	0.748555	439.9258579		
23000	9168	6.31	5.05	4.38	3.87	3.1	2.07	1.47	615.8	324.7	0	26.3	8.679	1.35	130.4	0.748946	461.2009609		

VT105 Westbound (1 of 2)



Appendix D – Raw FWD Data for Richford-Jay STP 2914(1)

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):					Depth to Bedrock	Absolute ERR/Sens	Adjusted to 68 F ATAF Adj. Surf Modulus
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF Adj. Surf Modulus				
22250	9069	8.93	7.5	6.47	5.71	4.48	2.85	1.99	987.5	67.1	0	18.9	6.237	1.87	131.5	0.749343	739.9766284		
21501	9091	9.1	7.61	6.45	5.61	4.2	2.66	1.88	972.4	40.4	0	21	6.93	1.76	138.5	0.749747	729.0542695		
20750	9091	9.94	8.15	6.68	5.84	4.21	2.6	1.76	764.9	34.6	0	21.4	7.062	2.35	300	0.750158	573.7955478		
20000	9058	10.29	8.64	7.36	6.43	4.92	3.29	2.3	707.1	74.4	0	16.7	5.511	1.54	129.5	0.750574	530.7310802		
19250	9080	9.67	8.01	6.84	5.97	4.81	3.19	2.15	550.7	143.9	0	16.9	5.577	1.29	107.5	0.750997	413.5742239		
18500	9102	7.28	5.98	5.06	4.43	3.41	2.37	1.77	650	197	0	23.3	7.689	1.82	230.5	0.752304	488.997583		
17750	9518	7.39	6.15	5.32	4.65	3.52	2.36	1.61	1040	98.6	0	25.8	8.514	1.71	102.5	0.761942	792.4195821		
17000	9453	8.51	7.03	5.99	5.2	4.03	2.72	1.96	751	113.6	0	22.2	7.326	1.4	154.9	0.762577	572.6949874		
16250	9365	8.35	6.91	5.9	5.16	3.89	2.64	1.93	1040	56.4	0	23.7	7.821	2.22	300	0.76321	793.7384779		
15500	9453	5.51	4.57	3.95	3.47	2.61	1.89	1.4	1040	237.4	0	32.6	10.758	2.14	300	0.763842	794.3960936		
14750	9310	15.05	11	8.65	7.07	4.82	3.19	2.31	340	25.4	0	19.7	6.501	4.21	65.4	0.764473	259.920965		
14000	9453	8.85	7.58	6.57	5.77	4.18	2.8	1.85	1040	50	0	21.8	7.194	2.44	114.2	0.765103	795.7071948		
13250	9420	8.39	7.04	6.04	5.31	4.15	2.87	2.17	784.4	136.9	0	21	6.93	1.45	300	0.765731	600.6395879		
12500	9354	7.87	6.44	5.5	4.81	3.65	2.52	1.87	717.4	139.8	0	23.8	7.854	1.64	300	0.766358	549.7851242		
11751	9332	10.46	9.06	7.82	7.07	5.65	3.89	2.94	1040	41.3	0	16.4	5.412	2.9	300	0.767295	797.9864273		
11000	9365	9.26	7.81	6.67	5.79	4.38	3.05	2.31	830.7	78.6	0	20.1	6.633	1.93	300	0.767917	637.9086122		
10251	9277	10.69	9.21	8.03	7.1	5.65	3.91	2.94	825	87.2	0	15.1	4.983	1.3	300	0.768537	634.0433439		
9500	9255	11.24	9.46	8.09	6.97	5.06	3.33	2.34	830.8	25.1	0	18.7	6.171	1.89	124.3	0.768847	638.7579814		
8751	9255	10.52	8.86	7.59	6.58	4.98	3.48	2.59	701.1	72.8	0	17.4	5.742	1.91	300	0.769464	539.4714378		
8002	9190	11.09	9.44	8.02	7.03	5.15	3.52	2.6	800.3	39	0	17.3	5.709	2.3	145.3	0.77008	616.2947653		
7250	9255	9.13	7.67	6.6	5.77	4.5	3.09	2.37	780.3	103.4	0	19.3	6.369	1.34	300	0.770693	601.3716231		
6500	9113	9.3	7.83	6.81	6.05	4.83	3.49	2.7	606.1	184.8	0	16.8	5.544	1.44	300	0.771304	467.4871879		
5751	9201	9.33	7.86	6.78	5.88	4.49	3.12	2.17	788.2	87	0	19.1	6.303	1.63	300	0.771912	608.4212303		
5000	9234	8.04	6.65	5.72	5.03	3.94	2.85	2.24	615.8	207.9	0	21.1	6.963	1.74	300	0.772518	475.7167726		
4251	9113	7.23	6.04	5.25	4.65	3.81	2.8	2.22	608.9	332.8	0	21.1	6.963	1.32	300	0.77282	470.5703343		
3501	9135	8.48	6.96	5.87	5.11	3.95	2.69	1.88	624.2	129.8	0	21.8	7.194	1.5	121.3	0.773723	482.9577141		
2751	9135	9.48	7.98	6.95	6.13	4.98	3.48	2.75	617.4	170.7	0	16.7	5.511	1.07	300	0.774022	477.881266		
2000	9168	9.36	7.88	6.83	6	4.86	3.41	2.6	613.6	171.5	0	17.1	5.643	1.09	300	0.774619	475.3061594		
1251	9102	10.57	8.84	7.56	6.53	5	3.19	2.17	816.1	39.3	0	18.4	6.072	1.52	113.1	0.775509	632.8926334		
499	9058	8.48	7.06	6.07	5.31	4.11	2.84	2.13	733.3	122.6	0	20.5	6.765	1.42	300	0.776098	569.1127736		
250	9113	6.63	5.44	4.73	4.15	3.26	2.24	1.64	826.1	201.5	0	25.9	8.547	1.36	171.5	0.776392	641.3772156		
Mean:		9.08	7.56	6.48	5.69	4.42	3.00	2.17	757.9	128.9	0	19.6		1.68	213.6		579		
Std. De	v:	1.49	1.22	1.02	0.90	0.72	0.48	0.37	206.6	78.8	0	3.6	1.2	0.52	84.5		158.4204644		
Var Coe	ff(%):	16.39	16.17	15.77	15.82	16.23	16.08	16.90	27.3	61.2	0	18.4		30.98	39.6				

VT105 Westbound (2 of 2)



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX E – RAW FWD DATA FOR CAVENDISH WEATHERSFIELD STP 0146(14)



GEOdesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):						Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR(E1)	ERR(E2)	ERR(E3)	ERR(E4)				
100	9398	10.72	8.56	7.17	6.22	4.58	3.02	1.84	580.1	56.2	0	20.6	6.798	2.12	163.3	0.8063	467.734842			
501	9420	6.19	5.04	4.56	4.34	3.93	3.2	2.48	417.7	2000	0	18.8	6.204	1.2	300	0.8063	336.7916626			
1000	9332	11.14	9.89	9.23	8.6	7.51	5.91	4.64	888.6	272.3	0	9.5	3.135	0.9	300	0.8063	716.4785047			
1501	9255	19.72	16.46	14.01	12.06	9.19	6.4	4.81	373.2	32.1	0	9.8	3.234	1.68	300	0.8063	300.9112964			
2002	9179	15.32	13.54	12.35	11.28	9.67	7.61	5.98	531.7	164.6	0	7.6	2.508	0.85	300	0.8063	428.7099043			
2503	9146	15.76	13.46	11.7	10.21	7.83	5.29	3.77	697.7	20.2	0	12.1	3.993	1.43	165.9	0.8063	562.5557649			
3001	9135	18.5	13.31	10.96	9.12	6.43	3.81	2.39	217.6	28.7	0	15.1	4.983	3.11	93	0.8063	175.4509595			
3500	9573	14.83	11.99	10.31	9.04	6.81	4.39	2.97	554	33.4	0	14.5	4.785	2.31	115.2	0.8063	446.6904024			
4000	9376	19.97	15.48	12.3	9.94	6.67	3.85	2.69	261.1	15.5	0	15.5	5.115	3.1	62.7	0.8063	210.5250254			
4501	9409	17.09	13.93	11.63	9.85	7.07	4.32	2.89	478	15	0	14.9	4.917	2.1	114.1	0.8063	385.4115746			
5002	9464	5.99	5.15	4.76	4.45	3.91	3.02	2.37	753.6	915.6	0	19.3	6.369	0.98	300	0.8063	607.6279553			
5501	9332	11.67	10.33	9.4	8.67	7.45	5.72	4.46	758.1	202.8	0	10.2	3.366	0.81	300	0.953592	722.9178237			
6001	9365	4.22	3.54	3.29	3.13	2.79	2.28	1.91	934.9	2000	0	25.3	8.349	1.29	300	0.953592	891.512826			
6501	9354	5.2	4.4	4.07	3.89	3.53	2.93	2.45	759	2000	0	19.3	6.369	1.22	300	0.953592	723.7760562			
7001	9310	10.79	8.76	7.38	6.18	4.4	2.79	2.08	747.9	24	0	23.2	7.656	1.87	93.9	0.953592	713.1911189			
7501	9365	5.41	4.22	3.59	3.15	2.53	1.83	1.38	554.2	386.7	0	34.9	11.517	1.39	300	0.953592	528.480488			
8001	9310	5.79	4.96	4.53	4.2	3.63	2.8	2.23	792.4	735.3	0	20.6	6.897	0.86	300	0.953592	755.6260171			
8501	9288	5.7	4.57	4.13	3.83	3.26	2.49	1.93	457.9	1036.6	0	24.6	8.118	0.94	300	0.953592	436.6496128			
9001	9332	9.26	8.1	7.46	6.98	6.08	4.75	3.72	655	443.9	0	12.1	3.993	0.87	300	0.953592	624.6025255			
9500	9255	10.58	8.32	6.85	5.74	4.12	2.63	1.87	555.4	41.1	0	23.5	7.755	1.91	102.9	0.953592	529.6247979			
10000	9288	12.19	10.25	8.74	7.51	5.6	3.69	2.62	807.8	22.4	0	17.8	5.874	1.6	256.6	0.953592	770.3113283			
10501	9223	18.37	14.82	12.12	9.88	6.6	3.69	2.44	311.9	15.5	0	15.5	5.115	4.09	61.3	0.953592	297.4252331			
11002	9420	13.07	10.83	9.15	7.77	5.69	3.6	2.6	706.4	18.4	0	18.4	6.072	1.7	150	1.066643	753.4766992			
11500	9288	16.91	14.04	11.88	10.06	7.3	4.48	3.07	504.9	15	0	14.1	4.653	2.1	123.4	1.066699	538.5761818			
12002	9310	15.26	12.74	10.85	9.37	6.98	4.56	3.12	634.4	18.6	0	14.3	4.719	1.69	120.3	1.066761	676.7533322			
12501	9277	10.38	8.18	6.7	5.63	4.07	2.7	2.05	511.7	53.5	0	23.1	7.623	1.99	111.1	1.066795	545.8790535			
13000	9245	4.11	3.39	2.99	2.83	2.4	2.18	1.47	725.3	2000	0	29.5	9.735	3.58	300	1.066868	773.7939359			
13000	9266	4.11	3.29	2.94	2.73	2.37	1.87	1.5	554.9	2000	0	33.1	10.923	1.13	300	1.066907	592.0267233			
13500	9255	7.63	6.48	5.76	5.22	4.3	3.21	2.62	805.5	249.5	0	19	6.27	1.06	300	1.066999	859.4607018			
14001	9255	5.74	4.8	4.37	4.08	3.48	2.64	1.99	667.4	745	0	22.3	7.359	1.12	300	1.06708	712.1695127			
14500	9266	9.27	8.11	7.33	6.77	5.74	4.26	3.19	916.2	214.7	0	13.7	4.521	1.16	300	1.067178	977.7480503			
15000	9266	4.82	4.06	3.84	3.69	3.38	2.8	2.36	963.3	2000	0	19.6	6.468	1.81	300	1.067281	1028.112218			
15501	9310	5.34	4.39	3.96	3.7	3.24	2.48	1.94	527	1279	0	24.3	8.019	0.95	300	1.067336	562.4860619			
16000	9201	5.39	4.56	4.18	3.94	3.43	2.67	2.11	643.2	1190.9	0	21.6	7.128	0.94	300	1.06745	686.5839611			
16571	9201	10.08	7.61	5.92	4.72	3.16	1.78	1.27	443.6	32.2	0	32.2	10.626	3.21	58.7	1.067699	473.6313271			
17001	9255	5.76	4.78	4.33	4.03	3.5	2.69	2.11	545.4	1004.1	0	22.2	7.326	0.83	300	1.067834	582.3965568			
17501	9255	7.02	5.69	5.02	4.53	3.78	2.83	2.2	470.8	438	0	21.9	7.227	0.98	300	1.067975	502.802767			
18000	9168	6.76	5.74	5.05	4.6	3.78	2.73	1.99	965.6	238.7	0	21.9	7.227	1.28	300	1.068124	1031.380108			
18500	9212	9.28	7.8	6.91	6.31	5.25	3.94	3.02	491.9	273.6	0	15.3	5.049	1.14	300	1.068279	525.4862385			
19101	9179	6.46	5.14	4.53	4.11	3.49	2.69	2.18	372.2	774.5	0	23.2	7.656	1.22	300	1.06844	397.6735045			
19500	9255	6.99	5.56	4.88	4.43	3.74	2.85	2.29	368.8	612.5	0	22.1	7.293	1.2	300	1.068609	394.1029513			
20001	9201	5.19	4	3.52	3.2	2.76	2.2	1.79	347.3	1669.4	0	28.9	9.537	1.56	300	1.068784	371.1887111			
20501	9146	5.75	4.8	4.33	4.02	3.53	2.83	2.33	483.6	1394.8	0	20.9	6.897	1.02	300	1.068966	516.9519465			
21001	9025	27.08	17.01	13.23	11.33	8.17	4.63	2.89	200	15	0	12.4	4.092	6.38	300	1.069155	213.8309078			
21501	9376	5.69	4.64	4.06	3.72	3.15	2.46	2.02	512.4	788.4	0	25.8	8.514	1.55	300	1.072622	549.6117436			
22000	9255	6.2	5.17	4.79	4.56	3.97	3.16	2.52	468.2	1581.5	0	18.1	5.973	0.98	300	1.072911	502.3369412			
22501	9255	5.59	4.72	4.38	4.06	3.54	2.8	2.28	618.2	1192.9	0	20.8	6.864	0.63	300	1.073206	663.4558246			
23002	9234	6.5	5.78	5.29	4.79	3.96	3.02	2.49	1240	290.9	0	19.6	6.468	1.28	300	1.07366	1331.337796			
23501	9223	6.91	5.26	4.56	4.13	3.45	2.61	2.04	288.5	690.7	0	24.4	8.052	1.42	300	1.073814	309.7952853			
24001	9266	6.25	5.05	4.59	4.27	3.65	2.73	2.1	457	848.7	0	22	7.26	1.11	300	1.074127	490.8760309			
24502	9212	7.39	6	5.32	4.83	4.09	3.04	2.33	432.9	464.4	0	20.1	6.633	0.86	300	1.074446	465.1277637			

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Appendix E – Raw FWD Data for Cavendish Weathersfield STP 0146(14)

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):					Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR	ERR	ERR	ERR			
25001	9234	5.52	4.6	4.22	3.91	3.35	2.43	1.79	768.4	620.6	0	23.9	7.887	1.78	182.9	1.074771	825.8543859		
25556	9234	4.9	3.9	3.52	3.28	2.87	2.25	1.78	449.9	1885.4	0	27.1	8.943	0.82	300	1.075103	483.6886968		
26000	9146	6.41	5.53	5.11	4.78	4.27	3.46	2.89	545	1410.2	0	16.1	5.313	0.6	300	1.07544	586.1147194		
26500	9146	6.55	5.45	4.87	4.48	3.81	2.93	2.35	523.4	620.3	0	20.4	6.732	0.99	300	1.075957	563.1557157		
27000	9201	5.25	4.36	3.96	3.73	3.31	2.62	2.13	521.2	1778.6	0	22.3	7.359	0.71	300	1.076309	560.9719938		
27501	9190	5.03	4.29	3.97	3.74	3.33	2.69	2.23	661.5	1900.2	0	20.9	6.897	0.6	300	1.076666	712.2146598		
28000	9201	4.43	3.82	3.53	3.34	3	2.39	1.94	838.2	1992.8	0	23.1	7.623	0.8	300	1.076847	902.6132695		
28501	9157	5.72	5	4.7	4.46	3.98	3.24	2.73	782.3	1497.5	0	16.5	5.445	0.68	300	1.077213	842.7040416		
29001	9223	5.93	4.97	4.56	4.3	3.84	3.11	2.56	466.8	1941.2	0	18.4	6.072	0.73	300	1.077585	503.0168418		
29501	9157	6.27	5.23	4.64	4.24	3.57	2.7	2.1	609.9	502.4	0	22.3	7.359	1.04	300	1.077963	657.4496024		
30000	9135	4.94	4.11	3.78	3.58	3.18	2.57	2.17	591.4	2000	0	22.3	7.359	0.84	300	1.078154	637.6201871		
30501	9102	6.57	5.39	4.85	4.47	3.88	3.03	2.38	422	931.9	0	19.8	6.534	0.87	300	0.883875	372.9954416		
31001	9080	6	4.7	4.15	3.81	3.23	2.41	1.86	1240	43.5	0	37	12.21	12.9	300	0.883999	1096.147359		
31501	9102	5.48	4.63	4.28	4.07	3.63	2.95	2.44	551.9	2000	0	18.9	6.237	0.71	300	0.884226	488.0041083		
32000	9157	6.63	5.07	4.39	3.98	3.35	2.59	2.1	290.4	819.6	0	24.7	8.151	1.64	300	0.884471	256.8503281		
32500	9113	5.6	4.51	4.09	3.81	3.31	2.6	2.17	427.8	1445	0	23	7.59	0.84	300	0.884725	378.4855526		
33000	9124	7.61	6.31	5.67	5.23	4.51	3.51	2.87	402.3	698.2	0	17	5.61	0.91	300	0.884989	356.0312673		
33500	9157	5.83	4.72	4.25	3.92	3.37	2.5	1.81	495.2	801.4	0	23.9	7.887	1.03	147.5	0.885263	438.3821632		
34001	9102	5.48	4.16	3.59	3.24	2.74	2.12	1.71	329.6	1043.3	0	30.1	9.933	1.64	300	0.885546	291.8758122		
34502	9036	5.51	4.19	3.56	3.13	2.46	1.78	1.38	471.5	364.4	0	34.8	11.484	1.59	300	0.885838	417.6724001		
35000	9277	5.44	4.41	3.96	3.65	3.18	2.52	2.11	454	1410.9	0	24.5	8.085	1.03	300	0.890464	404.2707531		
35501	9234	4.49	3.61	3.34	3.15	2.85	2.32	1.93	660.4	2000	0	26.1	8.613	1.9	300	0.890672	588.20003		
36001	9168	5.35	4.42	4.07	3.78	3.34	2.61	2.15	533.2	1480.2	0	22.4	7.392	0.5	300	0.891095	475.1319766		
36501	9179	7.51	5.82	5.12	4.7	4.02	3.01	2.42	271.5	798.9	0	20.6	6.798	0.95	300	0.891527	242.049528		
37000	9168	4.96	3.97	3.58	3.29	2.8	2.12	1.78	527.5	1040.9	0	28.7	9.471	0.86	300	0.891967	470.5126186		
37500	9245	4.62	3.61	3.23	2.98	2.58	1.98	1.58	449.3	1665.9	0	31.4	10.362	0.81	300	0.892416	400.9624689		
38001	9223	4.59	3.65	3.31	3.11	2.76	2.2	1.79	524.2	2000	0	27.9	9.207	1.16	300	0.892873	468.0442068		
38500	9179	4.27	3.17	2.9	2.74	2.43	1.89	1.52	1240	109.3	0	50.4	16.632	16.59	300	0.893339	1107.74073		
39100	9091	5.65	4.28	3.78	3.44	2.92	2.25	1.81	320.1	1189.4	0	27.9	9.207	1.22	300	0.893814	286.1097732		
39500	9113	4.9	3.8	3.41	3.13	2.65	1.9	1.59	468.5	940.4	0	31.5	10.395	1.41	300	0.894297	418.9779438		
40001	9135	4.04	3.09	2.84	2.69	2.4	1.89	1.51	605.8	2000	0	32.7	10.791	2.37	300	0.894788	542.0624416		
40501	9135	4.36	3.42	3.13	2.96	2.61	2.06	1.64	555	2000	0	29.4	9.702	1.47	300	0.895287	496.884462		
41001	9113	5.23	4.15	3.68	3.34	2.74	1.98	1.47	590.7	535.3	0	30.5	10.065	1.3	185.4	0.89554	528.995588		
41501	9091	5.87	4.89	4.55	4.32	3.92	3.15	2.54	493.8	2000	0	17.6	5.808	0.87	300	0.896052	442.4705218		
42000	9069	5.21	4.33	4.04	3.82	3.42	2.77	2.46	577.7	2000	0	20.2	6.666	0.84	300	0.896572	517.9497436		
42501	9080	5.46	4.53	4.11	3.83	3.33	2.55	2	569.2	1045.8	0	22.8	7.524	0.85	300	0.8971	510.6295339		
43000	9168	6.3	4.83	4.14	3.7	3.07	2.29	1.77	342.9	577.2	0	27.8	9.174	1.43	300	0.897637	307.7996054		
43501	9080	5.85	4.94	4.53	4.32	3.81	3.15	2.6	486.2	2000	0	17.8	5.874	1.13	300	0.897908	436.5627649		
44000	9036	7.43	5.97	5.26	4.82	4.05	3.15	2.71	345.9	620.8	0	19.5	6.435	1.46	300	0.898456	310.7759442		
44500	9091	6.16	4.83	4.26	3.84	3.23	2.36	1.82	414.8	580.9	0	25.9	8.547	0.87	300	0.899012	372.9102652		
45000	9047	6.42	5.2	4.72	4.39	3.85	2.96	2.32	388.2	1158.3	0	19.9	6.567	0.72	300	0.899576	349.2154955		
45501	9069	4.13	3.42	3.15	2.99	2.64	2.06	1.6	719.3	2000	0	27.6	9.108	1.03	300	0.900148	647.4764976		
46001	9234	3.96	2.9	2.63	2.43	2.1	1.55	1.17	435.6	2000	0	40.2	13.266	1.1	300	0.906606	394.9176614		
46501	9190	4.33	3.33	3.05	2.85	2.51	1.92	1.49	489	2000	0	31.9	10.527	1.13	300	0.907263	443.651537		
47000	9146	5.22	4.01	3.61	3.36	2.93	2.26	1.79	350.4	1939.4	0	26.9	8.877	0.73	300	0.907926	318.1374264		
47501	9146	6.63	5.44	4.96	4.67	4.07	3.15	2.47	407.1	1163.5	0	18.6	6.138	0.89	300	0.908261	369.7529781		
Mean:		7.68	6.22	5.47	4.92	4.04	2.98	2.3	562.5	959.9	0	22.4		1.64	258.4		545		
Std. Dev:		4.33	3.35	2.72	2.25	1.59	1.03	0.76	207.2	732.9	0	6.9	2.291253	2.1	161.9		215.2424299		
Var Coeff (%)		56.38	53.76	49.8	45.81	39.42	34.64	32.84	36.8	76.4	0	31		128.27	62.7				

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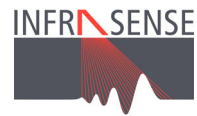
Appendix E – Raw FWD Data for Cavendish Weathersfield STP 0146(14)

Station	Load (lbs)	Measured Deflection (mils):										Calculated Modulus Values (ksi):				Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF Adj. Surf Modulus
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/Sens	Depth to Bedrock	Adjusted to 68 F ATAF Adj. Surf Modulus			
47251	9234	5.38	4.21	3.9	3.69	3.27	2.53	2	484	2000	0	23.6	7.788	2.28	300	0.9089	439.9076272	
46751	9255	4.52	3.55	3.24	3.03	2.63	1.96	1.5	539.5	2000	0	30.3	9.999	1.32	300	0.909588	490.7224769	
46250	9179	6.25	5.24	4.64	4.17	3.41	2.42	1.76	494.5	523	0	24.5	8.085	1.14	159.5	0.91028	450.1335903	
45750	9223	6.75	5.5	4.96	4.56	3.8	2.74	2.1	467.1	714.9	0	21.3	7.029	1.27	300	2.088626	975.5973848	
45251	9212	7.57	6.16	5.54	5.09	4.35	3.21	2.44	359.3	892.3	0	18.3	6.039	0.87	300	2.091626	751.5210917	
44750	9168	9.13	6.87	5.94	5.34	4.42	3.16	2.3	197.8	637.7	0	19.3	6.369	1.11	300	2.094638	414.3194239	
44251	9146	4.57	3.5	3.3	3.17	2.84	2.24	1.74	716.4	2000	0	26.5	8.745	3.87	300	2.097664	1502.76615	
43751	9102	7.64	5.28	4.39	3.84	3.07	2.17	1.62	184.3	608.2	0	29.3	9.669	1.91	300	2.099181	386.8790466	
43251	9058	7.02	5.29	4.61	4.17	3.47	2.55	1.94	242	1039.9	0	23.7	7.821	1.28	300	1.655818	400.7079934	
42751	9058	6.69	5.23	4.7	4.35	3.68	2.73	2.26	302.5	1327.6	0	21.5	7.095	0.96	300	1.657922	501.521467	
42250	9069	4.93	3.42	3.06	2.83	2.41	1.75	1.28	288.2	2000	0	35.4	11.682	1.92	300	1.660035	478.4219998	
41751	9036	5.33	3.55	3.13	2.92	2.52	1.85	1.37	241.9	2000	0	34.5	11.385	2.74	300	1.661094	401.8186453	
41250	9047	5.43	4.3	3.94	3.69	3.16	2.32	1.76	405.4	1800.1	0	24.5	8.085	1.31	300	1.663219	674.2688581	
40750	9058	7.67	6.18	5.65	5.22	4.4	3.24	2.47	342.8	891.4	0	17.7	5.841	1.12	300	1.665351	570.882372	
40250	9058	6.29	4.78	4.28	3.97	3.34	2.44	1.94	277.8	1514	0	24.1	7.953	1.05	300	1.667491	463.2290312	
39750	8971	7.24	5.8	5.13	4.65	3.8	2.69	1.99	418.4	491.1	0	21.5	7.095	1.27	212.5	1.669638	698.5766787	
39251	9004	5.54	4.01	3.48	3.11	2.5	1.7	1.17	299.1	852	0	34.8	11.484	1.36	101.6	1.671793	500.033147	
38750	9036	5.17	3.94	3.58	3.36	2.89	2.19	1.72	385.6	2000	0	27.1	8.943	1.52	300	1.672872	645.0595077	
38250	9047	8.9	7.54	6.8	6.28	5.3	3.78	2.72	356.5	330.1	0	19.6	6.468	1.23	300	1.675036	871.3538975	
37751	9014	8.61	6.79	5.96	5.3	4.3	2.96	2.26	356.5	330.1	0	19.6	6.468	1.23	300	1.677207	597.9242183	
37251	9036	5.61	4.31	3.94	3.72	3.28	2.53	1.98	390.7	2000	0	23.5	7.755	2.12	300	1.679383	656.135039	
36750	9014	5.88	4.64	4.07	3.68	3.07	2.25	1.69	388.1	932	0	26.4	8.712	1.07	300	1.681565	652.6155599	
36250	9036	6.54	5.05	4.47	4.1	3.48	2.57	1.9	281.4	1334	0	23	7.59	0.93	300	1.683753	473.8081351	
35750	8971	6.13	4.53	4.01	3.67	3.17	2.43	1.9	244.3	2000	0	24.8	8.184	1.29	300	1.685946	411.8766064	
35250	9223	4.79	3.78	3.51	3.37	2.92	2.23	1.78	592.7	2000	0	26.2	8.646	2.2	300	1.304808	773.35982	
34750	9190	6.02	4.84	4.43	4.21	3.63	2.81	2.19	401.5	2000	0	20.7	6.831	1.14	300	1.306252	524.4603411	
34251	9113	5.81	4.53	4.06	3.8	3.3	2.56	2.04	348.1	2000	0	23.5	7.755	1.28	300	1.307697	455.2093812	
33751	9091	6.14	4.98	4.5	4.19	3.57	2.65	2.06	419.2	1252.8	0	21.7	7.161	1	300	1.309142	548.7924361	
33244	9190	5.12	4.07	3.69	3.46	2.9	2.11	1.47	465.6	1490.8	0	27.6	9.108	1.4	300	1.309865	609.873089	
32750	9135	6	5.01	4.61	4.38	3.83	2.97	2.17	497.3	1881.5	0	18.8	6.204	0.93	300	1.311131	652.1145306	
32250	9102	5.22	4.23	3.87	3.64	3.24	2.56	2.05	553.3	2000	0	22.7	7.491	1.73	300	1.312033	725.947704	
31751	9069	7.29	6.2	5.78	5.51	5.03	4.06	3.33	671.2	1313.4	0	13.1	4.323	2.03	300	1.313478	881.606217	
31251	9069	7.78	6.43	5.86	5.45	4.64	3.48	2.79	385.3	901.1	0	16.3	5.379	0.98	300	1.314922	506.6395185	
30751	9080	7.53	5.95	5.25	4.81	4.03	2.97	2.35	290.3	893.4	0	20	6.6	1.1	300	1.316366	382.1410634	
30251	9047	6.9	5.51	5.02	4.76	4.24	3.36	2.63	381.6	1729.5	0	17.3	5.709	1.91	300	1.317088	502.6006551	
29750	9102	6.12	4.65	4.17	3.82	3.24	2.34	1.68	290	1456.5	0	25.2	8.316	0.9	139	1.31853	382.3737521	
29250	9058	6.65	5.38	5	4.76	4.29	3.49	2.84	502.9	1649.1	0	16.5	5.445	2.64	300	1.319251	663.4513351	
28750	9091	6.74	5.59	5.14	4.87	4.32	3.37	2.61	459.7	1655.7	0	16.6	5.478	1.2	300	1.320692	607.1219824	
28250	9014	7.61	5.9	5.09	4.57	3.77	2.78	2.11	268.5	695.7	0	21.8	7.194	1.51	300	1.322131	354.9921634	
27751	8993	7.92	6.52	5.91	5.48	4.65	3.43	2.63	377.4	772	0	16.5	5.445	1.04	300	1.323569	499.5147694	
27251	8993	5.92	5.16	4.83	4.58	4.11	3.23	2.58	771.9	1600.8	0	16	5.28	1.05	300	1.325004	1022.770793	
26751	9025	6.4	5.33	4.83	4.46	3.82	2.83	2.13	503.5	943.2	0	19.9	6.567	0.95	300	1.326438	667.8614908	
26250	9058	6.51	5.09	4.53	4.16	3.52	2.57	1.89	317.4	1150.2	0	22.9	7.557	0.95	300	1.327154	421.2386484	
25751	9025	6.74	5.52	5.06	4.74	4.13	3.16	2.46	370.8	1686.7	0	17.8	5.874	0.72	300	1.328584	492.6389713	
25250	9058	5.67	4.06	3.4	2.97	2.33	1.48	0.94	343.1	431.2	0	38.9	12.837	1.92	300	1.330012	456.3269963	
24750	8960	6.99	5.37	4.78	4.39	3.7	2.71	2.05	262.2	1187.1	0	21.6	7.128	0.96	300	1.331436	349.1026357	
24250	9190	7.8	5.88	5.08	4.54	3.65	2.46	1.73	275.4	463.5	0	24.2	7.986	1.49	127.9	1.348242	371.3057899	
23751	9080	9.4	7.7	7.02	6.53	5.56	4.17	3.26	293.2	819	0	13.7	4.521	0.96	300	1.349612	395.7061331	
23251	9058	8.64	6.9	6	5.35	4.33	2.96	2.07	393.5	294.3	0	19.6	6.468	1.36	127.8	1.350294	531.340867	
22750	9102	6.33	4.78	4.04	3.54	2.85	2	1.45	334.4	522.7	0	30.5	10.065	1.35	146.5	1.351656	451.9936736	
22251	9058	5.5	4.22	3.69	3.33	2.71	1.83	1.22	415.7	700.6	0	31.8	10.494	1.65	90.5	1.353011	562.4466802	

Appendix E – Raw FWD Data for Cavendish Weathersfield STP 0146(14)

Station	Load (lbs)	Measured Deflection (mils):							Calculated Modulus Values (ksi):							Absolute ERR/Sens	Depth to Bedrock	Adjusted to 68 F	
		R1	R2	R3	R4	R5	R6	R7	SURF(E1)	BASE(E2)	SUBB(E3)	SUBG(E4)	ERR/Sens	Depth to Bedrock	ATAF			Adj. Surf Modulus	
21751	9004	6.72	5.18	4.6	4.23	3.59	2.7	1.98	264.9	1471.2	0	21.9	7.227	1.09	300	1.353686	358.5915171		
21250	9036	6.95	5.77	5.39	5.11	4.55	3.54	2.78	473.3	1553	0	15.5	5.115	1.44	300	1.355032	641.3367931		
20751	9047	7.09	5.23	4.54	4.12	3.42	2.61	2.06	202.5	1450.8	0	23.6	7.788	1.8	300	1.35903	275.203664		
20250	9091	5.98	4.54	3.9	3.52	2.78	1.88	1.43	387.1	530.3	0	31.3	10.329	1.79	300	1.359691	526.3362833		
19750	9047	6.06	4.89	4.29	3.97	3.26	2.43	1.84	432.8	870.7	0	24.4	8.052	1.5	300	1.361006	589.0433549		
19250	9069	6.2	4.82	4.26	3.9	3.3	2.47	1.94	308.8	1369.3	0	24.2	7.986	1.12	300	1.362314	420.6824628		
18751	9004	8.98	6.84	5.78	5.13	4.18	3.02	2.23	220.9	462.6	0	20.2	6.666	1.67	300	1.362965	301.0789076		
18251	9069	7.78	5.69	4.86	4.28	3.45	2.45	1.81	218.3	584.1	0	25.1	8.283	1.39	196.6	1.364261	297.8181816		
17750	9004	10.52	8.17	7.04	6.22	4.98	3.52	2.59	245.3	287.5	0	16.9	5.577	1.21	218.1	1.365549	334.9692742		
17250	9025	7.7	6.59	6.04	5.67	4.94	3.76	2.96	464.3	1022.7	0	14.5	4.785	1.01	300	1.278523	593.6182124		
16751	8938	6.99	6.01	5.59	5.3	4.81	3.85	3.15	631	1372	0	13.7	4.521	1.54	300	1.279099	807.1116613		
16250	8927	7.61	6.26	5.71	5.31	4.54	3.45	2.7	356.1	1071.6	0	16.3	5.379	0.87	300	1.280246	455.8957592		
15750	9047	7.73	6.6	6.07	5.72	5.04	3.91	3.11	415.1	1378.7	0	13.8	4.554	0.83	300	1.282518	532.3731995		
14751	9014	8.06	6.39	5.48	4.9	3.96	2.89	2.32	340.7	414.2	0	20.9	6.897	1.62	300	1.283642	437.336814		
14251	8960	5.03	3.92	3.51	3.26	2.85	2.18	1.7	414.2	2000	0	27	8.91	1.21	300	1.284758	532.1467229		
13751	8894	8.82	7.39	6.68	6.18	5.37	4.14	3.29	308.3	1026.2	0	13.5	4.455	0.84	300	1.285866	396.4323685		
13251	9069	7.24	5.96	5.52	5.21	4.63	3.7	3.01	451.2	1519.3	0	15.2	5.016	1.54	300	1.286965	580.6785701		
12751	8993	5.41	4.2	3.74	3.47	3.05	2.46	2.03	389.2	2000	0	24.9	8.217	2.14	300	1.288056	501.3112543		
12250	9146	14.3	11.43	9.54	8.18	6.06	4.2	3.22	349.7	74.2	0	14.3	4.719	2.1	199.8	1.301856	455.2589142		
11750	9124	17.4	14.05	11.48	9.7	6.78	4.4	3.11	404.3	26.5	0	13.4	4.422	2.36	81.8	1.302803	526.7233516		
11250	9004	22.44	18.8	16.16	13.96	10.25	6.75	4.7	492.7	15	0	8.8	2.904	1.9	177.5	1.30374	642.3525755		
10751	9014	14.11	11.44	9.52	8.06	5.7	3.71	2.63	556	29.9	0	15.8	5.214	2.15	90.1	1.304665	725.3937405		
10251	8938	14.05	11.33	9.49	8.02	5.69	3.72	2.78	528	33.2	0	15.6	5.148	2.09	93.1	1.305123	689.1051326		
10750	9047	21.49	17.43	14.32	11.93	8.13	4.85	3.1	340.3	15	0	11.6	3.828	2.93	69.1	1.306031	444.4424987		
9699	9069	14.53	12.15	10.44	8.94	6.07	3.24	1.83	629	15	0	16.8	5.544	4.43	68.5	1.306928	822.0576431		
9250	9080	8.78	7.32	6.61	6.11	5.09	3.79	2.76	404.9	548.4	0	15.1	4.983	1.17	181.6	1.307372	529.3548049		
8751	9047	4.96	3.87	3.46	3.17	2.63	1.98	1.53	414.5	1513	0	30.1	9.933	1.2	300	1.30825	542.2698078		
8251	9102	6.02	4.77	4.16	3.76	3.07	2.26	1.71	425.4	726.7	0	26.8	8.844	1.41	300	1.309117	556.8984483		
7751	9168	5.44	4.22	3.74	3.43	2.84	2.11	1.6	373.3	1318.6	0	28.7	9.471	1.22	300	1.309972	489.0124668		
7238	9091	7.74	6.11	5.26	4.71	3.77	2.73	1.94	364.5	410.5	0	22.2	7.326	1.55	300	1.310394	477.638792		
6750	9113	8.96	6.62	5.02	3.89	2.14	1.05	0.53	635.7	16.5	0	54.9	18.117	4.1	34.7	1.311231	833.5493112		
6250	9091	6.99	6.07	5.5	5.11	4.31	3.31	2.43	720.2	642.1	0	16.8	5.544	1.1	179.1	1.312054	944.9414965		
5751	9004	10.42	8.57	7.28	6.3	4.8	3.45	2.55	519.8	123	0	17.2	5.676	2.04	300	1.312865	682.4273951		
5249	9080	7.67	6.02	5.24	4.73	3.8	2.81	2.07	325.3	536.6	0	21.6	7.128	1.65	300	1.313266	427.205452		
4751	9004	20.13	15.92	12.93	10.68	7.04	3.99	2.38	320.3	15	0	13.6	4.488	3.51	57.7	1.314058	420.8927543		
4250	8971	22.8	17.64	14.12	11.51	7.43	4.63	3.44	252.4	15	0	13.7	4.059	2.79	51.5	1.314837	331.8648179		
3750	9004	22.22	16.67	12.98	10.35	6.69	4.19	2.96	218.1	16.7	0	13.7	4.521	2.99	51.6	1.315603	286.9329421		
3250	9069	16.91	13.82	11.85	10.19	7.3	4.64	3.11	589.9	19.1	0	12.8	4.224	2.39	110	1.315981	776.2969797		
2750	9091	18.76	14.39	11.56	9.5	6.5	4.38	3.18	247.9	33.8	0	13.5	4.455	2.89	67.8	1.318533	326.8642546		
2250	9014	17.99	13.79	10.96	8.89	5.57	3.14	2.05	321.1	15	0	17.5	5.775	3.65	47	1.319231	423.6051588		
1751	9058	7.05	5.49	5.13	4.89	4.12	3.18	2.37	304.2	1809.5	0	18.1	5.973	1.49	223.3	1.319916	401.5184543		
1250	9036	10.98	8.33	7.06	6.4	5.31	4.05	2.98	150	679.1	0	15.3	5.049	2.23	300	1.320587	198.0880286		
751	8993	5.21	4.2	3.97	3.84	3.45	2.98	2.55	855.1	1912.6	0	19.1	6.303	3.84	300	1.320917	1129.516141		
250	9069	14.77	11.32	9.16	7.5	4.76	2.78	1.65	470.8	15	0	21.3	7.029	3.1	48.4	1.321567	622.1936268		
Mean:		8.51	6.74	5.86	5.24	4.18	2.99	2.23	396.2	989.9	0	21.2					551		
Std. Dev		4.33	3.47	2.74	2.19	1.39	0.86	0.64	135.7	677.4	0	6.9	2.283626				199.8621983		
Var Coef f(%)		50.91	51.43	46.83	41.87	33.11	28.81	28.65	34.2	68.4	0	32.6							

VT131 Westbound (2 of 2)



***Pavement Structural Evaluation for Three  
Pavement Sections in Vermont:  
VT 131 - Cavendish-Weathersfield  
VT 100 - Stowe-Morristown  
VT 105 - Richford-Jay***

**Final Report**

**submitted to**

**GEODesign**

54 Main Street, P.O. Box 699  
Windsor, VT 05089

**by**

**Infrasense**

21-G Olympia Avenue, Suite 45  
Woburn, MA 01801

June 30, 2022



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX F – INFRASENSE FWD PAVEMENT STRUCTURAL EVALUATION REPORT



## 1. Introduction

The objective of this project was to evaluate the structure of the pavement sections outlined in Table 1. The evaluations utilized both ground penetrating radar (GPR) and falling weight deflectometer (FWD) to calculate the pavement layer thicknesses, moduli, and effective structural number. These sections recently underwent full depth reclamation including the use of a reclaimed stabilized base with a stabilizing agent (cement or emulsion). A description of the pavement design for each project section is provided in Table 2 below. Note that, although one treatment (typical section) is applied to each entire project segment, varying amounts of aggregate are applied for super elevation throughout the project segment. The following sections describe the data collection equipment and procedures, analysis methods, and resulting deliverables.

**Table 1 – Description of Pavement Sections**

Project	Route	Total Mileage (each lane)
Cavendish-Weathersfield ER STP 0146(14)	VT 131	8.95 miles
Stowe-Morristown STP PS19(3)	VT 100	7.55 miles
Richford-Jay STP 2914(1)	VT 105	7.44 miles

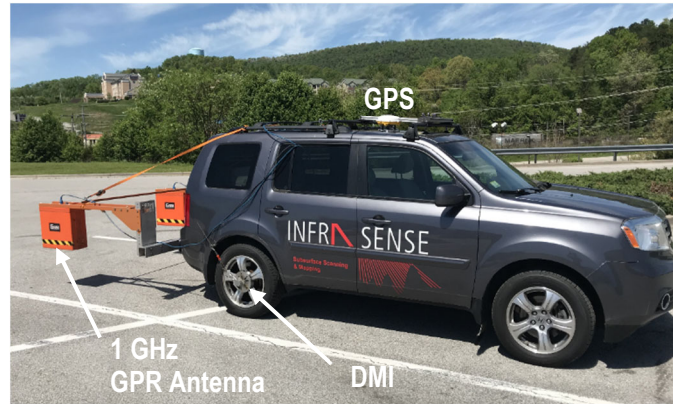
**Table 2 – Pavement Section Design**

SECTION ID	DESIGN
Cavendish-Weathersfield (VT-131)	1.5" AC Wearing Course over 2.5" AC over 2.5" Plant Mix Recycled AC with Portland Cement over 8" Reclaimed Cement Stabilized Base
Richford-Jay (VT-105)	1.5" AC Wearing Course over 2.5" AC over 3" Plant Mix Recycled AC with Portland Cement over 6" Reclaimed Emulsified AC Stabilized Base over 4" Reclaimed Base
Stowe-Morrisville (VT-100)	1.5" AC Wearing Course over 3.5" AC over 6" Reclaimed Emulsified AC Stabilized Base over 4" Reclaimed Base

## 2. Data Collection

### GPR Data Collection

GPR data was collected on November 23, 2021. The data was collected with a GSSI 1-GHz horn antenna. The 1-GHz antenna focuses on the upper 2-3 feet of the pavement construction. Data collection was carried out along the centerline of each of the two travel lanes (one per direction) at normal driving speeds, and no traffic control was required. The GPR system for this work included a GSSI SIR-4000 radar control and data acquisition unit, an electronic distance measuring instrument (DMI), and a high-resolution differential GPS using a Trimble Model SPS 985 GPS unit (see Figure 1).



**Figure 1 – GPR Data Collection System**

Falling Weight Deflectometer (FWD) Testing

The initial plan was to collect FWD data in the Fall of 2021 in the same time frame as the GPR testing. However, due to timing and schedule constraints of the project, the available time had cold weather conditions that were not favorable for FWD testing, so the testing was deferred until the spring of 2022. FWD testing was carried out by Wood Environmental and Infrastructure, Inc. using a Dynatest Model 8002 FWD as shown in Figure 2 according to the following schedule.

- VT 131 tested May 17, 2022;
- VT 100 tested May 18, 2022;
- VT 105 tested May 19, 2022.

Testing was performed in accordance with ASTM D4694-09 (2020) and ASTM D4695-03 (2020) with drops performed at approximate 500-ft intervals in each direction of travel. Due to incoming adverse weather conditions, test spacing in the northbound direction of VT 105 was increased to 750 ft for a majority of the lane. A total of 1,389 locations were tested across the three project sites.

All test locations were documented in terms of linear distance using a DMI, and with GPS coordinates.



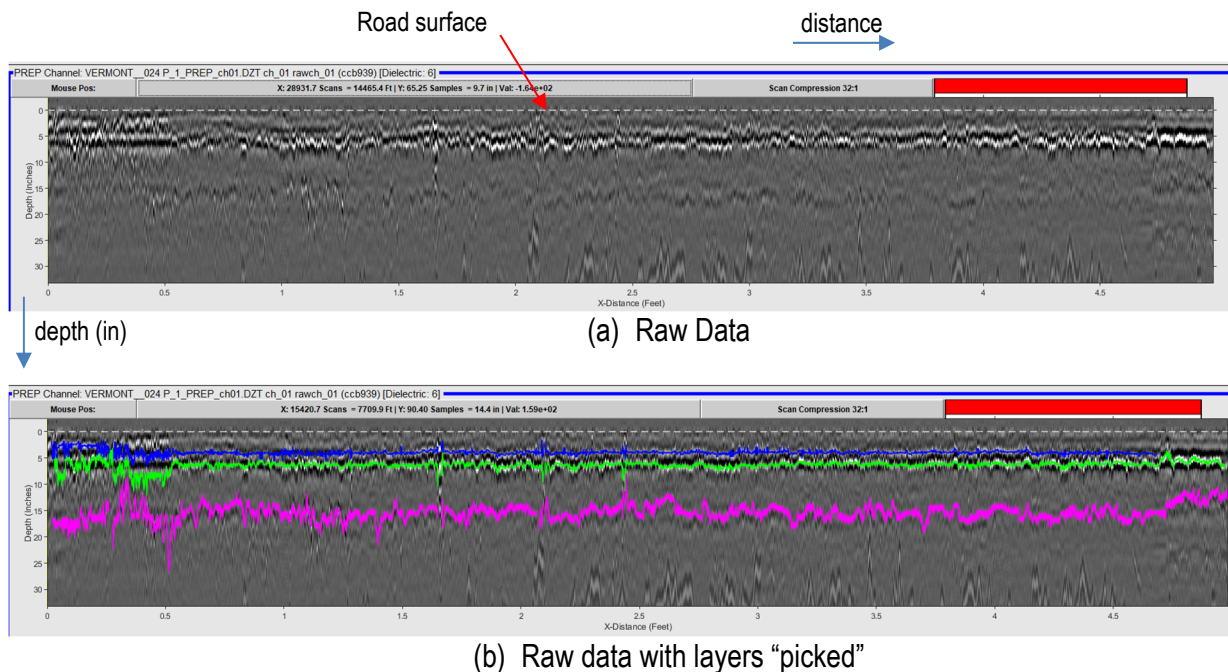
**Figure 2 – FWD Equipment**

### 3. Data Analysis

#### GPR Data Analysis

The GPR data analysis was carried out using Infrasense's proprietary software, *WinDecar*. Using this software, the GPR data file is observed visually on the screen in b-scan display, and the analyst "picks" the relevant pavement layers as they are observed. The picking process produces a binary file incorporating the arrival time and amplitude of all of the picked layers. When the picking for a GPR data file is complete, an output report is generated. Two output reports were generated for each site in each direction – one with layer thickness data at 5-foot intervals, and one with layer thickness data specifically at the FWD test locations. The later was determined using the GPS coordinated data for the FWD test points and served as an input into the FWD data analysis.

Figure 3 shows a sample of data from the Cavendish-Weathersfield site, going EB from Cavendish to Weathersfield. Figure 3a shows the raw GPR data. The vertical axis is estimate depth in inches, and the horizontal axis is distance in feet (x 10,000). Figure 3b shows the raw data with the layers "picked" by the analyst. The blue layer is the bottom of the 1.5-inch wearing course plus the 2.5-inch AC layer. The green layer is the bottom of the 2.5-inch plant mix recycled AC. Note that the design depth of these layers (4-inches and 6.5-inches) matches closely with the depths observed in the GPR data.



**Figure 3 – Sample GPR Data from Cavendish-Weathersfield site**

blue = bottom of upper AC layers  
green = bottom of plant mix recycled AC  
magenta = bottom of cement stabilized recycled AC

Core data is sometimes used to calibrate the GPR thickness data. In the case of these sites, cores were taken within individual lifts but there were no cores that completely sampled all lifts at a given location, and in only one site (VT-100) were all lifts sampled. For this site, the average of the wearing course cores was added to average of the AC course cores, and this sum was compared to the average depth of the AC course from the GPR data in Table 3. The results are within 5%. Given that the cores were taken at different offsets

from where the GPR data was collected, and the wearing course cores were not at the same locations as the base course cores, this difference does not appear to be significant. A summary of the calculated layer thickness values for each of the three projects is shown in Table 4. Pavement structure profile plots for each section/lane are provided in Attachment A.

**Table 3 – Average Depth of AC Layer – Cores vs. GPR**

Road	Avg. AC depth GPR (in.)	Avg AC depth Core (in.)
VT-100 SB	5.25	4.90
VT-100 NB	5.21	4.89

**Table 4 – GPR Layer Thickness Data**

Road	AC (in.)*		Reclaimed Stabilized Base (in.)		Reclaimed Base (in.)	
	Average	Stdev	Average	Stdev	Average	Stdev
VT100 - NB	5.2	0.8	6.0	1.0	6.2	2.3
VT100 - SB	5.2	0.7	6.3	1.0	7.8	2.6
VT105 - EB	6.5	0.7	6.2	1.6	Not detected	
VT105 - WB	6.3	0.6	6.2	1.8	Not detected	
VT131 - EB	6.2	0.7	7.2	1.1	Not detected	
VT131 - WB	5.8	0.5	6.6	1.5	Not detected	

\* Includes all bound and plant mix layers

### FWD Data Analysis

The existing structural capacity of the pavement for each section was estimated in accordance with the 1993 AASHTO *Guide for the Design of Pavement Structures* using the FWD deflection data and GPR layer thickness data. The analysis was carried out using the ModTag<sup>1</sup> software program, incorporating the AASHTO backcalculation algorithm. Table 5 shows the estimated effective structural number ( $SN_{eff}$ ) and subgrade modulus ( $M_R$ ) of the existing pavement for each project section. Note that “subgrade” in this analysis includes all material below what was detected by GPR, and will include some reclaimed base material for VT105 and VT131

**Table 5 – Results of Structural Analysis**

Route	$SN_{eff}$		Subgrade $M_R$ (psi)	
	Mean	Std Dev	Mean	Std Dev
Route 100 – NB	2.33	0.22	32,500	7,520
Route 100 – SB	2.04	0.14	30,800	6,630
Route 105 – EB	2.50	0.17	21,800	3,920
Route 105 – WB	2.50	0.15	22,200	3,840
Route 131 – EB	3.29	0.53	27,700	9,160
Route 131 – WB	3.03	0.44	25,700	8,060

<sup>1</sup> <https://www.virginiadot.org/business/materials-download-docs.asp>

In addition to the ModTag analysis, the individual layer moduli were backcalculated using Modulus version 6.0. These results are summarized in Table 6. Detailed backcalculation results are presented in Attachment B to this report.

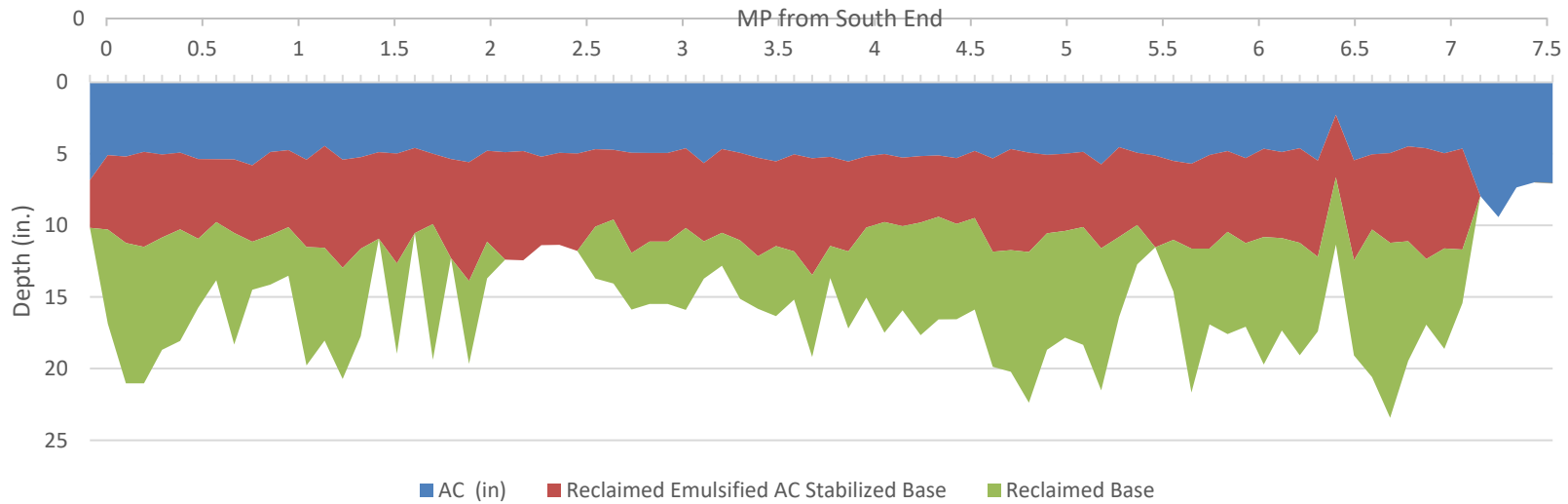
**Table 6. Results of Backcalculation**

Route	Direction	Layer	Modulus, ksi	
			Mean	Standard Deviation
VT 100	NB	AC*	1003	331
		Reclaimed AC Stabilized Base	190	140
		Reclaimed Base	60	20
		Subgrade	28.1	6.1
	SB	AC*	643	233
		Reclaimed AC Stabilized Base	220	120
		Reclaimed Base	30	20
		Subgrade	29.0	8.7
VT 105	EB	AC*	773	218
		Reclaimed AC Stabilized Base	40	40
		Subgrade	27.2	5.3
	WB	AC*	579	158
		Reclaimed AC Stabilized Base	130	80
		Subgrade	19.6	3.6
VT 131	EB	AC*	545	215
		Reclaimed Cement Stabilized Base	960	730
		Subgrade	22.4	6.9
	WB	AC*	551	200
		Reclaimed Cement Stabilized Base	990	680
		Subgrade	21.2	6.9

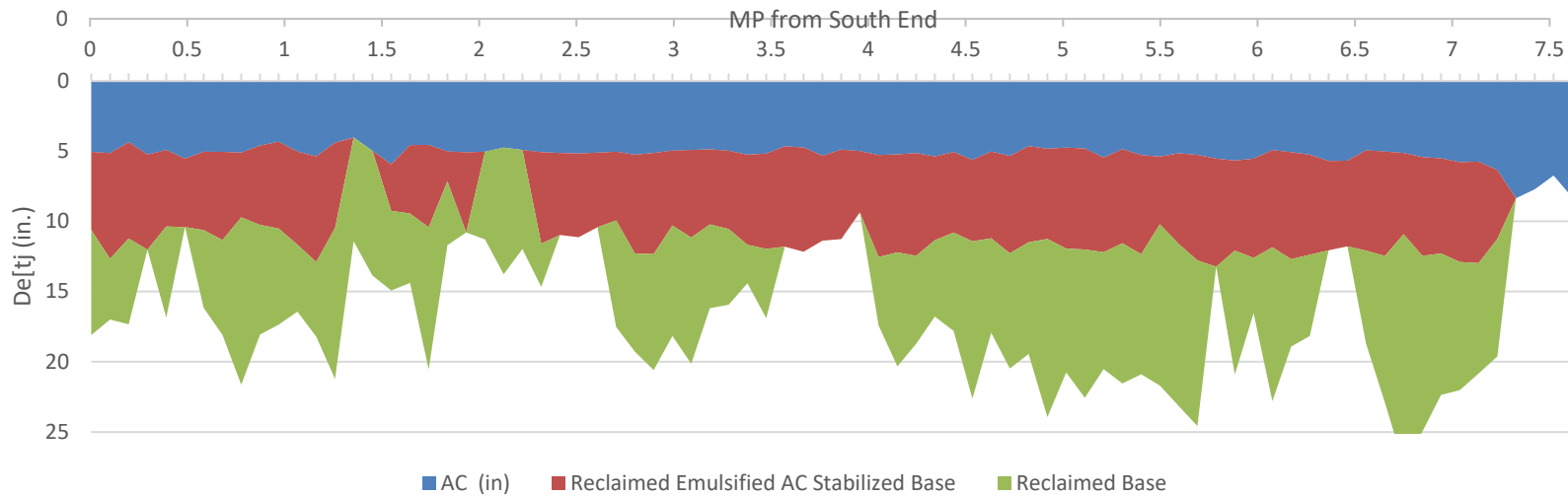
\* AC modulus has been temperature adjusted to 68°F

# Attachment A - Layer Thickness Plots

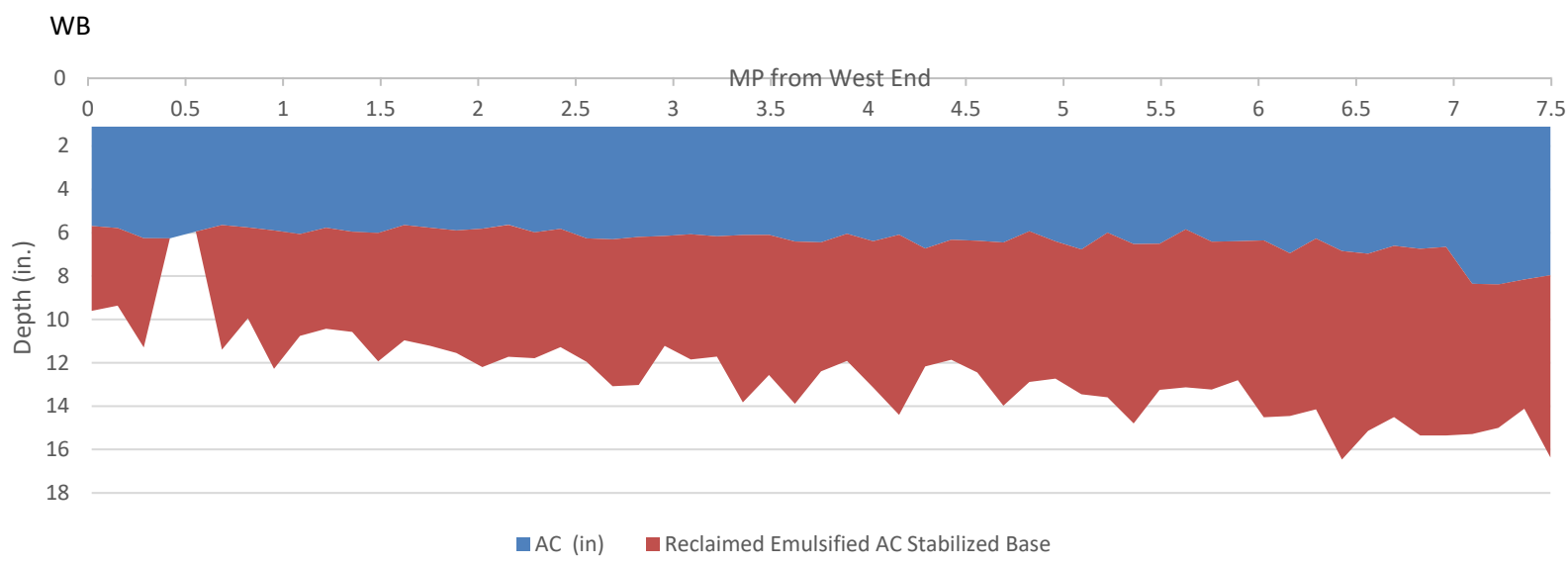
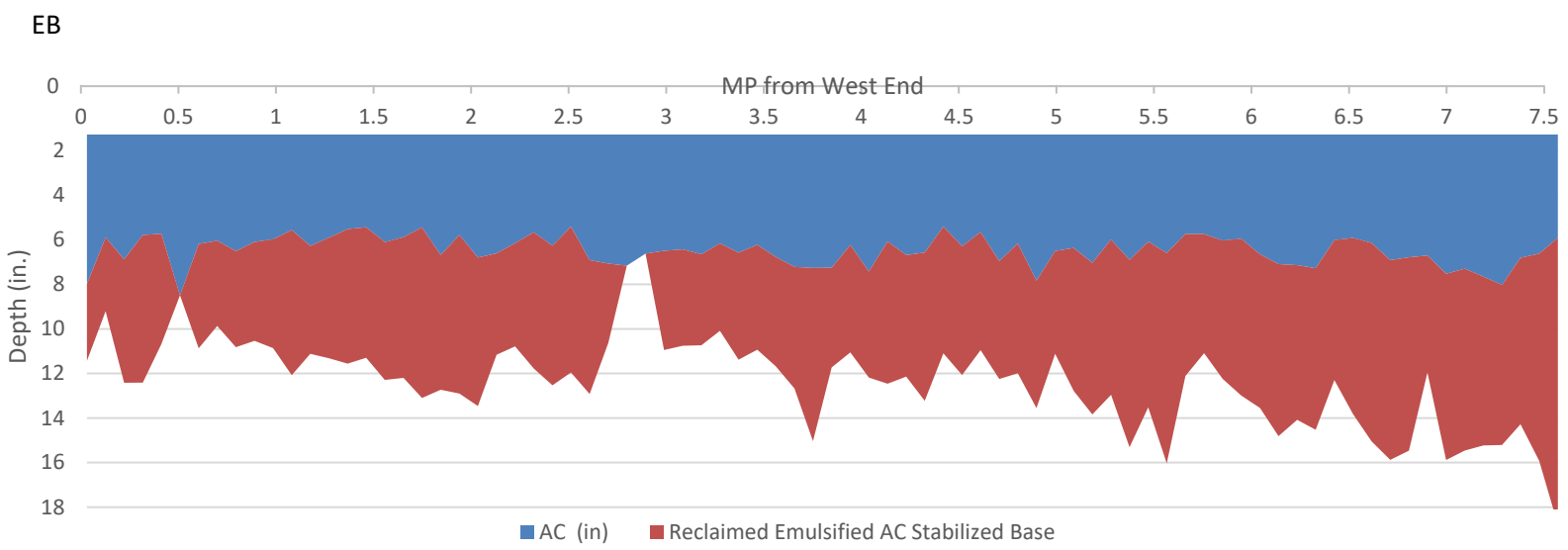
## VT 100 NB



## VT 100 SB



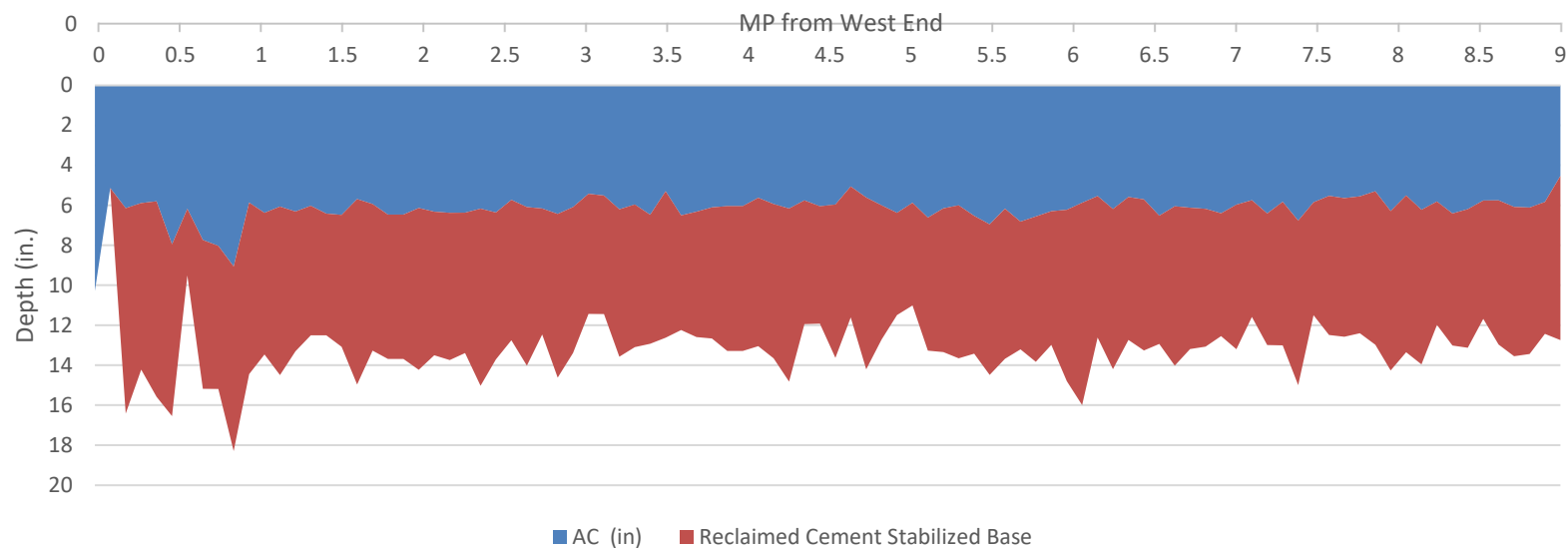
# VT 105



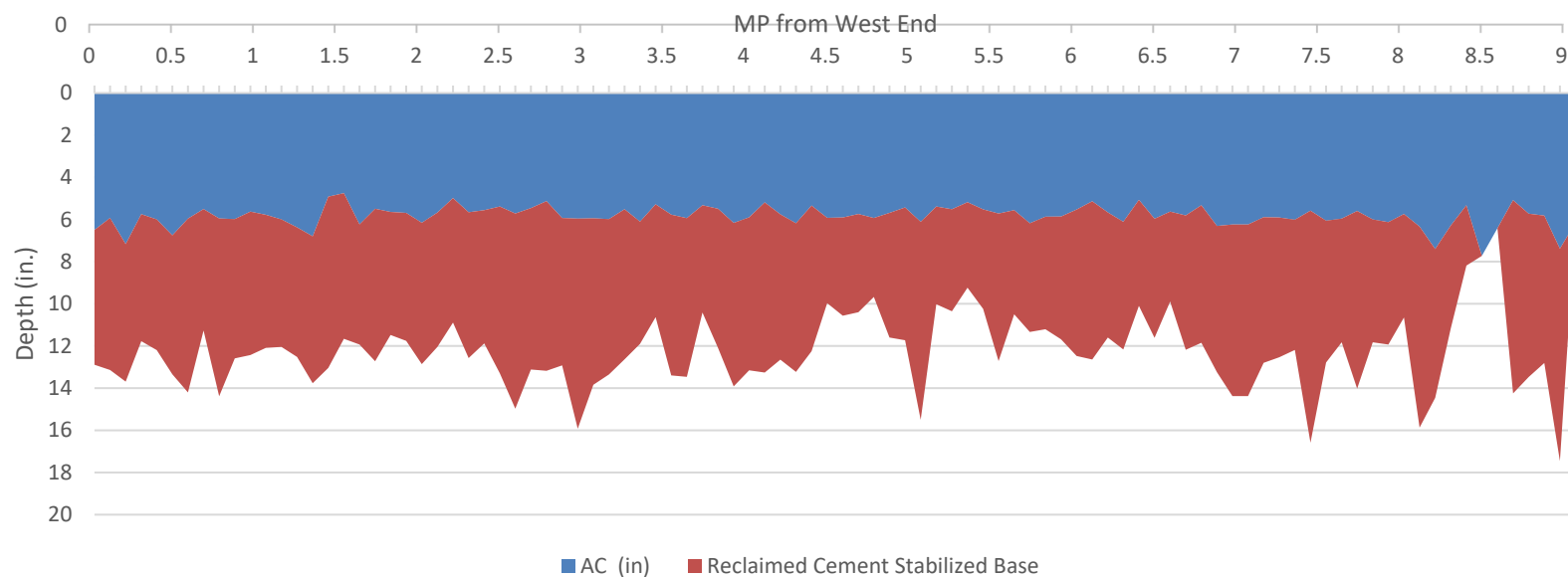


# VT 131

EB



WB





## **Attachment B**

### **FWD Data and Analysis**

**Provided as “FWD Data and Analysis.xlsx”**



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX G – RESILIENT MODULUS DATA REDUCTION FOR STOWE-MORRISTOWN STP PS19(3)



GEODesign, Inc.  
 85 Granite Shed Lane, Unit 1  
 Montpelier, VT 05602  
 (802) 674-2033

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
150+00	4L	8kg	7/29/2020	(#) 0	(#) 0	(ft) 0	(mm) 0	(mm/blow)	(mm)	(%)	(psi)		
				1 to 2	2	0.03	10					First 2 blows discounted as "seating" blows. Data set not included. Does not appear to have been performed on a compacted material.	
				3	1	1.68	512	502.0	502.0	0	1120		
				4	1	2.30	702	190.0	190.0	1	2248		
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
150+00	Not Reported	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	12.3					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	37.4	6.3	25.1	37	25912		
				7 to 10	4	0.20	62.1	6.2	24.7	38	26212		
				11 to 15	5	0.29	89.3	5.4	27.2	44	28705		
				16 to 20	5	0.39	117.4	5.6	28.1	42	28043		
				21 to 25	5	0.47	144	5.3	26.6	45	29168		
				26 to 30	5	0.56	171.6	5.5	27.6	43	28406		
				31 to 34	4	0.65	197.3	6.4	25.7	36	25477		
				35 to 39	5	0.74	225.5	5.6	28.2	42	27972		
				40 to 43	4	0.82	251.4	6.5	25.9	36	25336		
				Test Averages					5.9		40	27160	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
150+00	10?	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	14					First 2 blows discounted as "seating" blows.	
				3 to 7	4	0.13	40	6.5	26	36	25266		
				8 to 12	4	0.22	67	6.8	27	34	24527		
				13 to 17	5	0.30	93	5.2	26	46	29649		
				18 to 22	5	0.39	118	5.0	25	49	30670		
				Test Averages					5.9		40	27219	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
160+00	4R	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.03	9					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.12	37	5.6	28	43	28187		
				8 to 11	4	0.22	67	7.5	30	30	22749		
				12 to 17	6	0.31	95	4.6	28	52	32205		
				18	1	0.71	218	123.4	123	1	3063	Excessively loose zone. Possible compaction issue	
				19 to 22	4	0.80	245	6.7	27	35	24856		
				23 to 27	5	0.90	276	6.2	31	38	26137		
				28 to 31	4	1.00	304	7.2	29	32	23480		
				Test Averages					23.0		9	10204	

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
160+00	10R	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	6.4	26	37	25549	
				7 to 10	4	0.22	69	7.0	28	33	24021	
				11 to 14	5	0.31	94	5.1	26	47	30064	
				15 to 18	4	0.40	122	7.1	28	33	23837	
				19 to 22	4	0.50	151	7.3	29	32	23249	
				23 to 27	5	0.59	179	5.5	27	43	28555	
				Test Averages				6.4		37	25594	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
216+50	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	18					
				1 to 4	4	0.06	37					First 4 blows discounted as "seating" blows.
				5 to 10	6	0.16	66	4.8	29.0	50	31244	
				11 to 15	5	0.26	96	6.0	30.0	39	26758	
				16 to 19	4	0.34	123	6.8	27.0	34	24592	
				20 to 24	5	0.44	151	5.6	28.0	42	28115	
				25 to 27	3	0.52	177	8.7	26.0	26	20558	
				28 to 31	4	0.62	206	7.3	29.0	32	23364	
				32 to 33	2	0.65	217	5.5	11.0	43	28480	Discount < 20mm of travel.
				Test Averages				6.5		36	25220	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
216+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	48	7.5	30.0	31	22803	
				7 to 10	4	0.25	75	6.8	27.0	34	24592	
				11 to 15	5	0.33	102	5.4	27.0	44	28857	
				16 to 19	4	0.42	127	6.3	25.0	37	25987	
				20 to 23	4	0.52	160	8.3	33.0	27	21297	
				24 to 26	3	0.61	185	8.3	25.0	27	21144	
				27 to 30	4	0.70	214	7.3	29.0	32	23364	
				Test Averages				7.1		32	23705	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
216+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.13	41	13.5	27.0	16	14963		
				5 to 8	4	0.25	75	8.5	34.0	27	20846		
				9 to 12	4	0.35	107	8.0	32.0	28	21772		
				13 to 16	4	0.44	135	7.0	28.0	33	23959		
				17 to 20	4	0.53	163	7.0	28.0	33	23959		
				21 to 24	4	0.61	185	5.5	22.0	43	28480		
				Test Averages					8.8		26	20334	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
216+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.19	57	9.0	27.0	25	20009		
				6 to 9	4	0.28	86	7.3	29.0	32	23364		
				10 to 13	4	0.39	118	8.0	32.0	28	21772		
				14 to 17	4	0.49	148	7.5	30.0	31	22803		
				18 to 21	4	0.59	179	7.8	31.0	29	22273		
				22 to 24	3	0.68	206	9.0	27.0	25	20009		
				Test Averages					8.1		28	21611	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
226+50	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	47	6.3	25.0	37	25987		
				7 to 10	4	0.26	80	8.3	33.0	27	21297		
				11 to 14	4	0.35	108	7.0	28.0	33	23959		
				15 to 18	4	0.46	141	8.3	33.0	27	21297		
				19 to 22	4	0.55	169	7.0	28.0	33	23959		
				23 to 26	4	0.65	197	7.0	28.0	33	23959		
				27 to 30	4	0.72	220	5.8	23.0	41	27587		
				Test Averages					7.3		32	23268	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
226+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	45	8.3	25.0	27	21144		
				6 to 8	3	0.24	72	9.0	27.0	25	20009		
				9 to 12	4	0.34	105	8.3	33.0	27	21297		
				Test Averages					8.5		26	20798	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
226+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.17	53	15.5	31.0	14	13552		
				5	1	0.29	88	35.0	35.0	5	7559		
				6 to 7	2	0.38	117	14.5	29.0	15	14216		
				8	1	0.59	181	64.0	64.0	3	4904	Possible new layer.	
				9	1	0.87	265	84.0	84.0	2	4036	Discount from analysis	
				Test Averages					21.7		9	10660	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
226+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.13	40	13.5	27.0	16	14963		
				5 to 8	4	0.22	67	6.8	27.0	34	24592		
				9 to 12	4	0.32	99	8.0	32.0	28	21772		
				13 to 16	4	0.43	130	7.8	31.0	29	22273		
				17 to 19	3	0.52	158	9.3	28.0	24	19495		
				20 to 21	2	0.56	171	6.5	13.0	36	25266	Discount < 20mm of travel.	
				Test Averages					9.1		25	19904	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
236+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	48	7.0	35.0	33	23959		
				8 to 11	4	0.24	73	6.3	25.0	37	25987		
				12 to 16	5	0.34	103	6.0	30.0	39	26758		
				17 to 20	4	0.45	136	8.3	33.0	27	21297		
				21 to 25	5	0.55	169	6.6	33.0	35	24991		
				26 to 30	5	0.65	199	6.0	30.0	39	26758		
				Test Averages					6.7		35	24767	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
236+50	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.17	52	6.0	30.0	39	26758		
				8 to 11	4	0.26	80	7.0	28.0	33	23959		
				12 to 15	4	0.37	114	8.5	34.0	27	20846		
				Test Averages					7.2		32	23558	

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
236+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	8.0	32.0	28	21772		
				7 to 10	4	0.25	77	6.8	27.0	34	24592		
				11 to 14	4	0.34	104	6.8	27.0	34	24592		
				15 to 20	6	0.45	136	5.3	32.0	45	29115		
				21 to 24	4	0.55	167	7.8	31.0	29	22273		
				25 to 29	5	0.64	195	5.6	28.0	42	28115		
				30 to 33	4	0.72	219	6.0	24.0	39	26758		
				Test Averages					6.6		35	24998	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
236+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	41	7.0	28.0	33	23959		
				7 to 11	5	0.22	68	5.4	27.0	44	28857		
				12 to 15	4	0.31	96	7.0	28.0	33	23959		
				16 to 20	5	0.41	125	5.8	29.0	41	27416		
				21 to 25	5	0.51	154	5.8	29.0	41	27416		
				26 to 29	4	0.59	181	6.8	27.0	34	24592		
				30 to 33	4	0.68	206	6.3	25.0	37	25987		
				Test Averages					6.3		37	25881	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
246+50	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	47	6.0	30.0	39	26758		
				8 to 12	5	0.25	75	5.6	28.0	42	28115		
				13 to 17	5	0.34	104	5.8	29.0	41	27416		
				18 to 23	6	0.44	135	5.2	31.0	46	29786		
				24 to 27	4	0.53	161	6.5	26.0	36	25266		
				28 to 31	4	0.63	191	7.5	30.0	31	22803		
				32 to 35	4	0.71	217	6.5	26.0	36	25266		
				Test Averages					6.2		38	26281	

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Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
246+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.13	39					First 2 blows discounted as "seating" blows.	
				3	1	0.19	59	20.0	20.0	10	11289		
				4 to 6	3	0.31	93	11.3	34.0	19	16962		
				7 to 11	5	0.39	119	5.2	26.0	46	29649		
				12 to 15	4	0.47	144	6.3	25.0	37	25987		
				16 to 19	4	0.56	170	6.5	26.0	36	25266		
				20 to 23	4	0.65	199	7.3	29.0	32	23364		
				Test Averages					9.4		24	19363	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
246+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	51	10.7	32.0	21	17715		
				6 to 8	3	0.32	97	15.3	46.0	14	13658		
				9 to 12	4	0.42	128	7.8	31.0	29	22273		
				13 to 16	4	0.53	161	8.3	33.0	27	21297		
				17 to 19	3	0.61	187	8.7	26.0	26	20558		
				20 to 23	4	0.71	217	7.5	30.0	31	22803		
				Test Averages					9.7		23	18971	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
246+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	41	6.8	27.0	34	24592		
				7 to 10	4	0.24	72	7.8	31.0	29	22273		
				11 to 14	4	0.33	101	7.3	29.0	32	23364		
				15 to 19	5	0.43	131	6.0	30.0	39	26758		
				20 to 24	5	0.52	158	5.4	27.0	44	28857		
				25 to 28	4	0.62	189	7.8	31.0	29	22273		
				29 to 32	4	0.73	221	8.0	32.0	28	21772		
				33 to 35	3	0.82	249	9.3	28.0	24	19495		
				Test Averages					7.3		32	23297	



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Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
256+50	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.12	36					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.21	63	6.8	27.0	34	24592	
				7 to 11	5	0.29	89	5.2	26.0	46	29649	
				12 to 15	4	0.38	115	6.5	26.0	36	25266	
				16 to 20	5	0.47	143	5.6	28.0	42	28115	
				21 to 24	4	0.56	170	6.8	27.0	34	24592	
				25 to 29	5	0.65	197	5.4	27.0	44	28857	
				Test Averages				6.0		39	26652	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
256+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	40	6.3	25.0	37	25987	
				7 to 10	4	0.23	69	7.3	29.0	32	23364	
				11 to 14	4	0.31	94	6.3	25.0	37	25987	
				15 to 19	5	0.39	120	5.2	26.0	46	29649	
				20 to 23	4	0.48	145	6.3	25.0	37	25987	
				24 to 28	5	0.56	172	5.4	27.0	44	28857	
				29 to 32	4	0.65	197	6.3	25.0	37	25987	
				Test Averages				6.1		38	26377	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
256+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	36	6.3	25.0	37	25987	
				7 to 11	5	0.20	62	5.2	26.0	46	29649	
				12 to 16	5	0.29	88	5.2	26.0	46	29649	
				17 to 21	5	0.38	117	5.8	29.0	41	27416	
				22 to 25	4	0.47	142	6.3	25.0	37	25987	
				Test Averages				5.7		41	27622	

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Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
256+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	36	6.3	25.0	37	25987	
				7 to 11	5	0.20	62	5.2	26.0	46	29649	
				12 to 15	4	0.30	91	7.3	29.0	32	23364	
				16 to 20	5	0.40	121	6.0	30.0	39	26758	
				21 to 25	5	0.49	148	5.4	27.0	44	28857	
				26 to 31	6	0.57	174	4.3	26.0	57	33788	
				32 to 36	5	0.67	203	5.8	29.0	41	27416	
								5.7		41	27595	
				Test Averages								
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
266+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	44	6.8	27.0	34	24592	
				7 to 9	3	0.23	71	9.0	27.0	25	20009	
				10 to 14	5	0.32	97	5.2	26.0	46	29649	
				15 to 18	4	0.40	123	6.5	26.0	36	25266	
				19	1	0.49	150	27.0	27.0	7	9104	
				20 to 24	5	0.58	177	5.4	27.0	44	28857	
				25 to 29	5	0.68	206	5.8	29.0	41	27416	
								9.4		24	19427	
				Test Averages								
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
266+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.14	42	9.0	27.0	25	20009	
				6 to 10	5	0.24	72	6.0	30.0	39	26758	
				11 to 14	4	0.32	99	6.8	27.0	34	24592	
				15 to 18	4	0.41	125	6.5	26.0	36	25266	
				19 to 22	4	0.51	155	7.5	30.0	31	22803	
				23 to 26	4	0.59	181	6.5	26.0	36	25266	
				27 to 30	4	0.68	206	6.3	25.0	37	25987	
								6.9		33	24136	
				Test Averages								

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
266+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	44	5.8	29.0	41	27416	
				8 to 11	4	0.23	70	6.5	26.0	36	25266	
				12 to 16	5	0.33	100	6.0	30.0	39	26758	
				17 to 21	5	0.42	127	5.4	27.0	44	28857	
				22 to 25	4	0.50	152	6.3	25.0	37	25987	
				26 to 30	5	0.59	180	5.6	28.0	42	28115	
				31 to 34	4	0.69	211	7.8	31.0	29	22273	
				Test Averages				6.2		38	26180	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
276+50	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	48	7.8	31.0	29	22273	
				7 to 10	4	0.25	77	7.3	29.0	32	23364	
				11 to 14	4	0.33	102	6.3	25.0	37	25987	
				15 to 18	4	0.42	127	6.3	25.0	37	25987	
				19 to 22	4	0.50	153	6.5	26.0	36	25266	
				23 to 26	4	0.59	181	7.0	28.0	33	23959	
				27 to 30	4	0.69	209	7.0	28.0	33	23959	
				Test Averages				6.9		34	24316	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
276+50	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.13	40	5.8	29.0	41	27416	
				8 to 11	4	0.21	65	6.3	25.0	37	25987	
				12 to 16	5	0.30	90	5.0	25.0	48	30494	
				17 to 20	4	0.39	118	7.0	28.0	33	23959	
				21 to 25	5	0.49	149	6.2	31.0	38	26137	
				26 to 30	5	0.59	179	6.0	30.0	39	26758	
				31 to 34	4	0.68	207	7.0	28.0	33	23959	
				Test Averages				6.2		38	26202	

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
276+50	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.13	40	5.2	26.0	46	29649		
				8 to 12	5	0.22	68	5.6	28.0	42	28115		
				13 to 16	4	0.31	94	6.5	26.0	36	25266		
				17 to 20	4	0.41	124	7.5	30.0	31	22803		
				21 to 23	3	0.50	152	9.3	28.0	24	19495		
				24 to 27	4	0.59	181	7.3	29.0	32	23364		
				28 to 30	3	0.69	210	9.7	29.0	23	19010		
				Test Averages					7.3		32	23265	
286+50	L4	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	53	10.0	30	22	18598		
				6 to 8	3	0.27	82	9.5	29	23	19201		
				9 to 12	4	0.36	110	7.0	28	33	24082		
				13 to 16	4	0.45	137	6.8	27	34	24398		
				17 to 19	3	0.54	165	9.4	28	24	19346		
				20 to 22	3	0.62	190	8.2	25	28	21328		
				23 to 25	3	0.71	216	8.8	26	26	20390		
				Test Averages					8.5		26	20794	
286+50	L10	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.15	45	15.0	30	14	13908		
				5 to 7	3	0.24	73	9.4	28	24	19445		
				8 to 11	4	0.32	98	6.2	25	38	26061		
				12 to 15	4	0.41	124	6.4	25	37	25693		
				16 to 19	4	0.50	151	6.8	27	34	24462		
				20 to 23	4	0.58	175	6.1	25	38	26366		
				24 to 27	4	0.66	202	6.6	26	36	25128		
				Test Averages					8.1		28	21671	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
286+50	R4	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.21	64					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.31	94	7.6	30	30	22695	
				7 to 10	4	0.40	121	6.7	27	35	24856	
				11 to 14	4	0.49	149	7.0	28	33	24021	
				15 to 18	4	0.57	175	6.5	26	36	25266	
				19 to 22	4	0.68	206	7.9	32	29	21920	
				Test Averages				7.1		32	23669	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
286+50	R10	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	48	8.0	32	28	21772	
				7 to 10	4	0.24	73	6.2	25	38	26289	
				11 to 13	4	0.35	107	8.4	34	27	20979	
				14 to 17	4	0.43	132	6.3	25	37	25839	
				18 to 20	3	0.52	160	9.3	28	24	19495	
				21 to 24	4	0.61	187	6.7	27	35	24657	
				25 to 28	4	0.71	216	7.4	30	31	23023	
				Test Averages				7.5		31	22855	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
296+50	L4	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	29					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	55	8.6	26	26	20730	
				6 to 8	3	0.37	112	19.0	57	11	11697	Apparent poorly compacted zone.
				9	1	0.55	167	55.6	56	3	5425	
				10 to 13	4	0.65	198	7.7	31	30	22482	
				Test Averages				22.7		9	10305	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
296+50	L10	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	17					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.15	47	10.0	30	22	18598	
				6 to 9	4	0.25	76	7.3	29	32	23306	
				10 to 13	4	0.34	104	7.1	28	33	23837	
				14 to 17	4	0.43	130	6.6	26	35	24991	
				18 to 20	3	0.56	171	13.6	41	16	14910	
				21 to 23	3	0.65	198	8.9	27	25	20116	
				Test Averages				8.9		25	20173	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
296+50	R4	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	45	6.5	26	36	25406		
				7 to 10	4	0.24	73	6.8	27	34	24462		
				11 to 14	4	0.33	102	7.3	29	32	23364		
				15 to 18	4	0.43	131	7.3	29	32	23249		
				19 to 22	4	0.51	156	6.4	25	37	25693		
				23 to 26	4	0.61	185	7.3	29	31	23192		
				27 to 30	4	0.69	211	6.5	26	36	25266		
				Test Averages					6.9		34	24325	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
296+50	R10	8kg	8/28/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	51	7.6	30	30	22641		
				7 to 10	4	0.27	83	7.8	31	29	22171		
				11 to 13	3	0.35	107	8.3	25	27	21266		
				14 to 17	4	0.44	134	6.7	27	35	24723		
				18 to 21	4	0.53	162	7.0	28	33	24021		
				22 to 24	3	0.61	187	8.3	25	27	21266		
				25 to 27	3	0.72	219	10.6	32	21	17835		
				Test Averages					8.0		28	21730	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
306+50	L4	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	45	7.0	28	33	23959		
				7 to 9	3	0.23	71	8.8	26	26	20390		
				10 to 12	3	0.36	110	12.9	39	17	15458		
				13	1	0.50	153	43.5	44	4	6468		
				14 to 17	4	0.59	181	7.1	28	33	23837		
				18	1	0.68	208	26.3	26	7	9277		
				Test Averages					17.6		12	12379	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
306+50	L10	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	46	9.6	29	23	19105		
				6 to 9	4	0.24	74	7.1	28	33	23717		
				10 to 13	4	0.34	102	7.0	28	33	24021		
				14 to 17	4	0.42	127	6.3	25	37	25987		
				18 to 20	3	0.50	153	8.5	26	27	20846		
				21 to 25	5	0.60	183	6.1	31	38	26319		
				26 to 30	5	0.69	210	5.3	27	45	29168		
				Test Averages					7.1		32	23654	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
306+50	R4	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	20					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	50	10.2	31	22	18335		
				6 to 9	4	0.28	84	8.6	34	26	20759		
				10 to 11	2	0.39	118	16.8	34	12	12819		
				12 to 14	3	0.47	143	8.3	25	27	21144		
				15 to 18	4	0.57	174	7.7	31	30	22377		
				19 to 22	4	0.65	198	6.1	25	38	26366		
				Test Averages					9.6		23	19099	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
306+50	R10	8kg	9/3/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	6.7	27	35	24723		
				7 to 10	4	0.26	79	6.3	25	37	25839		
				11 to 14	4	0.34	104	6.3	25	37	25839		
				15 to 19	5	0.44	134	5.9	30	40	27083		
				20 to 24	5	0.53	161	5.4	27	44	28934		
				25 to 29	5	0.62	189	5.6	28	43	28187		
				30 to 33	4	0.70	214	6.3	25	37	25912		
				Test Averages					6.1		39	26561	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+00	L4	8kg	9/4/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.21	64	9.0	36	25	20009		
				7 to 10	4	0.31	93	7.5	30	31	22913		
				11 to 14	4	0.40	121	6.8	27	34	24527		
				15 to 19	5	0.48	148	5.5	27	44	28630		
				20 to 24	5	0.58	177	5.8	29	41	27553		
				25 to 28	4	0.66	201	6.2	25	38	26289		
				Test Averages					6.8		34	24551	

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Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+00	L10	8kg	9/4/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	46	8.2	33	28	21344		
				7 to 10	4	0.23	71	6.2	25	38	26289		
				11 to 14	4	0.32	98	6.8	27	34	24398		
				15 to 18	4	0.42	127	7.2	29	32	23422		
				19 to 23	5	0.51	155	5.6	28	42	28115		
				24 to 27	4	0.59	181	6.7	27	35	24856		
				28 to 32	5	0.69	209	5.6	28	43	28260		
				Test Averages					6.6		35	24978	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+00	R4	8kg	9/4/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	45	6.0	30	39	26631		
				8 to 11	3	0.23	70	8.4	25	27	20964		
				12 to 15	4	0.32	97	6.7	27	35	24657		
				16 to 19	4	0.41	124	6.8	27	34	24527		
				20 to 23	4	0.49	149	6.2	25	38	26061		
				24 to 28	5	0.58	176	5.4	27	45	29012		
				29 to 33	5	0.67	204	5.7	29	41	27691		
				Test Averages					6.5		36	25355	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+00	R10	8kg	9/4/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	39	7.0	28	33	24021		
				7 to 8	2	0.21	64	12.8	26	17	15589		
				9 to 13	5	0.31	93	5.8	29	41	27416		
				14 to 17	4	0.39	120	6.7	27	35	24723		
				18 to 21	4	0.48	145	6.2	25	38	26212		
				22 to 25	4	0.56	172	6.7	27	35	24856		
				26 to 30	5	0.66	200	5.7	28	42	27901		
				Test Averages					7.2		32	23377	



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Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
320+00	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	37	6.0	24.0	39	26758		
				7 to 12	6	0.22	67	5.0	30.0	48	30494		
				13 to 16	4	0.30	92	6.3	25.0	37	25987		
				17 to 22	6	0.39	120	4.7	28.0	52	32040		
				23 to 26	4	0.48	145	6.3	25.0	37	25987		
				27 to 30	4	0.56	172	6.8	27.0	34	24592		
				31 to 34	4	0.65	199	6.8	27.0	34	24592		
				Test Averages					6.0		40	26911	
320+00	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.03	10					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	36	6.5	26.0	36	25266		
				7 to 11	5	0.20	61	5.0	25.0	48	30494		
				12 to 16	5	0.29	88	5.4	27.0	44	28857		
				17 to 21	5	0.38	117	5.8	29.0	41	27416		
				22 to 25	4	0.47	144	6.8	27.0	34	24592		
				26 to 30	5	0.56	172	5.6	28.0	42	28115		
				31 to 34	4	0.66	201	7.3	29.0	32	23364		
				Test Averages					6.0		39	26622	
320+00	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.12	37	5.0	25.0	48	30494		
				8 to 11	4	0.21	64	6.8	27.0	34	24592		
				12 to 17	6	0.31	95	5.2	31.0	46	29786		
				18 to 21	4	0.40	121	6.5	26.0	36	25266		
				22 to 26	5	0.49	150	5.8	29.0	41	27416		
				27 to 31	5	0.59	180	6.0	30.0	39	26758		
				32 to 35	4	0.69	210	7.5	30.0	31	22803		
				Test Averages					6.1		39	26436	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	Mr	Notes
320+00	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	48	5.2	26.0	46	29649	
				8 to 11	4	0.24	73	6.3	25.0	37	25987	
				12 to 16	5	0.33	100	5.4	27.0	44	28857	
				17 to 19	3	0.42	127	9.0	27.0	25	20009	
				20 to 23	4	0.51	154	6.8	27.0	34	24592	
				24 to 29	6	0.60	183	4.8	29.0	50	31244	
				30 to 34	5	0.69	210	5.4	27.0	44	28857	
								6.1		38	26384	
				Test Averages								
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	Mr	Notes
330+00	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	37	6.3	25.0	37	25987	
				7 to 11	5	0.21	65	5.6	28.0	42	28115	
				12 to 16	5	0.31	93	5.6	28.0	42	28115	
				17 to 20	4	0.39	118	6.3	25.0	37	25987	
				21 to 25	5	0.48	145	5.4	27.0	44	28857	
				26 to 30	5	0.56	172	5.4	27.0	44	28857	
				31 to 33	3	0.62	190	6.0	18.0	39	26758	Discount < 20mm of travel.
				34 to 36	3	0.72	218	9.3	28.0	24	19495	
								5.8		41	27587	
				Test Averages								
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	Mr	Notes
330+00	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.12	37	6.7	20.0	35	24812	
				6 to 7	2	0.21	63	13.0	26.0	17	15373	
				8 to 11	4	0.29	89	6.5	26.0	36	25266	
				12 to 15	4	0.37	113	6.0	24.0	39	26758	
				16 to 19	4	0.46	140	6.8	27.0	34	24592	
				20 to 23	4	0.54	166	6.5	26.0	36	25266	
				24 to 27	4	0.64	195	7.3	29.0	32	23364	
				28 to 31	4	0.72	220	6.3	25.0	37	25987	
								7.4		31	23103	
				Test Averages								

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
330+00	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	7.3	29.0	32	23364		
				7 to 10	4	0.31	96	13.5	54.0	16	14963		
				11 to 13	3	0.41	125	9.7	29.0	23	19010		
				14 to 17	4	0.50	153	7.0	28.0	33	23959		
				18 to 20	3	0.58	178	8.3	25.0	27	21144		
				21 to 22	2	0.67	203	12.5	25.0	17	15811		
				Test Averages					9.7		23	18952	
340+00	L4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.18	54	7.0	35.0	33	23959		
				8	1	0.36	110	56.0	56.0	3	5397	Possible poorly compacted zone.	
				9 to 14	6	0.45	138	4.7	28.0	52	32040		
				15 to 20	6	0.56	170	5.3	32.0	45	29115		
				21 to 25	5	0.65	197	5.4	27.0	44	28857		
				Test Averages					15.7		13	13440	
340+00	L10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	6.5	26.0	36	25266		
				7 to 10	4	0.23	69	6.8	27.0	34	24592		
				11 to 15	5	0.31	96	5.4	27.0	44	28857		
				16 to 19	4	0.40	123	6.8	27.0	34	24592		
				20 to 24	5	0.51	154	6.2	31.0	38	26137		
				25 to 30	6	0.61	187	5.5	33.0	43	28480		
				31 to 34	4	0.70	213	6.5	26.0	36	25266		
				Test Averages					6.2		38	26051	
340+00	R4	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	42	5.4	27.0	44	28857		
				8 to 10	3	0.22	68	8.7	26.0	26	20558		
				11 to 15	5	0.34	104	7.2	36.0	32	23480		
				16 to 19	4	0.43	130	6.5	26.0	36	25266		
				20 to 23	4	0.52	160	7.5	30.0	31	22803		
				24 to 27	4	0.61	187	6.8	27.0	34	24592		
				28 to 32	5	0.72	218	6.2	31.0	38	26137		
				Test Averages					6.9		34	24237	

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
340+00	R10	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	50	6.6	33.0	35	24991		
				8 to 12	5	0.25	76	5.2	26.0	46	29649		
				13 to 17	5	0.33	101	5.0	25.0	48	30494		
				18 to 22	5	0.43	130	5.8	29.0	41	27416		
				23 to 28	6	0.52	160	5.0	30.0	48	30494		
				29 to 32	4	0.63	191	7.8	31.0	29	22273		
				33 to 36	4	0.71	216	6.3	25.0	37	25987		
				Test Averages					5.9		40	26942	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
350+00	L4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	41	6.9	28	33	24145		
				7 to 10	4	0.22	67	6.5	26	36	25266		
				11 to 14	4	0.30	92	6.3	25	37	25912		
				15 to 18	4	0.39	120	6.8	27	34	24527		
				19 to 23	5	0.47	144	5.0	25	49	30670		
				24 to 28	5	0.57	174	6.0	30	39	26822		
				29 to 34	6	0.67	203	4.8	29	50	31322		
				Test Averages					6.0		39	26653	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
350+00	L10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 9	7	0.17	52	5.7	40	42	27911		
				10 to 13	4	0.27	81	7.3	29	32	23306		
				14 to 17	4	0.35	107	6.3	25	37	25765		
				18 to 21	4	0.44	133	6.5	26	36	25266		
				22 to 26	5	0.53	161	5.7	29	42	27760		
				27 to 31	5	0.63	192	6.2	31	38	26258		
				Test Averages					6.3		37	25929	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
350+00	R4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	40	6.8	27	34	24398		
				7 to 11	5	0.23	70	5.9	30	40	26952		
				12 to 16	5	0.32	98	5.8	29	41	27553		
				17 to 21	5	0.41	126	5.6	28	42	28115		
				22 to 25	4	0.50	151	6.3	25	37	25987		
				26 to 30	5	0.59	179	5.6	28	42	28043		
				31 to 35	5	0.67	204	4.9	25	49	30849		
				Test Averages					5.8		40	27265	
350+00	10R	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	40	9.1	27	25	19852		
				6 to 9	4	0.23	70	7.4	30	31	22968		
				10 to 13	4	0.32	98	7.2	29	32	23480		
				14 to 18	5	0.41	126	5.6	28	42	28115		
				19 to 23	5	0.50	151	5.0	25	48	30494		
				24 to 27	4	0.59	179	7.0	28	33	23898		
				28 to 31	4	0.67	204	6.2	25	38	26289		
				Test Averages					6.8		34	24499	
360+00	L4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	48	10.9	33	20	17404		
				6 to 8	3	0.25	75	9.0	27	25	20009		
				9 to 13	5	0.34	103	5.6	28	42	28115		
				14 to 18	5	0.43	132	5.7	29	41	27622		
				19 to 23	5	0.53	162	6.1	31	38	26319		
				24 to 27	4	0.64	194	7.9	32	29	21920		
				28 to 30	3	0.70	214	6.6	20	35	24901		
				Test Averages					7.6		30	22681	
360+00	L10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	42	5.7	28	42	27830		
				8 to 11	4	0.22	68	6.7	27	35	24856		
				12 to 16	5	0.33	100	6.3	31	37	25957		
				17 to 20	4	0.42	128	7.0	28	33	23898		
				21 to 25	5	0.51	156	5.6	28	43	28187		
				26 to 29	4	0.60	183	6.7	27	35	24657		
				30 to 34	5	0.70	212	5.9	30	40	26952		
				Test Averages					6.3		37	25940	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
360+00	R4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.2	25	38	26289		
				7 to 11	5	0.25	75	5.3	27	45	29089		
				12 to 15	4	0.33	100	6.2	25	38	26061		
				16 to 20	5	0.42	128	5.6	28	43	28187		
				21 to 24	4	0.50	154	6.5	26	36	25336		
				25 to 28	4	0.60	181	7.0	28	33	24021		
				29 to 32	4	0.69	210	7.2	29	32	23480		
				Test Averages					6.3		37	25904	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
360+00	R10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	42	5.6	28	42	28043		
				8 to 12	5	0.23	70	5.5	28	43	28333		
				13 to 16	4	0.31	95	6.2	25	38	26289		
				17 to 21	5	0.41	125	6.1	30	39	26505		
				22 to 26	5	0.50	153	5.7	28	42	27901		
				27 to 31	5	0.60	182	5.7	29	41	27691		
				32 to 35	4	0.68	208	6.5	26	36	25406		
				Test Averages					5.9		40	27120	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A10+00	L4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	41	8.2	25	28	21390		
				6 to 10	5	0.23	70	5.8	29	41	27484		
				11 to 14	4	0.32	98	7.1	28	33	23777		
				15 to 17	3	0.42	127	9.7	29	23	18917		
				18	1	0.50	152	25.2	25	8	9566	Blows 18 to 20 not included. Apparently punched through stabilized base.	
				19	1	0.62	189	36.4	36	5	7349		
				20	1	0.73	224	34.9	35	5	7574		
				Test Averages					7.7		30	22383	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A10+00	L10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	41	7.1	29	32	23657	
				7 to 11	5	0.23	70	5.8	29	41	27416	
				12 to 15	4	0.32	97	6.6	27	35	24924	
				16 to 18	3	0.40	122	8.4	25	27	21024	
				19 to 23	5	0.50	151	5.9	29	40	27149	
				24 to 27	4	0.59	179	7.0	28	33	24082	
				28 to 31	4	0.67	206	6.6	26	35	25059	
			Test Averages					6.8		34	24553	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A10+00	R4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	43	7.1	28	33	23717	
				7 to 10	4	0.24	72	7.3	29	31	23192	
				11 to 14	4	0.34	104	8.0	32	28	21772	
				15 to 17	3	0.42	129	8.4	25	27	21024	
				18 to 21	4	0.51	155	6.5	26	36	25336	
				22 to 25	4	0.59	180	6.2	25	38	26061	
				26 to 29	4	0.69	209	7.2	29	32	23539	
			Test Averages					7.2		32	23380	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A10+00	R10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	39	6.6	26	36	25128	
				7 to 11	5	0.21	64	5.1	25	47	30149	
				12 to 16	5	0.30	92	5.5	28	43	28406	
				17 to 21	5	0.39	119	5.4	27	44	28781	
				22 to 25	4	0.47	144	6.4	25	37	25693	
				26 to 30	5	0.56	172	5.4	27	44	28705	
				31 to 35	5	0.65	200	5.6	28	43	28187	
			Test Averages					5.7		42	27740	

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A20+00	L4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	41	6.5	26	36	25197		
				7 to 11	5	0.22	68	5.2	26	46	29486		
				12 to 16	5	0.31	95	5.4	27	44	28934		
				17 to 21	5	0.40	122	5.5	28	43	28406		
				22 to 25	4	0.49	148	6.6	26	35	25059		
				26 to 29	4	0.59	180	7.8	31	29	22171		
				30 to 33	4	0.68	207	6.8	27	34	24527		
				Test Averages					6.3		37	25959	
A20+00	L10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	49	7.4	30	31	23079		
				7 to 10	4	0.24	74	6.2	25	38	26061		
				11 to 14	4	0.33	99	6.3	25	37	25839		
				15 to 18	4	0.41	124	6.3	25	37	25765		
				19 to 22	4	0.49	151	6.6	26	35	25059		
				24 to 26	3	0.58	176	8.5	25	27	20905		
				27 to 31	5	0.68	207	6.1	31	38	26319		
				Test Averages					6.8		34	24534	
A20+00	R4	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	46	7.2	29	32	23598		
				7 to 10	4	0.24	75	7.3	29	32	23364		
				11 to 14	4	0.34	103	7.1	28	33	23777		
				15 to 18	4	0.43	131	7.1	28	33	23777		
				19 to 23	5	0.53	161	6.0	30	39	26694		
				24 to 28	5	0.63	192	6.1	31	39	26443		
				29 to 33	5	0.73	223	6.2	31	38	26258		
				Test Averages					6.7		35	24750	



Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A20+00	R10	8kg	9/8/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.19	59					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.28	86	6.8	27	34	24527	
				7 to 10	4	0.38	115	7.3	29	32	23364	
				11 to 14	4	0.48	146	7.7	31	30	22325	
				15 to 18	4	0.57	173	6.7	27	35	24856	
				19 to 21	3	0.65	197	8.2	25	28	21453	
				Test Averages				7.3		31	23219	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A50+00	L4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 5	4	0.16	49	6.8	27	34	24527	
				6 to 8	3	0.26	78	9.8	29	23	18825	
				9 to 11	4	0.35	107	7.2	29	32	23539	
				12 to 15	4	0.44	133	6.6	26	35	24991	
				16 to 20	5	0.53	163	6.0	30	39	26758	
				21 to 23	3	0.62	190	9.1	27	25	19904	
				24 to 27	4	0.72	218	7.0	28	33	24021	
				Test Averages				7.5		31	22837	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A50+00	L10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	26					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.18	55	14.7	29	14	14077	
				5 to 6	2	0.28	84	14.4	29	15	14286	
				7 to 9	3	0.37	112	9.4	28	24	19445	
				10 to 12	3	0.45	137	8.3	25	27	21266	
				13 to 15	3	0.54	164	9.0	27	25	20063	
				16 to 18	3	0.62	189	8.5	25	27	20905	
				19 to 22	4	0.71	216	6.6	27	35	24924	
				23 to 25	3	0.79	240	8.2	25	28	21328	
				Test Averages				9.9		22	18718	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A50+00	R4	8kg	8/1/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	25					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	50	8.6	26	26	20730	
				6 to 9	4	0.25	77	6.8	27	34	24527	
				10 to 14	5	0.35	107	6.0	30	39	26758	
				15 to 19	5	0.45	138	6.1	31	39	26443	
				20 to 24	5	0.55	168	6.0	30	39	26758	
				25 to 29	5	0.65	197	5.9	29	40	27149	
				30 to 33	4	0.73	223	6.3	25	37	25765	
				Test Averages				6.5		36	25208	

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A50+00	R10	8kg	8/1/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	55	10.9	33	20	17404		
				6 to 8	3	0.27	82	9.0	27	25	20009		
				9 to 11	3	0.36	110	9.6	29	23	19105		
				12 to 14	3	0.47	143	10.8	32	20	17597		
				15 to 17	3	0.56	169	8.9	27	25	20225		
				18 to 21	4	0.66	200	7.7	31	30	22429		
				22 to 24	3	0.71	217	5.5	17	43	28480	Discount < 20mm of travel.	
				Test Averages					9.5		24	19287	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A60+00	L4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.19	57	19.5	39	11	11517		
				5	1	0.53	160	103.7	104	2	3470	Possible poorly compacted zone.	
				6 to 9	4	0.61	187	6.7	27	35	24723		
				10 to 13	4	0.71	216	7.2	29	32	23598		
				Test Averages					34.3		6	7677	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A60+00	L10	8kg	8/1/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.28	86					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.37	113	13.4	27	16	15043		
				5 to 6	2	0.46	141	14.0	28	15	14578		
				7 to 10	4	0.55	168	6.9	28	34	24207		
				11 to 13	3	0.63	193	8.3	25	27	21205		
				Test Averages					10.7		21	17735	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A60+00	R4	8kg	8/1/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	50	9.1	27	25	19800		
				6 to 8	3	0.25	76	8.6	26	26	20730		
				9 to 13	5	0.34	104	5.7	28	42	27901		
				14 to 18	5	0.43	132	5.7	28	42	27901		
				19 to 22	4	0.53	162	7.4	30	31	22968		
				23 to 26	4	0.63	191	7.3	29	31	23136		
				27 to 31	5	0.73	222	6.1	30	39	26505		
				Test Averages					7.1		32	23657	

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A60+00	R10	8kg	8/1/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.19	56	9.8	29	23	18871		
				6 to 7	2	0.27	83	13.2	26	16	15206		
				8 to 10	3	0.38	116	11.0	33	20	17291		
				11 to 13	3	0.48	146	10.2	31	22	18335		
				14 to 16	3	0.59	181	11.4	34	19	16855		
				17 to 19	3	0.70	212	10.5	31	21	17957		
				20 to 23	4	0.79	242	7.4	29	31	23136		
				<b>Test Averages</b>					10.5		21	17931	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A70+00	L4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	8.5	34	27	20890		
				7 to 9	3	0.26	81	8.8	27	25	20279		
				10 to 12	3	0.35	106	8.4	25	27	21024		
				13 to 15	3	0.43	131	8.3	25	27	21205		
				16 to 19	4	0.52	159	7.1	28	33	23717		
				20 to 23	4	0.62	188	7.2	29	32	23598		
				24 to 27	4	0.70	215	6.8	27	34	24527		
				<b>Test Averages</b>					7.9		29	22046	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A70+00	L10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.19	59					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.31	95	12.1	36	18	16184		
				6	1	0.48	145	50.0	50	4	5853	Possibly poorly compacted	
				7 to 10	4	0.57	174	7.1	28	33	23837		
				11 to 15	5	0.67	205	6.4	32	37	25664		
				16 to 18	3	0.74	226	6.9	21	34	24292		
				<b>Test Averages</b>					16.5		13	12972	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A70+00	R4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	25					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	55	10.1	30	22	18466		
				6 to 8	3	0.27	82	9.0	27	25	20063		
				9 to 11	3	0.36	109	9.2	28	24	19697		
				12 to 14	3	0.44	135	8.6	26	26	20672		
				15 to 18	4	0.54	164	7.2	29	32	23539		
				19 to 22	4	0.63	192	7.1	28	33	23777		
				<b>Test Averages</b>					8.5		27	20822	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A70+00	R10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.19	59	11.8	35	18	16512		
				6 to 8	3	0.29	87	9.4	28	24	19346		
				9 to 11	3	0.38	117	9.8	29	23	18825		
				12 to 14	3	0.49	151	11.2	34	19	17070		
				15 to 17	3	0.59	179	9.6	29	23	19153		
				18 to 21	4	0.69	211	8.0	32	28	21772		
				Test Averages					10.0		22	18598	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A80+00	L4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	43	7.1	29	32	23657		
				7 to 10	4	0.24	73	7.5	30	31	22913		
				11 to 13	3	0.35	106	11.0	33	20	17366		
				14 to 17	4	0.43	132	6.7	27	35	24856		
				18 to 22	5	0.53	161	5.7	28	42	27830		
				23 to 24	2	0.64	195	17.2	34	12	12604		
				25 to 26	2	0.75	228	16.5	33	13	12986		
				Test Averages					10.2		22	18279	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A80+00	L10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	52	10.2	31	22	18250		
				6 to 7	2	0.26	79	13.7	27	16	14806		
				8 to 10	3	0.34	105	8.7	26	26	20446		
				11	1	0.51	155	49.6	50	4	5887	Possibly poorly compacted zone.	
				12 to 15	4	0.63	193	9.7	39	23	19034		
				16 to 20	5	0.73	222	5.7	29	41	27691		
				Test Averages					16.3		13	13088	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A80+00	R4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	40	8.5	25	27	20905		
				6 to 8	3	0.23	70	10.2	31	22	18292		
				9 to 11	3	0.34	105	11.6	35	19	16681		
				12 to 14	3	0.44	134	9.5	29	23	19249		
				15 to 18	4	0.53	163	7.4	30	31	23079		
				19 to 22	4	0.62	189	6.4	26	36	25477		
				23 to 26	4	0.71	216	6.9	28	34	24271		
				Test Averages					8.6		26	20613	

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A80+00	R10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.22	68	28.1	56	7	8847	
				5 to 7	3	0.32	96	9.4	28	24	19445	
				8 to 12	5	0.41	126	6.0	30	39	26694	
				13 to 16	4	0.51	154	6.9	28	33	24145	
				17 to 21	5	0.60	182	5.6	28	43	28260	
				22 to 24	3	0.69	211	9.7	29	23	18917	
				Test Averages				11.0		20	17384	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A90+00	L4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.19	57	11.2	34	20	17106	
				6 to 8	3	0.27	83	9.0	27	25	20063	
				9 to 12	4	0.37	114	7.7	31	30	22377	
				13 to 16	4	0.47	143	7.3	29	32	23306	
				17 to 20	4	0.58	177	8.3	33	27	21114	
				21 to 23	3	0.68	208	10.5	31	21	17957	
				Test Averages				9.0		25	20021	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A90+00	L10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	50	10.5	32	21	17876	
				6 to 8	3	0.25	76	8.9	27	25	20225	
				Test Averages				9.7		23	18963	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A90+00	R4	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	8.3	33	27	21159	
				7 to 10	4	0.26	80	7.3	29	32	23364	
				11 to 13	4	0.34	105	6.3	25	37	25912	
				14 to 17	4	0.45	136	7.7	31	30	22325	
				18 to 22	5	0.55	168	6.3	32	37	25722	
				23 to 26	4	0.63	193	6.3	25	37	25912	
				27 to 30	4	0.73	222	7.3	29	32	23249	
				Test Averages				7.1		33	23789	

**Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)**

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A90+00	R10	8kg	7/31/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.11	35					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.22	66	7.8	31	29	22120	
				7 to 10	4	0.30	91	6.2	25	38	26137	
				11 to 14	4	0.39	117	6.7	27	35	24856	
				15 to 18	4	0.49	148	7.7	31	30	22377	
				19 to 23	5	0.58	177	5.7	28	42	27901	
				24 to 27	4	0.66	201	6.2	25	38	26061	
				Test Averages				6.7		35	24697	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
150+00	4L	8kg	7/29/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	10					
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	49	7.3	29.0	32	23364	
				7 to 10	4	0.22	77	7.0	28.0	33	23959	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A170+00	L4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	47	6.0	30	39	26758	
				8 to 11	4	0.25	78	7.7	31	30	22429	
				12 to 15	4	0.34	105	6.8	27	34	24462	
				16 to 19	4	0.42	129	6.2	25	38	26289	
				20 to 23	4	0.51	155	6.3	25	37	25912	
				24 to 28	5	0.60	183	5.8	29	41	27553	
				29 to 32	4	0.68	208	6.2	25	38	26061	
				Test Averages				6.4		36	25514	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A170+00	L10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	54	11.9	36	18	16412	
				6 to 9	4	0.27	82	7.0	28	33	24082	
				10 to 14	5	0.36	111	5.8	29	41	27416	
				15 to 19	5	0.46	139	5.6	28	42	28115	
				20 to 24	5	0.54	166	5.4	27	45	29012	
				25 to 28	4	0.62	190	6.2	25	38	26061	
				29 to 32	4	0.69	211	5.1	20	47	30170	
				Test Averages				7.0		33	24040	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A170+00	R4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	44	6.2	25	38	26061	
				7 to 8	2	0.25	76	15.7	31	13	13459	
				Test Averages				10.9		20	17400	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A170+00	R10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	7.0	28	33	23959	
				7 to 10	4	0.22	66	6.4	25	37	25693	
				11 to 15	5	0.31	95	5.8	29	40	27282	
				16 to 20	5	0.41	124	5.8	29	41	27349	
				21 to 24	4	0.50	152	7.1	28	33	23837	
				25 to 27	3	0.58	177	8.3	25	27	21144	
				28 to 32	5	0.67	206	5.6	28	42	28043	
				Test Averages				6.6		35	25064	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A180+00	L4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	39	6.5	26	36	25336	
				7 to 10	4	0.21	65	6.6	26	35	24991	
				11 to 14	4	0.30	91	6.5	26	36	25266	
				15 to 18	4	0.38	117	6.5	26	36	25406	
				19 to 22	4	0.47	143	6.6	26	36	25128	
				23 to 27	5	0.56	171	5.6	28	42	28043	
				28 to 29	2	0.70	214	21.5	43	9	10719	
				Test Averages				8.5		26	20797	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
A180+00	L10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	46	6.9	28	34	24271	
				7 to 11	5	0.25	77	6.0	30	39	26694	
				12 to 15	4	0.34	103	6.6	27	35	24924	
				16 to 19	4	0.43	130	6.8	27	34	24592	
				20 to 22	3	0.52	157	9.1	27	25	19904	
				23 to 26	4	0.60	183	6.5	26	36	25266	
				27 to 30	4	0.69	209	6.5	26	36	25406	
				Test Averages				6.9		34	24212	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
A180+00	R4	8kg	7/30/2020	0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	44	5.9	30	40	27083		
				8 to 12	5	0.23	70	5.2	26	46	29731		
				13 to 17	5	0.31	94	4.9	25	49	30939		
				18 to 21	4	0.39	119	6.2	25	38	26061		
				22 to 26	5	0.49	148	5.8	29	41	27553		
				27 to 31	5	0.59	179	6.1	31	39	26443		
				32 to 34	3	0.67	206	9.1	27	25	19904		
				35 to 38	4	0.75	230	6.0	24	39	26758		
				Test Averages					6.2		38	26253	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
A180+00	R10	8kg	7/30/2020	0	0	0	0						
				1 to 2	2	0.05	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	44	6.8	27	34	24398		
				7 to 11	4	0.34	104	15.0	60	14	13874		
				12 to 13	2	0.45	137	16.5	33	13	12958		
				14 to 16	3	0.55	166	9.8	29	23	18825		
				17 to 18	2	0.65	199	16.1	32	13	13188		
				19 to 21	3	0.71	217	6.1	18	38	26340	Discount < 20mm of travel.	
				Test Averages					12.8		17	15506	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
A195+00	L4	8kg	7/30/2020	0	0	0	0						
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	46	6.7	27	35	24856		
				7 to 10	4	0.23	70	6.2	25	38	26212		
				11 to 15	5	0.39	119	9.7	49	23	18935		
				16 to 19	4	0.47	144	6.3	25	37	25912		
				20 to 23	4	0.56	172	6.9	28	34	24271		
				24 to 27	4	0.70	214	10.7	43	21	17735		
				Test Averages					7.7		30	22327	



Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A195+00	L10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	46	5.5	28	43	28333		
				8 to 20	13	0.39	118	5.5	72	43	28423		
				21 to 25	5	0.48	145	5.4	27	44	28934		
				26 to 30	5	0.58	176	6.2	31	38	26258		
				31 to 35	5	0.67	204	5.6	28	42	28043		
				36 to 38	3	0.75	229	8.3	25	27	21205		
				Test Averages					6.1		39	26487	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A195+00	R4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	41	6.1	31	38	26381		
				8 to 11	4	0.22	66	6.2	25	38	26137		
				12 to 16	5	0.31	95	5.7	29	41	27691		
				17 to 21	5	0.40	121	5.2	26	46	29486		
				22 to 26	5	0.49	150	5.7	29	42	27760		
				27 to 30	4	0.58	175	6.5	26	36	25406		
				31 to 34	4	0.66	200	6.3	25	37	25987		
				Test Averages					6.0		40	26905	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A195+00	R10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	44	5.7	28	42	27901		
				8 to 12	5	0.24	74	6.0	30	39	26631		
				13 to 17	5	0.33	101	5.3	27	45	29089		
				18 to 22	5	0.43	132	6.2	31	38	26137		
				23 to 27	5	0.54	164	6.5	32	36	25322		
				28 to 32	5	0.64	196	6.3	32	37	25722		
				33 to 36	4	0.73	223	6.8	27	34	24592		
				Test Averages					6.1		38	26394	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A215+00	L4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	43	6.1	31	38	26381		
				8 to 10	3	0.22	68	8.4	25	27	21084		
				11 to 14	4	0.31	94	6.6	26	35	24991		
				15 to 19	5	0.42	127	6.5	32	36	25322		
				20 to 24	5	0.50	153	5.3	27	45	29089		
				25 to 29	5	0.62	190	7.3	37	31	23204		
				30 to 33	4	0.71	217	6.6	27	35	24924		
				Test Averages					6.7		35	24742	

## Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A215+00	L10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	41	7.5	30	31	22803		
				7 to 11	5	0.22	68	5.3	27	45	29089		
				12 to 16	5	0.30	92	4.9	25	49	30849		
				17 to 21	5	0.40	122	5.9	30	40	27017		
				22 to 26	5	0.48	148	5.1	26	47	29896		
				27 to 31	5	0.57	175	5.5	28	43	28480		
				32 to 36	5	0.66	201	5.2	26	46	29813		
				Test Averages					5.6		42	27972	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A215+00	R4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.19	59	14.3	29	15	14394		
				5 to 9	5	0.28	86	5.5	27	44	28630		
				10 to 14	5	0.36	111	5.0	25	48	30407		
				15 to 19	5	0.45	138	5.4	27	44	28705		
				20 to 24	5	0.53	163	4.9	25	49	30759		
				25 to 30	6	0.63	193	5.0	30	48	30567		
				31 to 35	5	0.71	215	4.4	22	55	33204		
				Test Averages					6.7		35	24770	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A215+00	R10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	44	6.0	30	39	26694		
				8 to 12	5	0.24	73	5.9	29	40	27215		
				13 to 17	5	0.33	101	5.5	28	43	28333		
				18 to 22	5	0.42	128	5.3	27	45	29247		
				23 to 28	6	0.51	155	4.6	28	53	32288		
				29 to 33	5	0.60	184	5.7	29	41	27691		
				34 to 38	5	0.69	210	5.1	26	47	29896		
				Test Averages					5.5		44	28642	

Appendix G – Resilient Modulus Data Reduction for Stowe-Morristown STP PS19(3)

Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A222+00	L4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	51	9.0	36	25	19970		
				7 to 11	5	0.26	80	6.0	30	39	26822		
				12 to 16	5	0.36	110	5.9	29	40	27215		
				17 to 21	5	0.45	136	5.3	27	45	29168		
				22 to 27	6	0.53	162	4.2	25	59	34553		
				28 to 31	4	0.61	186	6.1	25	38	26366		
				32 to 36	5	0.88	269	16.6	83	13	12891	Do not include point. Apparently broke through stabilized base layer.	
				Test Averages					6.1		39	26490	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A222+00	L10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	45	7.8	31	29	22120		
				7 to 10	4	0.23	70	6.2	25	38	26061		
				11 to 13	3	0.32	96	8.9	27	25	20116		
				14 to 18	5	0.40	122	5.1	26	47	30064		
				19 to 22	4	1.72	524	100.6	402	2	3546	Do not include point. Apparently broke through	
				Test Averages					7.0		33	23908	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A222+00	R4	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.03	9					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	41	8.0	32	29	21821		
				7 to 10	4	0.22	68	6.8	27	34	24398		
				Test Averages					7.4		31	23023	
Station	Offset	Hammer Type	Date	Blow Count	Blows	Depth	DCP Reading	DCP Penetration Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
A222+00	R10	8kg	7/30/2020	(#)	(#)	(ft)	(mm)	(mm/blow)	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.15	46					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.25	76	9.8	29	23	18825		
				6 to 9	4	0.34	105	7.4	30	31	23023		
				10 to 14	5	0.44	133	5.6	28	43	28260		
				15 to 19	5	0.52	159	5.1	26	47	29896		
				20 to 24	5	0.61	187	5.7	28	42	27830		
				25 to 29	5	0.70	214	5.4	27	44	28781		
				Test Averages					6.5		36	25266	



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX H – RESILIENT MODULUS DATA REDUCTION FOR RICHFORD-JAY STP 2914(1)



GEDesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
135+10	6 R	Not Reported	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(mm)	(%)	(psi)		
				0	0	0.00	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.13	41	5.2	26	46	29649		
				8 to 10	3	0.20	61	6.7	20	35	24812		
				11	1	0.29	89	28.0	28	7	8870	Pont not included. Inferred penetration through the stabilized base.	
				Test Averages					5.9		40	26973	
135+15	2 R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.19	58	7.5	30	31	22803		
				7 to 10	4	0.28	85	6.8	27	34	24592		
				11	1	0.28	85.25	0.3	0	1379	261091	Discount. < 20mm travel.	
				Test Averages					7.1		32	23657	
135+15	6R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(mm)	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	6.8	27	34	24592		
				7 to 10	4	0.24	73	5.8	23	41	27587		
				Test Averages					6.3		37	25987	
135+15	8R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	46	5.8	29.0	41	27416		
				7 to 10	3	0.20	61	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
135+15	10R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	6.5	26.0	36	25266		
				6 to 10	5	0.24	73	6.2	31.0	38	26137		
				Test Averages					6.4		37	25693	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
138+10	2R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	45	5.4	27.0	44	28857		
				7 to 10	4	0.21	65	5.0	20.0	48	30494		
				Test Averages					5.2		46	29649	
138+10	4R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	25					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	53	9.3	28.0	24	19495		
				6 to 9	4	0.28	84	7.8	31.0	29	22273		
				10	1	0.30	91	7.0	7.0	33	23959	Discount, < 20mm travel.	
				Test Averages					8.5		26	20773	
138+10	8R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	48	5.8	29.0	41	27416		
				8 to 10	3	0.20	61	4.3	13.0	57	33788	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
147+5	2R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.15	47					First 2 blows discounted as "seating" blows. Does not appear to have been compacted	
				3	1	0.43	130	83.0	83.0	2	4070	Significant outlier. Do not include in test. Does not appear to be compacted stabilized base.	
147+5	4R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	43	6.5	26.0	36	25266		
				7 to 10	4	0.21	65	5.5	22.0	43	28480		
				Test Averages					6.0		39	26758	
147+5	8R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 8	6	0.14	42	4.5	27.0	54	32886		
				9 to 10	2	0.17	51	4.5	9.0	54	32886	Discount, < 20mm travel.	
				Test Averages					4.5		54	32886	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
160+30	2R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.10	32					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.19	58	8.7	26.0	26	20558	
				6 to 9	4	0.29	88	7.5	30.0	31	22803	
				10	1	0.31	94	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					8.1		28	21611	
160+30	4R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	57	7.5	30.0	31	22803	
				7 to 10	4	0.26	80	5.8	23.0	41	27587	
			Test Averages					6.6		35	24924	
160+30	6R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	59	8.0	32.0	28	21772	
				7 to 9	3	0.28	84	8.3	25.0	27	21144	
				10	1	0.31	95	11.0	11.0	20	17329	Discount, < 20mm travel.
			Test Averages					8.2		28	21453	
160+30	8R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	58	7.8	31.0	29	22273	
				7 to 10	4	0.29	87	7.3	29.0	32	23364	
			Test Averages					7.5		31	22803	
160+50	2R	7/9/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	50	6.5	26.0	36	25266	
				7 to 10	4	0.23	71	5.3	21.0	46	29446	
			Test Averages					5.9		40	27165	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index (mm/blow)	Pen. / Reading (mm)	CBR (%)	M <sub>R</sub> (psi)	Notes
160+50	4R	7/9/2021	8kg	0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	53	6.5	26.0	36	25266	
				7 to 10	4	0.27	82	7.3	29.0	32	23364	
			Test Averages					6.9		34	24271	
160+50	6R	7/9/2021	8kg	0	0	0	0					
				1 to 2	2	0.13	39					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.21	65	13.0	26.0	17	15373	
				4 to 6	2	0.30	90	12.5	25.0	17	15811	
				6 to 9	3	0.39	120	10.0	30.0	22	18554	
				10	1	0.42	127	7.0	7.0	33	23959	Discount, < 20mm travel.
			Test Averages					11.8		18	16445	
160+50	8R	7/9/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	44	5.0	25.0	48	30494	
				8 to 10	3	0.19	58	4.7	14.0	52	32040	
			Test Averages					5.0		48	30494	
160+50	8R	7/9/2021	8kg	0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	6.5	26.0	36	25266	
				7 to 10	4	0.21	63	5.5	22.0	43	28480	
			Test Averages					6.0		39	26758	
138+70	2L	7/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	47	6.3	25.0	37	25987	
				7 to 10	4	0.23	71	6.0	24.0	39	26758	
			Test Averages					6.1		38	26366	



## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
138+70	6L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	55	9.3	28.0	24	19495	
				6 to 9	4	0.28	85	7.5	30.0	31	22803	
				10	1	0.30	91	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					8.4		27	20994	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
138+70	8L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	48	5.8	29.0	41	27416	
				8 to 10	3	0.22	66	6.0	18.0	39	26758	Discount, < 20mm travel.
			Test Averages					5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
138+70	10L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	57	7.3	29.0	32	23364	
				7 to 10	4	0.27	83	6.5	26.0	36	25266	
			Test Averages					6.9		34	24271	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
147+00	2L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	49	5.8	29.0	41	27416	
				8 to 10	3	0.21	64	5.0	15.0	48	30494	Discount, < 20mm travel.
			Test Averages					5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
147+00	4L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.10	31					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.21	63	10.7	32.0	21	17715	
				6 to 8	3	0.30	90	9.0	27.0	25	20009	
				9 to 10	2	0.35	108	9.0	18.0	25	20009	Discount, < 20mm travel.
			Test Averages					9.8		23	18779	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
147+00	6L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	46	6.8	27.0	34	24592	
				7 to 10	4	0.25	76	7.5	30.0	31	22803	
			Test Averages					7.1		32	23657	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
147+00	10L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.10	32					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.20	60	7.0	28.0	33	23959	
				7 to 9	4	0.28	86	6.5	26.0	36	25266	
				10	1	0.31	93	7.0	7.0	33	23959	Discount, < 20mm travel.
				<b>Test Averages</b>				6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
154+50	2L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	11					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.12	38	5.4	27.0	44	28857	
				8 to 10	3	0.17	53	5.0	15.0	48	30494	Discount, < 20mm travel.
				<b>Test Averages</b>				5.4		44	28857	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
154+50	6L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	6.3	25.0	37	25987	
				7 to 10	4	0.22	67	6.5	26.0	36	25266	
				<b>Test Averages</b>				6.4		37	25620	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
154+50	8L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	7.3	29.0	32	23364	
				7 to 9	3	0.22	67	8.7	26.0	26	20558	
				10	1	0.24	73	6.0	6.0	39	26758	Discount, < 20mm travel.
				<b>Test Averages</b>				8.0		29	21854	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
154+50	10L	7/10/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	46	5.6	28.0	42	28115	
				8 to 10	3	0.21	63	5.7	17.0	42	27877	Discount, < 20mm travel.
				<b>Test Averages</b>				5.6		42	28115	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
167+20	4L	7/10/2021		0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	47	7.3	29.0	32	23364	
				7 to 10	4	0.23	70	5.8	23.0	41	27587	
			Test Averages					6.5		36	25266	
167+20	8L	7/10/2021		0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.13	41	5.0	25.0	48	30494	
				8 to 10	3	0.19	57	5.3	16.0	45	29115	Discount, < 20mm travel.
			Test Averages					5.0		48	30494	
167+20	10L	7/10/2021		0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.17	53	9.0	27.0	25	20009	
				6 to 9	4	0.28	85	8.0	32.0	28	21772	
				10	1	0.31	93	8.0	8.0	28	21772	Discount, < 20mm travel.
			Test Averages					8.5		27	20846	
174+00	2R	7/12/2021		0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.14	44	9.3	28.0	24	19495	
				6 to 9	4	0.23	71	6.8	27.0	34	24592	
				10	1	0.26	78	7.0	7.0	33	23959	Discount, < 20mm travel.
			Test Averages					8.0		28	21691	
174+00	4R	7/12/2021		0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	44	6.8	27.0	34	24592	
				7 to 10	4	0.24	72	7.0	28.0	33	23959	
			Test Averages					6.9		34	24271	
174+00	6R	7/12/2021		0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.17	53	10.3	31.0	21	18123	
				6 to 9	4	0.26	78	6.3	25.0	37	25987	
				10	1	0.27	83	5.0	5.0	48	30494	Discount, < 20mm travel.
			Test Averages					8.3		27	21220	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
174+00	10R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.3	25.0	37	25987		
				6 to 10	5	0.23	69	4.2	21.0	59	34553		
				Test Averages					5.2		46	29547	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
183+00	2R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	29					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.21	63	11.3	34.0	19	16962		
				6 to 8	3	0.31	93	10.0	30.0	22	18554		
				8 to 10	2	0.37	112	9.5	19.0	23	19249	Discount, < 20mm travel.	
				Test Averages					10.7		21	17715	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
183+00	4R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	7.0	28.0	33	23959		
				6 to 10	5	0.23	70	4.0	20.0	62	35783		
				Test Averages					5.5		43	28480	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
183+00	6R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	52	7.3	29.0	32	23364		
				6 to 9	4	0.25	77	6.3	25.0	37	25987		
				10	1	0.27	81	4.0	4.0	62	35783	Discount, < 20mm travel.	
				Test Averages					6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
183+00	8R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	48	5.6	28.0	42	28115		
				8 to 10	3	0.22	68	6.7	20.0	35	24812		
				Test Averages					6.1		38	26340	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
185+00	2R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	53	8.7	26.0	26	20558		
				6 to 10	5	0.27	82	5.8	29.0	41	27416		
				Test Averages					7.2		32	23402	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
185+00	4R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	53	8.7	26.0	26	20558		
				6 to 10	5	0.27	83	6.0	30.0	39	26758		
				Test Averages					7.3		31	23173	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
185+00	6R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	49	9.3	28.0	24	19495		
				6 to 9	3	0.26	78	9.7	29.0	23	19010		
				10	1	0.28	84	6.0	6.0	39	26758	Discount, < 20mm travel.	
				Test Averages					9.5		23	19249	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
185+00	8R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	3	0.15	47	10.0	30.0	22	18554		
				6 to 10	3	0.21	64	5.7	17.0	42	27877	Discount, < 20mm travel.	
				Test Averages					10.0		22	18554	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
195+50	2R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	46	10.0	30.0	22	18554		
				6 to 8	3	0.23	71	8.3	25.0	27	21144		
				9 to 10	2	0.29	87	8.0	16.0	28	21772	Discount, < 20mm travel.	
				Test Averages					9.2		24	19748	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
195+50	4R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	47	5.8	29.0	41	27416	
				6 to 10	3	0.21	65	6.0	18.0	39	26758	Discount, < 20mm travel.
				Test Averages				5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
195+50	6R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	49	5.6	28.0	42	28115	
				8 to 10	3	0.21	65	5.3	16.0	45	29115	Discount, < 20mm travel.
				Test Averages				5.6		42	28115	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
195+50	8R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	49	6.5	26.0	36	25266	
				7 to 10	4	0.25	77	7.0	28.0	33	23959	
				Test Averages				6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
198+50	4R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	48	5.8	29.0	41	27416	
				8 to 10	3	0.21	63	5.0	15.0	48	30494	Discount, < 20mm travel.
				Test Averages				5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
198+50	6R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	7.3	29.0	32	23364	
				7 to 9	3	0.26	78	9.0	27.0	25	20009	
				10	1	0.29	87	9.0	9.0	25	20009	Discount, < 20mm travel.
				Test Averages				8.1		28	21532	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
198+50	8R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.18	54	7.0	28.0	33	23959	
				6 to 10	5	0.26	79	5.0	25.0	48	30494	
				11	1	0.29	88	9.0	9.0	25	20009	Discount, < 20mm travel.
				Test Averages				6.0		39	26758	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
198+50	10R	7/12/2021		0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	55	11.0	33.0	20	17329	
				6 to 9	4	0.28	84	7.3	29.0	32	23364	
				10	1	0.30	92	8.0	8.0	28	21772	Discount, < 20mm travel.
			<b>Test Averages</b>					9.1		25	19813	
207+00	4R	7/12/2021		0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	7.5	30.0	31	22803	
				6 to 10	4	0.25	75	6.0	24.0	39	26758	
				11	1	0.36	109	34.0	34.0	6	7717	Do not include point. Apparently punched through stabilized base layer.
			<b>Test Averages</b>					6.8		34	24592	
207+00	6R	7/12/2021		0	0	0	0					
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	55	8.3	25.0	27	21144	
				6 to 8	3	0.27	82	9.0	27.0	25	20009	
				9 to 10	1	0.32	98	16.0	16.0	13	13247	Discount, < 20mm travel.
			<b>Test Averages</b>					8.7		26	20558	
207+00	8R	7/12/2021		0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.17	51	6.0	30.0	39	26758	
				8 to 10	3	0.22	66	5.0	15.0	48	30494	Discount, < 20mm travel.
			<b>Test Averages</b>					6.0		39	26758	
207+00	10R	7/12/2021		0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	48	7.3	29.0	32	23364	
				7 to 10	4	0.25	76	7.0	28.0	33	23959	
			<b>Test Averages</b>					7.1		32	23657	
213+00	2R	7/12/2021		0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	43	5.8	23.0	41	27587	
				7 to 10	3	0.23	69	8.7	26.0	26	20558	Blow counts grouped due to possible change in strata between blows 6 and 7.
			<b>Test Averages</b>					7.2		32	23461	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
213+00	4R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	49	6.0	30.0	39	26758	
				8 to 10	3	0.22	66	5.7	17.0	42	27877	Discount, < 20mm travel.
				Test Averages				6.0		39	26758	
213+00	6R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	43	4.8	24.0	50	31399	
				8 to 10	3	0.24	72	9.7	29.0	23	19010	
				Test Averages				7.2		32	23402	
213+00	8R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.
				3 to 7	6	0.20	60	4.3	26.0	57	33788	
				8 to 10	3	0.24	74	4.7	14.0	52	32040	Discount, < 20mm travel.
				Test Averages				4.3		57	33788	
222+70	4R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	43	6.3	25.0	37	25987	
				7 to 10	4	0.21	65	5.5	22.0	43	28480	
				Test Averages				6.3		37	25987	
222+70	6R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 6	3	0.14	43	9.0	27.0	25	20009	
				6 to 9	3	0.20	60	5.7	17.0	42	27877	Discount, < 20mm travel.
				Test Averages				9.0		25	20009	



Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
222+70	8R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	43	5.6	28.0	42	28115	
				8 to 11	3	0.22	66	7.7	23.0	30	22447	
			Test Averages					5.6		42	28115	
222+70	10R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	52	6.5	26.0	36	25266	
				7 to 10	4	0.26	80	7.0	28.0	33	23959	
			Test Averages					6.8		34	24592	
230+00	2R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	50	7.5	30.0	31	22803	
				7 to 10	4	0.24	74	6.0	24.0	39	26758	
			Test Averages					7.5		31	22803	
230+00	4R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.15	47	8.3	25.0	27	21144	
				6 to 8	3	0.24	73	8.7	26.0	26	20558	
				9 to 10	2	0.29	87	7.0	14.0	33	23959	Discount, < 20mm travel.
			Test Averages					8.5		27	20846	
230+00	6R	7/12/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	45	5.4	27.0	44	28857	
				8 to 10	3	0.20	60	5.0	15.0	48	30494	Discount, < 20mm travel.
			Test Averages					5.4		44	28857	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
230+00	10R	7/12/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.5	26.0	36	25266		
				7 to 10	4	0.26	79	7.8	31.0	29	22273		
				Test Averages					7.1		32	23657	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
182+30	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	43	5.8	29.0	41	27416		
				8 to 10	3	0.19	59	5.3	16.0	45	29115	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
182+30	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	49	8.3	25.0	27	21144		
				6 to 10	3	0.26	78	9.7	29.0	23	19010		
				Test Averages					9.0		25	20009	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
182+30	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	46	5.0	25.0	48	30494		
				8 to 10	3	0.20	61	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.0		48	30494	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
182+30	10L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	56	10.0	30.0	22	18554		
				6 to 8	3	0.27	82	8.7	26.0	26	20558		
				9 to 10	2	0.33	102	10.0	20.0	22	18554		
				Test Averages					9.3		24	19495	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
185+10	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	44	5.8	29.0	41	27416		
				8 to 10	3	0.20	61	5.7	17.0	42	27877	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
185+10	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	44	5.0	25.0	48	30494	
				8 to 9	2	0.19	58	7.0	14.0	33	23959	
				10	1	0.31	93	35.0	35.0	5	7559	Point not included. Inferred to have penetrated stabilized base.
			Test Averages					5.0		48	30494	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
185+10	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	56	9.3	28.0	24	19495	
				6 to 9	4	0.27	83	6.8	27.0	34	24592	
				10	1	0.29	89	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					8.0		28	21691	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
185+10	8L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	48	5.2	26.0	46	29649	
				8 to 10	3	0.22	67	6.3	19.0	37	25741	Discount, < 20mm travel.
			Test Averages					5.2		46	29649	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
200+00	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	40	6.8	27.0	34	24592	
				7 to 9	3	0.20	62	7.3	22.0	31	23173	
				10	1	1.88	573	511.0	511.0	0	1106	Point not included. Inferred to have penetrated stabilized base.
			Test Averages					6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
200+00	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.04	13					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.12	38	5.0	25.0	48	30494	
				8 to 10	3	0.18	56	6.0	18.0	39	26758	Discount, < 20mm travel.
			Test Averages					5.0		48	30494	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
200+00	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>													
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
200+00	8L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.13	40					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.22	68	7.0	28.0	33	23959		
				7 to 10	4	0.31	94	6.5	26.0	36	25266		
				11	2	0.32	98	2.0	4.0	134	58811	Discount, < 20mm travel.	
				<b>Test Averages</b>					6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
206+00	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	3	0.20	60	10.7	32.0	21	17715		
				7 to 10	3	0.28	84	8.0	24.0	28	21772		
				<b>Test Averages</b>					10.7		21	17715	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
206+00	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 7	3	0.16	50	10.0	30.0	22	18554		
				8 to 10	3	0.22	68	6.0	18.0	39	26758	Discount, < 20mm travel.	
				<b>Test Averages</b>					10.0		22	18554	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
206+00	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>													
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
206+00	10L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	50	8.7	26.0	26	20558		
				6 to 8	3	0.27	83	11.0	33.0	20	17329		
				9 to 10	2	0.33	101	9.0	18.0	25	20009	Discount, < 20mm travel.	
				<b>Test Averages</b>					9.8		23	18779	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
207+10	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	47	5.8	29.0	41	27416		
				8 to 10	3	0.21	63	5.3	16.0	45	29115	Discount, < 20mm travel.	
				11	1	2.06	627	564.0	564.0	0	1031	Point not included. Inferred to have penetrated stabilized base.	
				<b>Test Averages</b>					5.8		41	27416	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
207+10	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	47	6.8	27.0	34	24592		
				7 to 10	3	0.24	72	8.3	25.0	27	21144		
				Test Averages					7.5		30	22713	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
207+10	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	8.0	32.0	28	21772		
				7 to 9	3	0.27	82	9.3	28.0	24	19495		
				10	2	0.30	92	5.0	10.0	48	30494	Discount, < 20mm travel.	
				Test Averages					8.7		26	20558	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
207+10	8L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	48	8.7	26.0	26	20558		
				6 to 9	3	0.25	76	9.3	28.0	24	19495		
				10	2	0.28	85	4.5	9.0	54	32886	Discount, < 20mm travel.	
				Test Averages					9.0		25	20009	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
209+20	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	47	7.3	29.0	32	23364		
				7 to 10	4	0.24	73	6.5	26.0	36	25266		
				11	1	0.26	78	5.0	5.0	48	30494	Discount, < 20mm travel.	
				Test Averages					6.9		34	24271	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
209+20	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	53	10.3	31.0	21	18123		
				6 to 8	3	0.26	80	9.0	27.0	25	20009		
				9 to 10	2	0.33	102	11.0	22.0	20	17329		
				Test Averages					9.7		23	19010	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
209+20	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.18	54	6.2	31.0	38	26137		
				8 to 10	3	0.23	70	5.3	16.0	45	29115	Discount, < 20mm travel.	
				Test Averages					6.2		38	26137	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
209+20	8L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.16	50	13.5	27.0	16	14963		
				5 to 7	3	0.27	82	10.7	32.0	21	17715		
				8 to 10	3	0.36	110	9.3	28.0	24	19495		
				Test Averages					11.2		20	17143	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
219+10	2L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 10	10	0.03	9					Data set not included. Little to no movement for 10 blows then significant movement noted. Should have been ended in refusal. Infer bouncing on a cobble and then deflected around.	
				11 to 12	2	0.10	32	11.5	23.0	19	16785		
				13	1	0.22	68	36.0	36.0	5	7408		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
219+10	4L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	43	6.5	26.0	36	25266		
				7 to 10	4	0.23	70	6.8	27.0	34	24592		
				Test Averages					6.6		35	24924	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
219+10	6L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	52	8.3	25.0	27	21144		
				6 to 9	4	0.27	81	7.3	29.0	32	23364		
				10	1	0.29	89	8.0	8.0	28	21772	Discount, < 20mm travel.	
				Test Averages					7.8		29	22188	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
219+10	10L	7/13/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	49	6.3	25.0	37	25987		
				7 to 10	4	0.24	73	6.0	24.0	39	26758		
			Test Averages						6.1		38	26366	
230+00	2L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***													
230+00	4L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	43	6.3	25.0	37	25987		
				7 to 10	4	0.20	60	4.3	17.0	58	34262	Discount, < 20mm travel.	
			Test Averages						6.3		37	25987	
230+00	6L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.21	63	9.7	29.0	23	19010		
				6 to 8	3	0.31	93	10.0	30.0	22	18554		
				9 to 10	2	0.37	112	9.5	19.0	23	19249	Discount, < 20mm travel.	
			Test Averages						9.8		23	18779	
230+00	8L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***													
238+00	2L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.11	33					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.19	58	6.3	25.0	37	25987		
				6 to 8	3	0.32	97	13.0	39.0	17	15373		
				9 to 10	2	0.35	106	4.5	9.0	54	32886	Discount, < 20mm travel.	
			Test Averages						9.6		23	19069	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer	Blow	Blows	Depth	DCP	DCP Pen.	Pen. /	CBR	M <sub>R</sub>	Notes
238+00	4L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	45	6.3	25.0	37	25987	
				7 to 10	4	0.23	70	6.3	25.0	37	25987	
				Test Averages				6.3		37	25987	
Station	Offset	Date	Hammer	Blow	Blows	Depth	DCP	DCP Pen.	Pen. /	CBR	M <sub>R</sub>	Notes
238+00	6L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	49	9.3	28.0	24	19495	
				6 to 8	3	0.26	78	9.7	29.0	23	19010	
				9 to 10	2	0.30	92	7.0	14.0	33	23959	Discount, < 20mm travel.
				Test Averages				9.5		23	19249	
Station	Offset	Date	Hammer	Blow	Blows	Depth	DCP	DCP Pen.	Pen. /	CBR	M <sub>R</sub>	Notes
238+00	8L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.18	54	5.4	27.0	44	28857	
				8 to 10	3	0.22	68	4.7	14.0	52	32040	Discount, < 20mm travel.
				Test Averages				5.4		44	28857	
Station	Offset	Date	Hammer	Blow	Blows	Depth	DCP	DCP Pen.	Pen. /	CBR	M <sub>R</sub>	Notes
243+50	2L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	46	6.8	27.0	34	24592	
				7 to 10	4	0.23	70	6.0	24.0	39	26758	
				Test Averages				6.8		34	24592	
Station	Offset	Date	Hammer	Blow	Blows	Depth	DCP	DCP Pen.	Pen. /	CBR	M <sub>R</sub>	Notes
243+50	4L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	50	6.5	26.0	36	25266	
				7 to 10	4	0.24	74	6.0	24.0	39	26758	
				Test Averages				6.5		36	25266	



Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
243+50	6L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	54	9.0	27.0	25	20009	
				6 to 7	2	0.27	81	13.5	27.0	16	14963	
				8 to 10	3	0.34	104	7.7	23.0	30	22447	
			Test Averages					11.3		19	17052	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
243+50	8L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.21	64	10.0	30.0	22	18554	
				6 to 8	3	0.30	92	9.3	28.0	24	19495	
				9 to 10	1	0.36	109	17.0	17.0	12	12684	Discount, < 20mm travel.
			Test Averages					9.7		23	19010	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
255+50	2L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.22	67	20.0	40.0	10	11289	
				5 to 6	2	0.31	93	13.0	26.0	17	15373	
				7 to 10	4	0.42	127	8.5	34.0	27	20846	
			Test Averages					13.8		15	14703	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
255+50	4L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	54	9.0	27.0	25	20009	
				6 to 9	4	0.27	82	7.0	28.0	33	23959	
				10	1	0.29	89	7.0	7.0	33	23959	Discount, < 20mm travel.
			Test Averages					8.0		28	21772	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
255+50	6L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 8	6	0.19	57	5.0	30.0	48	30494	
				9 to 10	2	0.22	66	4.5	9.0	54	32886	Discount, < 20mm travel.
			Test Averages					5.0		48	30494	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
255+50	8L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.15	45					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.24	74	9.7	29.0	23	19010	
				6	1	0.34	103	29.0	29.0	7	8649	
				7 to 10	4	0.42	129	6.5	26.0	36	25266	
			Test Averages					15.1		14	13838	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
264+00	2L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	46	5.2	26.0	46	29649	
				8 to 10	3	0.30	91	15.0	45.0	14	13874	
			Test Averages					10.1		22	18422	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
264+00	4L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	46	6.8	27.0	34	24592	
				7 to 10	4	0.23	71	6.3	25.0	37	25987	
			Test Averages					6.5		36	25266	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
264+00	6L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	58	8.5	34.0	27	20846	
				7 to 10	4	0.27	83	6.3	25.0	37	25987	
			Test Averages					7.4		31	23079	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
264+00	8L	7/14/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.18	54	6.8	27.0	34	24592	
				7 to 10	4	0.24	74	5.0	20.0	48	30494	
			Test Averages					6.8		34	24592	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
243+00	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 3	3	0.06	19					First 2 blows discounted as "seating" blows.	
				4 to 7	4	0.16	48	7.3	29.0	32	23364		
				8 to 10	3	0.20	62	4.7	14.0	52	32040	Discount, < 20mm travel.	
				Test Averages					7.3		32	23364	
243+00	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	15					First 2 blows discounted as "seating" blows.	
				3 to 9	7	0.15	45	4.3	30.0	57	34057		
				10	1	0.20	60	15.0	15.0	14	13874	Discount, < 20mm travel.	
				Test Averages					4.3		57	34057	
243+00	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	7.3	29.0	32	23364		
				7 to 10	4	0.23	71	5.3	21.0	46	29446		
				Test Averages					7.3		32	23364	
243+00	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	6.3	25.0	37	25987		
				7 to 10	4	0.21	63	5.3	21.0	46	29446		
				Test Averages					6.3		37	25987	
250+90	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.21	65	9.5	38.0	23	19249		
				7 to 10	4	0.31	94	7.3	29.0	32	23364		
				Test Averages					8.4		27	21069	
250+90	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	6.3	25.0	37	25987		
				7 to 10	2	0.21	65	11.5	23.0	19	16785		
				Test Averages					6.3		37	25987	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
250+90	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	54	9.3	28.0	24	19495	
				6 to 9	4	0.28	84	7.5	30.0	31	22803	
				10	1	0.30	92	8.0	8.0	28	21772	Discount, < 20mm travel.
			Test Averages					8.4		27	20994	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
250+90	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted
				3 to 7	5	0.15	47	5.4	27.0	44	28857	
				8 to 10	3	0.21	64	5.7	17.0	42	27877	Discount, < 20mm travel.
			Test Averages					5.4		44	28857	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
260+25	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	47	7.3	29.0	32	23364	
				7 to 10	4	0.22	68	5.3	21.0	46	29446	
			Test Averages					7.3		32	23364	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
260+25	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	41	6.3	25.0	37	25987	
				7 to 10	4	0.21	64	5.8	23.0	41	27587	
			Test Averages					6.3		37	25987	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
260+25	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	6.3	25.0	37	25987	
				7 to 10	4	0.25	76	6.3	25.0	37	25987	
			Test Averages					6.3		37	25987	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
260+25	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	8.0	32.0	28	21772		
				7 to 10	4	0.24	74	6.0	24.0	39	26758		
				Test Averages					8.0		28	21772	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
268+00	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	55	6.8	27.0	34	24592		
				7 to 10	2	0.26	78	11.5	23.0	19	16785		
				Test Averages					6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
268+00	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	52	7.3	29.0	32	23364		
				7 to 10	4	0.26	80	7.0	28.0	33	23959		
				Test Averages					7.1		32	23657	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
268+00	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	46	8.0	32.0	28	21772		
				7 to 10	4	0.23	70	6.0	24.0	39	26758		
				Test Averages					8.0		28	21772	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
268+00	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.5	26.0	36	25266		
				7 to 10	2	0.24	74	13.0	26.0	17	15373		
				Test Averages					9.8		23	18894	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
272+15	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	45	7.0	28.0	33	23959		
				7 to 10	2	0.23	71	13.0	26.0	17	15373		
				Test Averages					10.0		22	18554	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
272+15	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.04	12					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	39	6.8	27.0	34	24592		
				7 to 10	4	0.20	61	5.5	22.0	43	28480		
				Test Averages					6.8		34	24592	
272+15	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	32					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.20	60	9.3	28.0	24	19495		
				6 to 9	4	0.29	89	7.3	29.0	32	23364		
				10	1	0.32	97	8.0	8.0	28	21772	Discount, < 20mm travel.	
				Test Averages					8.3		27	21220	
272+15	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	51	8.3	25.0	27	21144		
				6 to 9	4	0.25	76	6.3	25.0	37	25987		
				10	1	0.27	82	6.0	6.0	39	26758	Discount, < 20mm travel.	
				Test Averages					7.3		32	23268	
289+00	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 7	6	0.14	43	4.5	27.0	54	32886		
				8 to 10	2	0.19	57	7.0	14.0	33	23959	Discount, < 20mm travel.	
				Test Averages					4.5		54	32886	
289+00	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	42	5.0	25.0	48	30494		
				8 to 10	3	0.18	56	4.7	14.0	52	32040	Discount, < 20mm travel.	
				Test Averages					5.0		48	30494	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
289+00	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.13	40	5.2	26.0	46	29649		
				8 to 10	3	0.19	57	5.7	17.0	42	27877	Discount, < 20mm travel.	
				<b>Test Averages</b>					5.2		46	29649	
289+00	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	42	6.5	26.0	36	25266		
				7 to 10	4	0.20	61	4.8	19.0	51	31636	Discount, < 20mm travel.	
				<b>Test Averages</b>					6.5		36	25266	
302+40	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.14	42	8.3	25.0	27	21144		
				6 to 10	5	0.24	72	6.0	30.0	39	26758		
				<b>Test Averages</b>					8.3		27	21144	
302+40	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>									
302+40	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.17	51	6.2	31.0	38	26137		
				8 to 10	3	0.22	66	5.0	15.0	48	30494	Discount, < 20mm travel.	
				<b>Test Averages</b>					6.2		38	26137	
302+40	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>									
308+60	2R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>									

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
308+60	4R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	46	6.5	26.0	36	25266	
				7 to 10	4	0.22	67	5.3	21.0	46	29446	
				Test Averages				6.5		36	25266	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
308+60	6R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	45	5.8	29.0	41	27416	
				8 to 10	3	0.19	59	4.7	14.0	52	32040	Discount, < 20mm travel.
				Test Averages				5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
308+60	8R	7/15/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
<b>*** NO ENTRIES RECORDED (DCP Reading v. BLOW GRAPH NOT PROVIDED) ***</b>												
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
287+50	2L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	1.04	318					First 2 blows discounted as "seating" blows.
				3 to 6	4	1.13	344	6.5	26.0	36	25266	
				7 to 10	4	1.21	369	6.3	25.0	37	25987	
				Test Averages				6.4		37	25620	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
287+50	4L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	43	5.0	25.0	48	30494	
				8 to 10	3	0.20	61	6.0	18.0	39	26758	Discount, < 20mm travel.
				Test Averages				5.0		48	30494	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
287+50	6L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	0					
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	57	7.8	31.0	29	22273	
				7 to 10	4	0.28	84	6.8	27.0	34	24592	
				Test Averages				7.3		32	23364	



## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
287+50	8L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	41	6.3	25.0	37	25987		
				7 to 10	4	0.20	62	5.3	21.0	46	29446		
				Test Averages					6.3		37	25987	
299+35	2L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	47	5.8	29.0	41	27416		
				8 to 10	3	0.20	62	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
299+35	4L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	45	5.8	29.0	41	27416		
				8 to 10	3	0.19	59	4.7	14.0	52	32040	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
299+35	6L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.15	46	6.3	25.0	37	25987		
				7 to 10	4	0.23	70	6.0	24.0	39	26758		
				Test Averages					6.3		37	25987	
299+35	8L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	6.5	26.0	36	25266		
				7 to 11	5	0.26	78	4.8	24.0	50	31399		
				Test Averages					6.5		36	25266	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+10	2L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	42	5.2	26.0	46	29649		
				8 to 10	3	0.19	58	5.3	16.0	45	29115	Discount, < 20mm travel.	
				Test Averages					5.2		46	29649	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+10	4L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.24	72	8.4	42.0	27	21024		
				8 to 9	3	0.31	93	7.0	21.0	33	23959		
				Test Averages					8.4		27	21024	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+10	6L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.19	58	14.0	28.0	15	14578		
				5 to 7	3	0.31	94	12.0	36.0	18	16281		
				8 to 10	3	0.39	119	8.3	25.0	27	21144		
				Test Averages					11.4		19	16844	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
310+10	8L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 8	6	0.15	45	4.7	28.0	52	32040		
				9 to 10	2	0.18	56	5.5	11.0	43	28480	Discount, < 20mm travel.	
				Test Averages					4.7		52	32040	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
313+25	2L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	43	5.2	26.0	46	29649		
				8 to 10	3	0.19	57	4.7	14.0	52	32040	Discount, < 20mm travel.	
				Test Averages					5.2		46	29649	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
313+25	4L	7/16/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	48	5.6	28.0	42	28115		
				8 to 10	3	0.21	64	5.3	16.0	45	29115	Discount, < 20mm travel.	
				Test Averages					5.6		42	28115	

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Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
313+25	6L	7/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	48	5.6	28.0	42	28115	
				8 to 10	3	0.20	62	4.7	14.0	52	32040	Discount, < 20mm travel.
				Test Averages				5.6		42	28115	
Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
313+25	8L	7/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	45	5.2	26.0	46	29649	
				8 to 10	3	0.21	63	6.0	18.0	39	26758	Discount, < 20mm travel.
				Test Averages				5.2		46	29649	
Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
329+00	2L	7/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	48	6.8	27.0	34	24592	
				7 to 10	3	0.23	70	7.3	22.0	31	23173	
				Test Averages				6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
329+00	4L	7/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	45	6.8	27.0	34	24592	
				7 to 10	3	0.22	68	7.7	23.0	30	22447	
				Test Averages				6.8		34	24592	
Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
329+00	6L	7/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.17	53	8.7	26.0	26	20558	
				6 to 10	5	0.27	82	5.8	29.0	41	27416	
				Test Averages				7.2		32	23402	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
329+00	8L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.08	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	50	6.8	27.0	34	24592		
				7 to 10	4	0.24	74	6.0	24.0	39	26758		
				<b>Test Averages</b>					6.8		34	24592	
336+00	2L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	52	6.5	26.0	36	25266		
				7 to 10	4	0.25	77	6.3	25.0	37	25987		
				<b>Test Averages</b>					6.4		37	25620	
336+00	4L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.19	59	7.3	29.0	32	23364		
				7 to 10	4	0.27	83	6.0	24.0	39	26758		
				<b>Test Averages</b>					7.3		32	23364	
336+00	6L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.13	39					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.24	72	11.0	33.0	20	17329		
				6 to 8	3	0.34	104	10.7	32.0	21	17715		
				9 to 10	2	0.41	126	11.0	22.0	20	17329		
				<b>Test Averages</b>					10.8		20	17519	
336+00	8L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.08	25					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.18	54	5.8	29.0	41	27416		
				8 to 10	3	0.23	70	5.3	16.0	45	29115	Discount, < 20mm travel.	
				<b>Test Averages</b>					5.8		41	27416	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
344+10	2L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.5	26.0	36	25266		
				7 to 10	4	0.24	74	6.5	26.0	36	25266		
				Test Averages					6.5		36	25266	
344+10	4L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	8.0	32.0	28	21772		
				7 to 10	3	0.27	82	9.3	28.0	24	19495		
				Test Averages					8.7		26	20558	
344+10	6L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	54	6.5	26.0	36	25266		
				7 to 10	4	0.26	78	6.0	24.0	39	26758		
				Test Averages					6.5		36	25266	
344+10	8L	7/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	44	6.5	26.0	36	25266		
				7 to 10	4	0.23	69	6.3	25.0	37	25987		
				Test Averages					6.4		37	25620	
321+00	2R	7/19/2021	8kg	0	0	0	16						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	52	7.0	28.0	33	23959		
				7 to 10	4	0.19	73	5.3	21.0	46	29446		
				Test Averages					7.0		33	23959	
321+00	4R	7/19/2021	8kg	0	0	0	14						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	48	6.5	26.0	36	25266		
				7 to 10	4	0.19	72	6.0	24.0	39	26758		
				Test Averages					6.5		36	25266	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
321+00	6R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 10					
				1 to 2	2	0.04	21					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	50	7.3	29.0	32	23364	
				7 to 10	4	0.22	76	6.5	26.0	36	25266	
			Test Averages					6.9		34	24271	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
321+00	8R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 8					
				1 to 2	2	0.03	16					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.12	45	5.8	29.0	41	27416	
				8 to 10	4	0.18	63	4.5	18.0	54	32886	Discount, < 20mm travel.
			Test Averages					5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
326+40	2R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 12					
				1 to 2	2	0.04	24					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.12	49	8.3	25.0	27	21144	
				6 to 10	5	0.20	73	4.8	24.0	50	31399	
			Test Averages					8.3		27	21144	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
326+40	4R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 16					
				1 to 2	2	0.02	23					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.11	50	6.8	27.0	34	24592	
				7 to 10	4	0.20	76	6.5	26.0	36	25266	
			Test Averages					6.6		35	24924	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
326+40	6R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 15					
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.13	56	10.0	30.0	22	18554	
				6 to 9	4	0.23	84	7.0	28.0	33	23959	
				10	1	0.25	90	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					8.5		27	20846	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
326+40	8R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 18						
				1 to 2	2	0.02	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	48	6.3	25.0	37	25987		
				7 to 10	4	0.17	71	5.8	23.0	41	27587		
			Test Averages						6.3		37	25987	
337+50	4R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 15						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	51	6.8	27.0	34	24592		
				7 to 10	4	0.20	75	6.0	24.0	39	26758		
			Test Averages						6.8		34	24592	
337+50	6R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 12						
				1 to 2	2	0.02	19					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	49	7.5	30.0	31	22803		
				7 to 9	3	0.22	78	9.7	29.0	23	19010		
				10	1	0.24	85	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						8.6		26	20701	
337+50	8R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 14						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.14	56	10.7	32.0	21	17715		
				6 to 8	3	0.23	85	9.7	29.0	23	19010		
				9 to 10	2	0.28	100	7.5	15.0	31	22803	Discount, < 20mm travel.	
			Test Averages						10.2		22	18335	
353+00	2R	7/19/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 6						
				1 to 2	2	0.03	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	43	7.3	29.0	32	23364		
				7 to 10	4	0.21	70	6.8	27.0	34	24592		
			Test Averages						7.0		33	23959	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
353+00	4R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.02	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	55	8.5	34.0	27	20846		
				7 to 10	4	0.21	79	6.0	24.0	39	26758		
				<b>Test Averages</b>					8.5		27	20846	
353+00	6R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	27						
				1 to 2	2	0.02	32					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	62	7.5	30.0	31	22803		
				7 to 9	3	0.24	101	13.0	39.0	17	15373		
				10	1	0.26	106	5.0	5.0	48	30494	Discount, < 20mm travel.	
				<b>Test Averages</b>					10.3		22	18228	
353+00	8R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	17						
				1 to 2	2	0.04	30					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	62	10.7	32.0	21	17715		
				6 to 8	3	0.26	96	11.3	34.0	19	16962		
				9 to 11	3	0.33	117	7.0	21.0	33	23959		
				<b>Test Averages</b>					11.0		20	17329	
366+00	2R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	15						
				1 to 2	2	0.03	25					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	60	11.7	35.0	19	16613		
				6 to 8	3	0.25	90	10.0	30.0	22	18554		
				9 to 10	2	0.29	104	7.0	14.0	33	23959	Discount, < 20mm travel.	
				<b>Test Averages</b>					10.8		20	17519	
366+00	4R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.16	61					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.23	82	10.5	21.0	21	17916		
				<b>Test Averages</b>					10.5		21	17916	
366+00	6R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	21						
				1 to 2	2	0.04	32					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	61	9.7	29.0	23	19010		
				6 to 9	4	0.23	92	7.8	31.0	29	22273		
				10	1	0.26	100	8.0	8.0	28	21772	Discount, < 20mm travel.	
				<b>Test Averages</b>					8.7		26	20488	



## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
366+00	8R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	9						
				1 to 2	2	0.03	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	44	5.4	27.0	44	28857		
				8 to 10	4	0.16	59	3.8	15.0	66	37477	Discount, < 20mm travel.	
				Test Averages					5.4		44	28857	
378+00	2R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.05	26					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	61	11.7	35.0	19	16613		
				6 to 8	3	0.25	88	9.0	27.0	25	20009		
				9 to 10	2	0.31	107	9.5	19.0	23	19249	Discount, < 20mm travel.	
				Test Averages					10.3		21	18123	
378+00	4R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.04	21					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.13	49	5.6	28.0	42	28115		
				8 to 10	3	0.18	65	5.3	16.0	45	29115	Discount, < 20mm travel.	
				Test Averages					5.6		42	28115	
378+00	6R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.02	15					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	40	6.3	25.0	37	25987		
				7 to 10	4	0.19	65	6.3	25.0	37	25987		
				Test Averages					6.3		37	25987	
378+00	8R	7/19/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	47	5.2	26.0	46	29649		
				8 to 10	3	0.16	61	4.7	14.0	52	32040	Discount, < 20mm travel.	
				Test Averages					5.2		46	29649	
356+00	2L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.02	16					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	44	5.6	28.0	42	28115		
				8	1	0.21	73	29.0	29.0	7	8649		
				9	1	0.47	154	81.0	81.0	2	4142	Point not included. Inferred to have penetrated stabilized base.	
				Test Averages					5.6		42	28115	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes	
356+00	4L	7/20/2021	8kg	0	0	0	50						
				1 to 2	2	0.35	156					First 2 blows discounted as "seating" blows.	
				3 to 9	7	0.44	184	4.0	28.0	62	35783		
				10	1	0.46	191	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						4.0		62	35783	
356+00	6L	7/20/2021	8kg	0	0	0	12						
				1 to 2	2	0.02	19					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	59	8.0	40.0	28	21772		
				8 to 10	3	0.22	78	6.3	19.0	37	25741	Discount, < 20mm travel.	
			Test Averages						8.0		28	21772	
356+00	8L	7/20/2021	8kg	0	0	0	3						
				1 to 2	2	0.05	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.13	42	5.0	25.0	48	30494		
				8 to 10	3	0.17	55	4.3	13.0	57	33788	Discount, < 20mm travel.	
			Test Averages						5.0		48	30494	Notes
365+30	2L	7/20/2021	8kg	0	0	0	12						
				1 to 2	2	0.01	16					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.10	42	8.7	26.0	26	20558		
				6 to 9	4	0.19	70	7.0	28.0	33	23959		
				10	1	0.22	78	8.0	8.0	28	21772	Discount, < 20mm travel.	
			Test Averages						7.8		29	22103	
365+30	4L	7/20/2021	8kg	0	0	0	12						
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	45	6.3	25.0	37	25987		
				7 to 10	4	0.20	73	7.0	28.0	33	23959		
			Test Averages						6.6		35	24924	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
365+30	6L	7/20/2021	8kg	0	0	0	15						
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	57	7.8	31.0	29	22273		
				7 to 10	4	0.22	82	6.3	25.0	37	25987		
				Test Averages					7.0		33	23959	
365+30	8L	7/20/2021	8kg	0	0	0	12						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	51	7.3	29.0	32	23364		
				7 to 10	4	0.20	72	5.3	21.0	46	29446		
				Test Averages					7.3		32	23364	
379+15	2L	7/20/2021	8kg	0	0	0	12						
				1 to 2	2	0.02	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	47	6.0	30.0	39	26758		
				8 to 10	3	0.18	67	6.7	20.0	35	24812		
				Test Averages					6.0		39	26758	
379+15	4L	7/20/2021	8kg	0	0	0	13						
				1 to 2	2	0.04	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	54	7.5	30.0	31	22803		
				7 to 10	4	0.20	74	5.0	20.0	48	30494		
				Test Averages					7.5		31	22803	
379+15	6L	7/20/2021	8kg	0	0	0	16						
				1 to 2	2	0.04	27					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	53	8.7	26.0	26	20558		
				6 to 8	3	0.21	80	9.0	27.0	25	20009		
				9 to 10	2	0.26	96	8.0	16.0	28	21772	Discount, < 20mm travel.	
				Test Averages					8.8		25	20279	
379+15	8L	7/20/2021	8kg	0	0	0	14						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	52	7.0	28.0	33	23959		
				7 to 10	3	0.19	73	7.0	21.0	33	23959		
				Test Averages					7.0		33	23959	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
386+70	2L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	12					
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.11	47	8.3	25.0	27	21144	
				6 to 9	4	0.20	72	6.3	25.0	37	25987	
				10	1	0.21	76	4.0	4.0	62	35783	Discount, < 20mm travel.
			Test Averages					7.3		32	23268	
386+70	4L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	14					
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.13	53	9.0	27.0	25	20009	
				6 to 9	4	0.21	78	6.3	25.0	37	25987	
				10	1	0.24	88	10.0	10.0	22	18554	Discount, < 20mm travel.
			Test Averages					7.6		30	22534	
386+70	6L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	20					
				1 to 2	2	0.05	34					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.15	65	10.3	31.0	21	18123	
				6 to 8	3	0.25	95	10.0	30.0	22	18554	
				9 to 10	2	0.32	117	11.0	22.0	20	17329	
			Test Averages					10.2		22	18335	
386+70	8L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	21					
				1 to 2	2	0.05	35					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.13	62	9.0	27.0	25	20009	
				6 to 9	4	0.23	91	7.3	29.0	32	23364	
				10	1	0.26	101	10.0	10.0	22	18554	Discount, < 20mm travel.
			Test Averages					8.1		28	21532	
394+20	2L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
				0	0	0	11					
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.14	54	11.0	33.0	20	17329	
				6 to 8	3	0.23	82	9.3	28.0	24	19495	
				9 to 10	2	0.28	96	7.0	14.0	33	23959	Discount, < 20mm travel.
			Test Averages					10.2		22	18335	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
394+20	4L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	11						
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	48	7.0	28.0	33	23959		
				7 to 10	4	0.17	63	3.8	15.0	66	37477	Discount, < 20mm travel.	
				<b>Test Averages</b>					7.0		33	23959	
394+20	6L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	13						
				1 to 2	2	0.02	20					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	46	8.7	26.0	26	20558		
				6 to 8	3	0.19	71	8.3	25.0	27	21144		
				9 to 10	2	0.24	87	8.0	16.0	28	21772	Discount, < 20mm travel.	
				<b>Test Averages</b>					8.5		27	20846	
394+20	8L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.02	20					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.13	55	17.5	35.0	12	12423		
				6 to 8	3	0.22	81	8.7	26.0	26	20558		
				9 to 10	2	0.27	95	7.0	14.0	33	23959	Discount, < 20mm travel.	
				<b>Test Averages</b>					13.1		16	15303	
408+75	2L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	13						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	52	7.5	30.0	31	22803		
				7 to 10	4	0.20	73	5.3	21.0	46	29446		
				<b>Test Averages</b>					7.5		31	22803	
408+75	4L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.14	56	7.5	30.0	31	22803		
				7 to 11	5	0.23	84	5.6	28.0	42	28115		
				<b>Test Averages</b>					6.6		36	25128	
408+75	6L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	15						
				1 to 2	2	0.05	30					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	56	8.7	26.0	26	20558		
				6 to 10	5	0.24	87	6.2	31.0	38	26137		
				<b>Test Averages</b>					7.4		31	22949	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)	
408+75	8L	7/20/2021	8kg	0	0	0	18					
				1 to 2	2	0.04	31					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	63	8.0	32.0	28	21772	
				7 to 10	3	0.23	87	8.0	24.0	28	21772	
			Test Averages					8.0		28	21772	
416+10	2L	7/20/2021	8kg	0	0	0	16					
				1 to 2	2	0.05	31					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.14	58	9.0	27.0	25	20009	
				6 to 9	4	0.23	85	6.8	27.0	34	24592	
				10	1	0.25	93	8.0	8.0	28	21772	Discount, < 20mm travel.
			Test Averages					7.9		29	22019	
416+10	4L	7/20/2021	8kg	0	0	0	14					
				1 to 2	2	0.02	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.10	45	5.2	26.0	46	29649	
				8 to 10	3	0.16	64	6.3	19.0	37	25741	Discount, < 20mm travel.
			Test Averages					5.2		46	29649	
416+10	6L	7/20/2021	8kg	0	0	0	24					
				1 to 2	2	0.07	46					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.16	73	13.5	27.0	16	14963	
				5 to 6	2	0.24	98	12.5	25.0	17	15811	
				7 to 9	3	0.34	128	10.0	30.0	22	18554	
				10	1	0.38	139	11.0	11.0	20	17329	Discount, < 20mm travel.
			Test Averages					12.0		18	16281	
416+10	8L	7/20/2021	8kg	0	0	0	16					
				1 to 2	2	0.03	25					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	54	7.3	29.0	32	23364	
				7 to 10	4	0.20	77	5.8	23.0	41	27587	
			Test Averages					7.3		32	23364	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
430+00	2L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	52	6.5	26.0	36	25266		
				7 to 10	4	0.21	77	6.3	25.0	37	25987		
				Test Averages					6.4		37	25620	
430+00	4L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.10	43	5.0	25.0	48	30494		
				8 to 10	3	0.15	58	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.0		48	30494	
430+00	6L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.02	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	41	5.2	26.0	46	29649		
				8 to 10	3	0.16	56	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.2		46	29649	
430+00	8L	7/20/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.01	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.10	39	5.0	25.0	48	30494		
				8 to 10	3	0.15	57	6.0	18.0	39	26758	Discount, < 20mm travel.	
				Test Averages					5.0		48	30494	
388+15	2R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	7						
				1 to 2	2	0.02	12					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	41	7.3	29.0	32	23364		
				7 to 10	4	0.19	65	6.0	24.0	39	26758		
				Test Averages					7.3		32	23364	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
388+15	4R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	17						
				1 to 2	2	0.03	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	57	7.8	31.0	29	22273		
				7 to 10	4	0.22	84	6.8	27.0	34	24592		
				Test Averages					7.3		32	23364	
388+15	6R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	44	6.5	26.0	36	25266		
				7 to 10	4	0.19	67	5.8	23.0	41	27587		
				Test Averages					6.5		36	25266	
388+15	8R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	17						
				1 to 2	2	0.04	30					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	55	8.3	25.0	27	21144		
				6 to 9	4	0.23	88	8.3	33.0	27	21297		
				10	1	0.25	94	6.0	6.0	39	26758	Discount, < 20mm travel.	
				Test Averages					8.3		27	21220	
395+45	2R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	11						
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	47	6.8	27.0	34	24592		
				7 to 10	4	0.20	73	6.5	26.0	36	25266		
				Test Averages					6.6		35	24924	
395+45	4R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	16						
				1 to 2	2	0.04	28					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	56	9.3	28.0	24	19495		
				6 to 9	3	0.23	86	10.0	30.0	22	18554		
				10	1	0.25	93	7.0	7.0	33	23959	Discount, < 20mm travel.	
				Test Averages					9.7		23	19010	



## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
395+45	6R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	20						
				1 to 2	2	0.05	36					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	66	10.0	30.0	22	18554		
				6 to 8	3	0.24	94	9.3	28.0	24	19495		
				9 to 10	4	0.29	108	3.5	14.0	72	39377	Discount, < 20mm travel.	
			Test Averages						9.7		23	19010	
395+45	8R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	21						
				1 to 2	2	0.02	27					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	52	6.3	25.0	37	25987		
				7 to 11	5	0.18	77	5.0	25.0	48	30494		
			Test Averages						5.6		42	28025	
406+30	2R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	49	7.0	28.0	33	23959		
				7 to 10	4	0.20	73	6.0	24.0	39	26758		
			Test Averages						7.0		33	23959	
406+30	4R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.04	26					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.13	53	9.0	27.0	25	20009		
				6 to 8	3	0.21	78	8.3	25.0	27	21144		
				9 to 10	2	0.26	92	7.0	14.0	33	23959	Discount, < 20mm travel.	
			Test Averages						8.7		26	20558	
406+30	6R	7/21/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	16						
				1 to 2	2	0.03	26					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	53	9.0	27.0	25	20009		
				6 to 9	4	0.22	82	7.3	29.0	32	23364		
				10	1	0.24	89	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						8.1		28	21532	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
406+30	8R	7/21/2021	8kg	0	0	0	10					
				1 to 2	2	0.02	17					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.12	47	6.0	30.0	39	26758	
				8 to 10	3	0.68	218	57.0	171.0	3	5329	Point not included. Inferred to have penetrated stabilized base.
			Test Averages					6.0		39	26758	
417+65	2R	7/21/2021	8kg	0	0	0	9					
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.13	49	7.8	31.0	29	22273	
				7 to 10	4	0.21	72	5.8	23.0	41	27587	
			Test Averages					7.8		29	22273	
417+65	4R	7/21/2021	8kg	0	0	0	11					
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.10	43	6.3	25.0	37	25987	
				7 to 11	5	0.20	71	5.6	28.0	42	28115	
			Test Averages					5.9		40	27001	
417+65	6R	7/21/2021	8kg	0	0	0	18					
				1 to 2	2	0.10	48					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.18	73	12.5	25.0	17	15811	
				5 to 7	2	0.27	101	14.0	28.0	15	14578	
				8 to 9	3	0.42	146	15.0	45.0	14	13874	
			Test Averages					13.8		15	14703	
9+45	2L	7/22/2021	8kg	0	0	0	10					
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.11	43	6.3	25.0	37	25987	
				7 to 10	4	0.18	66	5.8	23.0	41	27587	
			Test Averages					6.3		37	25987	
9+45	4L	7/22/2021	8kg	0	0	0	11					
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.11	44	8.7	26.0	26	20558	
				6 to 8	3	0.19	70	8.7	26.0	26	20558	
				9 to 10	2	0.25	88	9.0	18.0	25	20009	Discount, < 20mm travel.
			Test Averages					8.7		26	20558	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
9+45	6L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 10					
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.13	49	5.8	29.0	41	27416	
				8 to 10	3	0.19	69	6.7	20.0	35	24812	
			Test Averages					5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
9+45	8L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 17					
				1 to 2	2	0.05	31					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.14	61	10.0	30.0	22	18554	
				6 to 8	3	0.24	91	10.0	30.0	22	18554	
				9 to 10	2	0.30	109	9.0	18.0	25	20009	Discount, < 20mm travel.
			Test Averages					10.0		22	18554	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
423+10	2R	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 20					
				1 to 2	2	0.03	29					First 2 blows discounted as "seating" blows.
				3	1	0.14	63	34.0	34.0	6	7717	Discount data set. Significant outlier. Possibly uncompacted location.
			Test Averages					34.0		6	7717	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
441+10	2L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 12					
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.13	53	11.7	35.0	19	16613	
				6 to 8	3	0.24	85	10.7	32.0	21	17715	
				9 to 10	2	0.30	103	9.0	18.0	25	20009	Discount, < 20mm travel.
				11 to 12	2	1.52	475	186.0	372.0	1	2283	Point not included. Inferred to have penetrated stabilized base.
			Test Averages					11.2		20	17143	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes
441+10	4L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 14					
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	51	7.3	29.0	32	23364	
				7 to 10	3	0.19	71	6.7	20.0	35	24812	
			Test Averages					7.3		32	23364	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
441+10	6L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 9						
				1 to 2	2	0.02	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	42	7.0	28.0	33	23959		
				7 to 10	3	0.19	66	8.0	24.0	28	21772		
			Test Averages						7.0		33	23959	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
441+10	8L	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 15						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	53	9.7	29.0	23	19010		
				6 to 9	4	0.22	81	7.0	28.0	33	23959	Discount, < 20mm travel.	
				10	1	0.23	86	5.0	5.0	48	30494		
			Test Averages						8.3		27	21144	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
453+20	2R	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 7						
				1 to 2	2	0.02	12					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	42	7.5	30.0	31	22803		
				7 to 10	4	0.20	68	6.5	26.0	36	25266		
			Test Averages						7.0		33	23959	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
453+20	4R	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 14						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	49	6.3	25.0	37	25987		
				7 to 10	4	0.20	74	6.3	25.0	37	25987		
			Test Averages						6.3		37	25987	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
453+20	6R	7/22/2021	8kg	(#) 0	(#) 0	(ft) 0	(mm) 10						
				1 to 2	2	0.02	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	44	6.8	27.0	34	24592		
				7 to 10	4	0.19	67	5.8	23.0	41	27587		
			Test Averages						6.8		34	24592	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
453+20	8R	7/22/2021	8kg	0	0	0	16						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	52	7.0	28.0	33	23959		
				7 to 10	4	0.18	72	5.0	20.0	48	30494		
				Test Averages					7.0		33	23959	
460+70	2L	7/22/2021	8kg	0	0	0	10						
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	44	8.7	26.0	26	20558		
				6 to 9	4	0.20	71	6.8	27.0	34	24592		
				10	1	0.22	76	5.0	5.0	48	30494	Discount, < 20mm travel.	
				Test Averages					7.7		30	22360	
460+70	4L	7/22/2021	8kg	0	0	0	10						
				1 to 2	2	0.01	14					First 2 blows discounted as "seating" blows.	
				3 to 8	6	0.12	48	5.7	34.0	42	27877		
				9 to 10	2	0.16	58	5.0	10.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.7		42	27877	
460+70	6L	7/22/2021	8kg	0	0	0	7						
				1 to 2	2	0.03	15					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.12	44	5.8	29.0	41	27416		
				8 to 10	2	0.17	60	8.0	16.0	28	21772	Discount, < 20mm travel.	
				Test Averages					5.8		41	27416	
460+70	8L	7/22/2021	8kg	0	0	0	16						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	51	9.0	27.0	25	20009		
				6 to 9	4	0.22	82	7.8	31.0	29	22273		
				10	1	0.24	90	8.0	8.0	28	21772	Discount, < 20mm travel.	
				Test Averages					8.4		27	21069	
469+70	2L	7/22/2021	8kg	0	0	0	15						
				1 to 2	2	0.03	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	51	7.0	28.0	33	23959		
				7 to 10	4	0.23	84	8.3	33.0	27	21297		
				Test Averages					7.6		30	22534	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
469+70	4L	7/22/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	48	8.7	26.0	26	20558		
				6 to 9	4	0.22	80	8.0	32.0	28	21772		
				10	1	0.25	88	8.0	8.0	28	21772	Discount, < 20mm travel.	
			Test Averages						8.3		27	21144	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
469+70	6L	7/22/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.03	19					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	45	8.7	26.0	26	20558		
				6 to 9	4	0.21	75	7.5	30.0	31	22803		
				10	1	0.24	82	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						8.1		28	21611	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
469+70	8L	7/22/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	20						
				1 to 2	2	0.04	33					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	66	11.0	33.0	20	17329		
				6 to 8	3	0.25	96	10.0	30.0	22	18554		
				9 to 10	2	0.32	117	10.5	21.0	21	17916		
			Test Averages						10.5		21	17916	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
476+00	2L	7/22/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.02	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	39	6.5	26.0	36	25266		
				7 to 10	4	0.18	64	6.3	25.0	37	25987		
			Test Averages						6.4		37	25620	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
476+00	4L	7/22/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.12	46	5.6	28.0	42	28115		
				8 to 10	3	0.18	64	6.0	18.0	39	26758	Discount, < 20mm travel.	
			Test Averages						5.6		42	28115	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
476+00	6L	7/22/2021	8kg	0	0	0	11					
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.13	50	6.0	30.0	39	26758	
				8 to 10	3	0.19	70	6.7	20.0	35	24812	
			Test Averages					6.0		39	26758	
476+00	8L	7/22/2021	8kg	0	0	0	14					
				1 to 2	2	0.02	21					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	50	7.3	29.0	32	23364	
				7 to 10	4	0.21	78	7.0	28.0	33	23959	
			Test Averages					7.1		32	23657	
487+30	2L	7/22/2021	8kg	0	0	0	8					
				1 to 2	2	0.04	19					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.13	48	5.8	29.0	41	27416	
				8 to 10	3	0.20	68	6.7	20.0	35	24812	
			Test Averages					5.8		41	27416	
487+30	4L	7/22/2021	8kg	0	0	0	13					
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.11	46	8.3	25.0	27	21144	
				6 to 9	4	0.20	75	7.3	29.0	32	23364	
				10	1	0.22	81	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					7.8		29	22188	
487+30	6L	7/22/2021	8kg	0	0	0	8					
				1 to 2	2	0.01	12					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.11	41	5.8	29.0	41	27416	
				8 to 10	3	0.15	55	4.7	14.0	52	32040	Discount, < 20mm travel.
			Test Averages					5.8		41	27416	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
				(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
487+30	8L	7/22/2021	8kg	0	0	0	8						
				1 to 2	2	0.02	14					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	39	6.3	25.0	37	25987		
				7 to 10	4	0.17	60	5.3	21.0	46	29446		
				<b>Test Averages</b>					6.3		37	25987	
14+00	2L	7/23/2021	8kg	0	0	0	16						
				1 to 2	2	0.02	23					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	48	6.3	25.0	37	25987		
				7 to 11	5	0.20	76	5.6	28.0	42	28115		
				<b>Test Averages</b>					5.9		40	27001	
14+00	6L	7/23/2021	8kg	0	0	0	15						
				1 to 2	2	0.02	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.10	47	6.3	25.0	37	25987		
				7 to 10	4	0.18	71	6.0	24.0	39	26758		
				<b>Test Averages</b>					6.3		37	25987	
14+00	8L	7/23/2021	8kg	0	0	0	16						
				1 to 2	2	0.03	25					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	50	8.3	25.0	27	21144		
				6 to 9	4	0.21	80	7.5	30.0	31	22803		
				10	1	0.24	88	8.0	8.0	28	21772	Discount, < 20mm travel.	
				<b>Test Averages</b>					7.9		29	21936	
14+00	4L	7/23/2021	8kg	0	0	0	7						
				1 to 2	2	0.02	14					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	40	8.7	26.0	26	20558		
				6 to 9	4	0.21	70	7.5	30.0	31	22803		
				10	1	0.23	76	6.0	6.0	39	26758	Discount, < 20mm travel.	
				<b>Test Averages</b>					8.1		28	21611	
29+90	2L	7/23/2021	8kg	0	0	0	15						
				1 to 2	2	0.02	21					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	49	9.3	28.0	24	19495		
				6 to 10	5	0.22	81	6.4	32.0	37	25549		
				<b>Test Averages</b>					7.9		29	22036	



## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
29+90	4L	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	54	7.5	30.0	31	22803		
				7 to 10	4	0.22	82	7.0	28.0	33	23959		
				Test Averages					7.3		32	23364	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
29+90	6L	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	16						
				1 to 2	2	0.05	32					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	66	11.3	34.0	19	16962		
				6 to 8	3	0.28	101	11.7	35.0	19	16613		
				9 to 10	2	0.35	123	11.0	22.0	20	17329		
				Test Averages					11.5		19	16785	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
29+90	8L	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	18						
				1 to 2	2	0.03	26					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.11	51	12.5	25.0	17	15811		
				5 to 8	4	0.21	81	7.5	30.0	31	22803		
				9 to 10	5	0.26	96	3.0	15.0	85	43978	Discount, < 20mm travel.	
				Test Averages					10.0		22	18554	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
450+25	2R	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	11						
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	46	8.3	25.0	27	21144		
				6 to 9	4	0.21	75	7.3	29.0	32	23364		
				10	1	0.23	82	7.0	7.0	33	23959	Discount, < 20mm travel.	
				Test Averages					7.8		29	22188	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
450+25	4R	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.03	17					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	42	6.3	25.0	37	25987		
				7 to 9	3	0.19	67	8.3	25.0	27	21144		
				10	1	0.22	74	7.0	7.0	33	23959	Discount, < 20mm travel.	
				Test Averages					7.3		32	23268	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
450+00	6R	7/23/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	46	7.0	28.0	33	23959		
				7 to 10	4	0.19	71	6.3	25.0	37	25987		
				Test Averages					6.6		35	24924	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
450+00	8R	7/23/2021		0	0	0	18						
				1 to 2	2	0.05	33					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.15	64	10.3	31.0	21	18123		
				6 to 8	3	0.24	92	9.3	28.0	24	19495		
				9 to 10	2	0.31	112	10.0	20.0	22	18554		
			Test Averages						9.8		23	18779	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
463+50	2R	7/23/2021		0	0	0	12						
				1 to 2	2	0.02	18					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	45	6.8	27.0	34	24592		
				7 to 9	3	0.19	70	8.3	25.0	27	21144		
				10	1	0.21	77	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						7.5		30	22713	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
463+50	4R	7/23/2021		0	0	0	13						
				1 to 2	2	0.03	23					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	51	9.3	28.0	24	19495		
				6 to 9	4	0.23	84	8.3	33.0	27	21297		
				10	1	0.26	92	8.0	8.0	28	21772	Discount, < 20mm travel.	
			Test Averages						8.8		26	20348	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
463+50	6R	7/23/2021		0	0	0	14						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	52	7.5	30.0	31	22803		
				7 to 10	4	0.21	78	6.5	26.0	36	25266		
			Test Averages						7.0		33	23959	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
			8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
463+50	8R	7/23/2021		0	0	0	17						
				1 to 2	2	0.04	28					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	54	8.7	26.0	26	20558		
				6 to 9	4	0.21	81	6.8	27.0	34	24592		
				10	1	0.24	89	8.0	8.0	28	21772	Discount, < 20mm travel.	
			Test Averages						7.7		30	22360	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
4+00	2R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	9						
				1 to 2	2	0.02	15					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	44	9.7	29.0	23	19010		
				6 to 8	3	0.20	70	8.7	26.0	26	20558		
				9 to 10	2	0.26	88	9.0	18.0	25	20009	Discount, < 20mm travel.	
			Test Averages						9.2		24	19748	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
4+00	4R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	13						
				1 to 2	2	0.03	23					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	49	8.7	26.0	26	20558		
				6 to 8	3	0.22	80	10.3	31.0	21	18123		
				9 to 10	2	0.28	99	9.5	19.0	23	19249	Discount, < 20mm travel.	
			Test Averages						9.5		23	19249	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
4+00	6R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	12						
				1 to 2	2	0.03	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	50	7.3	29.0	32	23364		
				7 to 10	4	0.22	80	7.5	30.0	31	22803		
			Test Averages						7.4		31	23079	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
4+00	8R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	8						
				1 to 2	2	0.04	19					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.14	50	10.3	31.0	21	18123		
				6 to 9	4	0.26	86	9.0	36.0	25	20009		
				10	1	0.29	96	10.0	10.0	22	18554	Discount, < 20mm travel.	
			Test Averages						9.7		23	19010	

## Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count (#)	Blows (#)	Depth (ft)	DCP Reading (mm)	DCP Pen. Index mm/blow	Pen. / Reading mm	CBR (%)	M <sub>R</sub> (psi)	Notes
13+80	2R	7/26/2021	8kg	0	0	0	6					
				1 to 2	2	0.03	16					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.12	44	5.6	28.0	42	28115	
				8 to 10	3	0.19	64	6.7	20.0	35	24812	
			Test Averages					5.6		42	28115	
13+80	4R	7/26/2021	8kg	0	0	0	9					
				1 to 2	2	0.01	13					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.10	41	5.6	28.0	42	28115	
				8 to 10	3	0.16	58	5.7	17.0	42	27877	Discount, < 20mm travel.
			Test Averages					5.6		42	28115	
13+80	6R	7/26/2021	8kg	0	0	0	16					
				1 to 2	2	0.03	26					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.11	51	8.3	25.0	27	21144	
				6 to 9	4	0.20	78	6.8	27.0	34	24592	
				10	1	0.22	84	6.0	6.0	39	26758	Discount, < 20mm travel.
			Test Averages					7.5		30	22713	
13+80	8R	7/26/2021	8kg	0	0	0	10					
				1 to 2	2	0.02	17					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	48	7.8	31.0	29	22273	
				7 to 10	4	0.22	78	7.5	30.0	31	22803	
			Test Averages					7.6		30	22534	
29+75	2R	7/26/2021	8kg	0	0	0	9					
				1 to 2	2	0.03	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	45	6.8	27.0	34	24592	
				7 to 10	4	0.19	68	5.8	23.0	41	27587	
			Test Averages					6.8		34	24592	
29+75	4R	7/26/2021	8kg	0	0	0	12					
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.12	50	7.5	30.0	31	22803	
				7 to 10	4	0.21	76	6.5	26.0	36	25266	
			Test Averages					7.0		33	23959	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
29+75	6R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	9						
				1 to 2	2	0.02	16					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	42	5.2	26.0	46	29649		
				8 to 10	3	0.16	57	5.0	15.0	48	30494	Discount, < 20mm travel.	
				Test Averages					5.2		46	29649	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
29+75	8R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	18						
				1 to 2	2	0.04	29					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	56	9.0	27.0	25	20009		
				6 to 9	4	0.21	82	6.5	26.0	36	25266		
				10	1	0.23	88	6.0	6.0	39	26758	Discount, < 20mm travel.	
				Test Averages					7.8		29	22273	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
479+50	2R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	9						
				1 to 2	2	0.02	14					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	44	6.0	30.0	39	26758		
				8 to 10	3	0.17	61	5.7	17.0	42	27877	Discount, < 20mm travel.	
				Test Averages					6.0		39	26758	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
479+50	4R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	6						
				1 to 2	2	0.02	13					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.12	42	7.3	29.0	32	23364		
				6 to 9	4	0.18	60	4.5	18.0	54	32886	Discount, < 20mm travel.	
				Test Averages					7.3		32	23364	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
479+50	6R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	11						
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.11	46	6.5	26.0	36	25266		
				7 to 10	4	0.19	68	5.5	22.0	43	28480		
				Test Averages					6.5		36	25266	

Appendix H – Resilient Modulus Data Reduction for Richford-Jay STP 2914(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
479+50	8R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	13						
				1 to 2	2	0.03	22					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.11	47	8.3	25.0	27	21144		
				6 to 9	4	0.20	75	7.0	28.0	33	23959		
				10	1	0.22	81	6.0	6.0	39	26758	Discount, < 20mm travel.	
			Test Averages						7.7		30	22447	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
486+30	2R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.02	16					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.17	62	15.3	46.0	14	13658		
				6 to 9	4	0.26	90	7.0	28.0	33	23959		
				10	1	0.28	95	5.0	5.0	48	30494	Discount, < 20mm travel.	
			Test Averages						11.2		20	17143	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
486+30	4R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	14						
				1 to 2	2	0.03	24					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.12	51	9.0	27.0	25	20009		
				6 to 9	4	0.22	81	7.5	30.0	31	22803		
				10	1	0.24	88	7.0	7.0	33	23959	Discount, < 20mm travel.	
			Test Averages						8.3		27	21297	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
486+30	6R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	11						
				1 to 2	2	0.02	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.11	46	5.8	29.0	41	27416		
				8 to 10	3	0.17	64	6.0	18.0	39	26758	Discount, < 20mm travel.	
			Test Averages						5.8		41	27416	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	Pen. / Reading	CBR	M <sub>R</sub>	Notes	
486+30	8R	7/26/2021	8kg	(#)	(#)	(ft)	(mm)	mm/blow	mm	(%)	(psi)		
				0	0	0	10						
				1 to 2	2	0.03	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	49	7.3	29.0	32	23364		
				7 to 10	4	0.22	77	7.0	28.0	33	23959		
			Test Averages						7.1		32	23657	



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX I – RESILIENT MODULUS DATA REDUCTION FOR CAVENDISH-WEATHERSFIELD STP 0146(14)



GEODesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
24+71	7 LT	6/7 or 8,2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0						
				1 to 2	2	0.13	39	19.5	10	11496	39	First 2 blows discounted as	
				3 to 5	3	0.22	68	9.7	23	19010	29		
				6 to 9	4	0.31	93	6.3	37	25987	25		
				10 to	2	0.34	104	5.5	43	28480	11	Discount, < 20mm travel.	
				Test Averages					8.0	29	21854		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
25+20	8' LT		8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0						
				1 to 2	2	0.26	80					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.35	108	14.0	15	14578	28		
				5 to 7	3	0.45	137	9.7	23	19010	29		
				8 to 11	4	0.57	175	9.5	23	19249	38		
												Blow 12 Was not incorporated - Punched through base.	
				Test Averages					11.1	20	17266		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
28+55	10 LT	6/7 or 8,2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	13						
				1 to 2	2	0.03	23	5.0	48	30494		First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.12	50	5.4	44	28857	27		
				8 to 10	3	0.19	70	6.7	35	24812	20		
				Test Averages					6.0	39	26652		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
31+64	14 LT	6/7 or 8,2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	18						
				1 to 2	2	0.04	30					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.13	58	7.0	33	23959	28		
				7 to 10	4	0.22	85	6.8	34	24592	27		
				Test Averages					6.9	34	24271		



Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
31+67	6 RT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	24					First 2 blows discounted as "seating" blows.	
				1 to 2	2	0.04	37						
				3 to 5	3	0.13	64	9.0	25	20009	27		
				6 to 10	5	0.23	93	5.8	41	27416	29		
Test Averages								7.4	31	23023			
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
35+00	7 RT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	0.00					First 2 blows discounted as "seating" blows.	
				1 to 2	2	0.09	28						
				3 to 6	4	0.19	57	7.3	32	23364	29		
				7 to 10	4	0.27	83	6.5	36	25266	26		
Test Averages								6.9	34	24271			
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	Depth	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
35+00	7 RT (-2??)	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0					This entire data set was not included in our analysis. It is not clear why this varies so significantly from the data set above from the same date and location. It is possible this was performed prior to compaction.	
				1	1	0.02	5	5.0	48	30494	5		
				2	1	0.08	25	20.0	10	11289	20		
				3	1	0.10	31	6.0	39	26758	6		
				4	1	0.19	57	26.0	8	9354	26		
				5	1	0.35	107	50.0	4	5853	50		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
37+50	10 LT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	27					First 2 blows discounted as "seating" blows.	
				1 to 2	2	0.02	34						
				3 to 5	3	0.11	61	9.0	25	20009	27		
				6 to 10	5	0.23	98	7.4	31	23023	37		
Test Averages								8.2	28	21390			
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
38+42	4 LT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	12					First 2 blows discounted as "seating" blows.	
				1 to 2	2	0.02	17						
				3 to 7	5	0.11	46	5.8	41	27416	29		
				8 to 10	3	0.17	63	5.7	42	27877	17	Discount, < 20mm travel.	
Test Averages								5.8	41	27416			

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
43+50	8 RT	6/8/2021	8kg	0	0	0.00	17					
				1 to 2	2	0.04	28					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	66	12.7	17	15662	38	
				6 to 8	3	0.25	93	9.0	25	20009	27	
				9 to 10	2	0.30	108	7.5	31	22803	15	Discount, < 20mm travel.
				Test Averages				10.8	20	17519		
44+29	3 LT	6/8/2021	8kg	0	0	0.00	6					
				1 to 2	2	0.07	27					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.17	58	15.5	14	13552	31	
				5 to 6	2	0.27	89	15.5	14	13552	31	
				7 to 9	3	0.36	115	8.7	26	20558	26	
				10 to	2	0.43	137	11.0	20	17329	22	
				Test Averages				12.7	17	15662		
47+52	3 RT	6/8/2021	8kg	0	0	0.00	23					
				1 to 2	2	0.04	35				12	First 2 blows discounted as "seating" blows.
				3 to 5	3	0.13	63	9.3	24	19495	28	
				6 to 10	5	0.23	93	6.0	39	26758	30	
				Test Averages				7.7	30	22447		
48+03	5 RT	6/8/2021	8kg	0	0	0	0					
				1	1	0.10	30	30.0	6	8442	30	This data set was not included in our analysis. It is apparent from the readings that this was not performed through a compacted stabilized base.
				2	1	0.26	78	48.0	4	6027	48	
				3	1	1.40	428	350.0	0	1451	350	
48+51	3 LT	6/8/2021	8kg	0	0	0.00	14					
				1 to 2	2	0.03	22					First 2 blows discounted as
				3 to 7	5	0.11	49	5.4	44	28857	27	
				8 to 10	3	0.16	64	5.0	48	30494	15	Discount, < 20mm travel.
				Test Averages				5.4	44	28857		
53+47	9 RT	6/8/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.14	43	6.3	37	25987	25	
				7 to 10	4	0.22	66	5.8	41	27587	23	
				Test Averages				6.0	39	26758		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
54+00	6 LT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.10	31					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.20	61	7.5	31	22803	30	
				7 to 10	4	0.29	87	6.5	36	25266	26	
				11	1	2.37	721	634.0	0	948	634	Point not included. Based on penetration, the test appears to have punched through the reclaimed stabilized base layer.
			Test Average					7.0	33	23959		
54+29	6 LT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 3	3	0.09	28					First three blows discounted as "seating" blows.
				4 to 8	5	0.18	56	5.6	42	28115	28	
				9 to 10	2	0.21	65	4.5	54	32886	9	Discount, < 20mm travel.
			Test Average					5.6	42	28115		
55+08	8 RT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.20	60	8.7	26	20558	26	
				6 to 9	4	0.29	88	7.0	33	23959	28	
				10	1	0.31	95	7.0	33	23959	7	Discount, < 20mm travel.
			Test Average					7.8	29	22103		
57+87	2 RT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.14	44	5.4	44	28857	27	
				8 to 10	3	0.19	58	4.7	52	32040	14	Discount, < 20mm travel.
			Test Average					5.4	44	28857		
59+02	? LT	6/8/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.15	47	5.2	46	29649	26	
				8 to 10	3	0.20	61	4.7	52	32040	14	Discount, < 20mm travel.
			Test Average					5.2	46	29649		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
59+02	? LT	6/8/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	47	5.2	46	29649	26		
				8 to 10	3	0.20	61	4.7	52	32040	14	Discount, < 20mm travel.	
				<b>Test Averages</b>					5.2	46	29649		
59+80	6 RT	6/8/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	49	7.0	33	23959	28		
				7 to 10	4	0.22	68	4.8	51	31636	19	Discount, < 20mm travel.	
				<b>Test Averages</b>					7.0	33	23959		
61+02	8 RT	6/8/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	51	6.3	37	25987	25		
				7 to 10	4	0.25	75	6.0	39	26758	24		
				<b>Test Averages</b>					6.1	38	26366		
65+56	10 RT	6/8/2021	8kg	0	0	0	0						
				1	1	0.08	23					First blow discounted as "seating" blow.	
				2 to 3	2	0.15	47	12.0	18	16281	24		
				4 to 6	3	0.25	76	9.7	23	19010	29		
				7 to 10	4	0.34	104	7.0	33	23959	28		
				11	1	0.71	215	111.0	1	3305	111	Point not included. Based on penetration, the test appears to have punched through the reclaimed stabilized base layer.	
				<b>Test Averages</b>					9.6	23	19169		
67+07	? LT	6/8/2021	8kg	0	0	0	0						
				1 to 3	3	0.09	26					First 3 blows discounted as "seating" blows.	
				4 to 8	5	0.18	55	5.8	41	27416	29		
				9 to 11	3	0.23	70	5.0	48	30494	15	Discount, < 20mm travel.	
				<b>Test Averages</b>					5.8	41	27416		
60+00	2 LT	6/11/2021	8kg	0	0	0	0						
				1 to 4	4	0.11	34.4					First 4 blows discounted as "seating" blows.	
				5 to 7	3	0.20	60	8.5	26	20788	26		
				8 to 10	3	0.26	78.5	6.2	38	26238	19	Discount, < 20mm travel.	
				<b>Test Averages</b>					8.5	26	20788		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
60+55	12 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.15	44.4					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.25	75.4	15.5	14	13552	31	
				5 to 6	2	0.34	102.3	13.5	16	15003	27	
				7 to 8	2	0.42	127.4	12.6	17	15766	25	
				9 to 10	2	0.48	146.8	9.7	23	18963	19	Discount, < 20mm travel.
				Test Averages					13.8	15	14703	
299+31	4 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	31.4					First 2 blows discounted as "seating" blows.
				2 to 5	4	0.21	64.7	8.3	27	21159	33	
				6 to 8	3	0.32	97.1	10.8	20	17558	32	
				9 to 10	2	0.38	116.5	9.7	23	18963	19	Discount, < 20mm travel.
				Test Averages					9.6	23	19159	
310+00	2 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.12	37.7					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.20	62.4	12.4	17	15949	25	
				5 to 7	3	0.31	94.7	10.8	20	17597	32	
				8 to 10	3	0.41	124.4	9.9	22	18688	30	
				Test Averages					11.0	20	17322	
310+44	4 LT	6/11/2021	8kg	0	0	0	0					
				1	1	0.15	46.4					First blow discounted as "seating" blow.
				2 to 4	3	0.27	82.5	12.0	18	16249	36	
				5 to 6	2	0.35	107.6	12.6	17	15766	25	
				7 to 9	3	0.45	137.9	10.1	22	18422	30	
				10	1	0.48	145.3	7.4	31	23023	7	Discount, < 20mm travel.
				Test Averages					11.6	19	16722	
310+45	6 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19.6					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	7.9	29	22070	31	
				7	1	0.26	78.8	27.8	7	8915	28	
				8 to 10	3	0.32	97.3	6.2	38	26238	19	Discount, < 20mm travel.
				Test Averages					17.8	12	12260	

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
311+58	9 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	29					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	54.7	8.6	26	20730	26	
				6 to 9	4	0.27	82.4	6.9	33	24145	28	
				10	1	0.29	89.3	6.9	34	24207	7	Discount, < 20mm travel.
				Test Averages				7.7	29	22282		
318+20	5 LT	6/11/2021	8kg	0	0	0	0					
				1	1	0.06	18.9					First blow discounted as "seating" blow.
				2 to 4	3	0.14	44	8.4	27	21084	25	
				5 to 8	4	0.23	71.1	6.8	34	24527	27	
				9 to 10	2	0.27	81.9	5.4	44	28857	11	Discount, < 20mm travel.
				Test Averages				7.6	30	22650		
319+02	3 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	31.8					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.20	60.8	7.3	32	23364	29	
				7 to 10	4	0.28	84.4	5.9	40	27083	24	
				Test Averages				6.6	35	25059		
321+00	4 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	29.6					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	58.7	7.3	32	23306	29	
				7 to 10	4	0.28	84.8	6.5	36	25197	26	
				Test Averages				6.9	34	24207		
321+67	14 LT	6/11/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	19.6					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	44.5	6.2	38	26061	25	
				7 to 10	4	0.21	65.5	5.3	46	29446	21	
				Test Averages				5.7	41	27630		

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
324+85	3 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	26.5					First 2 blows discounted as "seating" blows.	
				3 to 8	6	0.18	56.1	4.9	49	30789	30		
				9 to 10	2	0.22	68.3	6.1	39	26443	12	Discount, < 20mm travel.	
				Test Averages					4.9	49	30789		
325+45	6 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	21.6					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.16	47.3	8.6	26	20730	26		
				6 to 9	4	0.26	79.9	8.2	28	21484	33		
				10	1	0.28	85.3	5.4	44	28857	5	Discount, < 20mm travel.	
				Test Averages					8.4	27	21099		
329+75	20 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.10	29.6					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.19	58.4	9.6	23	19105	29		
				6 to 9	4	0.28	86	6.9	34	24207	28		
				10	1	0.30	92.6	6.6	35	24991	7	Discount, < 20mm travel.	
				Test Averages					8.3	27	21297		
330+20	13 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.10	29.5					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.19	59.3	7.5	31	22913	30		
				7 to 10	4	0.27	83.1	6.0	40	26919	24		
				Test Averages					6.7	35	24723		
336+00	4 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	28.5					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	54.5	8.7	26	20558	26		
				6 to 10	5	0.26	80.7	5.2	46	29486	26		
				Test Averages					7.0	33	24074		

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
			8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
336+73	10 LT	6/11/2021		0	0	0	0					
				1	1	0.10	29.9					First blow discounted as "seating" blow.
				2 to 6	5	0.20	60.1	6.0	39	26631	30	
				7 to 10	4	0.28	84.5	6.1	39	26443	24	
			Test Averages					6.1	39	26537		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
			8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
338+40	3 LT	6/11/2021		0	0	0	0					
				1	1	0.07	20.9					First blow discounted as "seating" blow.
				2 to 4	3	0.16	50.2	9.8	23	18871	29	
				5 to 7	3	0.26	78	9.3	24	19595	28	
				8 to 9	2	0.30	90.7	6.4	37	25693	13	Discount, < 20mm travel.
			Test Averages					9.5	23	19225		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
			8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
338+95	5 LT	6/11/2021		0	0	0	0					
				1 to 2	2	0.14	43.9					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.23	68.6	8.2	28	21328	25	
				6 to 9	4	0.33	101.3	8.2	28	21437	33	
				10	1	0.36	109	7.7	30	22377	8	Discount, < 20mm travel.
			Test Averages					8.2	28	21382		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
			8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
347+35	3 LT	6/11/2021		0	0	0	0					
				1 to 2	2	0.10	29.7					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.18	54.2	6.1	38	26366	25	
				7 to 10	4	0.26	78.5	6.1	39	26521	24	
			Test Averages					6.1	39	26443		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
			8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
347+93	12 LT	6/11/2021		0	0	0	0					
				1 to 2	2	0.08	25.2					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.17	51.4	8.7	26	20446	26	
				6 to 8	3	0.25	77.2	8.6	26	20672	26	
				9 to 10	2	0.30	92.9	7.9	29	22070	16	Discount, < 20mm travel.
			Test Averages					8.7	26	20558		



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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
351+99	5 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.10	31					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.19	56.9	8.6	26	20615	26		
				6 to 9	4	0.29	88	7.8	29	22222	31		
				10	1	0.30	92.7	4.7	52	31877	5	Discount, < 20mm travel.	
				<b>Test Averages</b>					8.2	28	21382		
352+58	11 LT	6/11/2021	8kg	0	0	0	0						
				1	1	0.08	23.9					First blow discounted as "seating" blow.	
				2 to 4	3	0.17	50.9	9.0	25	20009	27		
				5 to 8	4	0.26	78	6.8	34	24527	27		
				9 to 10	2	0.30	90.2	6.1	39	26443	12	Discount, < 20mm travel.	
				<b>Test Averages</b>					7.9	29	21994		
358+44	6 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.08	23.2					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	54.9	10.6	21	17835	32		
				6 to 8	3	0.26	79.9	8.3	27	21144	25		
				9 to 10	2	0.33	99.5	9.8	23	18825	20		
				<b>Test Averages</b>					9.6	23	19153		
358+90	4 LT	6/11/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	28.6					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.19	57.9	7.3	31	23192	29		
				7 to 10	4	0.29	88.2	7.6	30	22641	30		
				<b>Test Averages</b>					7.5	31	22913		
296+05	9 RT	6/16/2021	8kg	0	0	0	0						
				1 to 3	3	0.12	36.4					First 3 blows discounted as "seating" blows.	
				4 to 7	4	0.21	63.5	6.8	34	24527	27		
				8 to 10	3	0.27	83.6	6.7	35	24723	20		
				<b>Test Averages</b>					6.7	34	24625		
309+69	2 RT	6/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	21.1					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.17	50.4	7.3	31	23192	29		
				7 to 10	4	0.26	78.7	7.1	33	23777	28		
				<b>Test Averages</b>					7.2	32	23480		

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
311+53	6 RT	6/16/2021	8kg	0	0	0	0					
				1 to 3	3	0.11	32.4					First 3 blows discounted as "seating" blows.
				4 to 8	5	0.20	62.4	6.0	39	26758	30	
				9 to 10	2	0.25	76.4	7.0	33	23959	14	Discount, < 20mm travel.
				Test Averages				6.0	39	26758		
320+80	1 RT	6/16/2021	8kg	0	0	0	0					
				1 to 3	3	0.06	17.1					First 3 blows discounted as "seating" blows.
				4 to 9	6	0.15	46.4	4.9	49	31014	29	
				10	1	0.17	51.8	5.4	44	28857	5	Discount, < 20mm travel.
				Test Averages				4.9	49	31014		
323+12	10 RT	6/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	31.3					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.20	60.4	7.3	32	23306	29	
				7 to 9	3	0.29	88.9	9.5	23	19249	29	
				10	1	0.31	93.1	4.2	59	34553	4	Discount, < 20mm travel.
				Test Averages				8.4	27	21046		
325+41	12 RT	6/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	50.4	6.6	35	24991	26	
				7 to 10	4	0.24	72.2	5.5	44	28667	22	
				Test Averages				6.0	39	26679		
329+76	4 RT	6/16/2021	8kg	0	0	0	0					
				1 to 2	2	0.08	24.1					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	50.8	6.7	35	24790	27	
				7 to 10	4	0.25	75.1	6.1	39	26521	24	
				Test Averages				6.4	37	25620		
337+65	4 RT	6/16/2021	8kg	0	0	0	0					
				1 to 3	3	0.08	24.2					First 3 blows discounted as "seating" blows.
				4 to 7	4	0.16	49	6.2	38	26137	25	
				8 to 10	3	0.22	68.2	6.4	37	25549	19	Discount, < 20mm travel.
				Test Averages				6.2	38	26137		

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
342+54	14 RT	6/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.09	27.5					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	56.2	7.2	32	23539	29		
				7 to 10	4	0.27	81.7	6.4	37	25620	26		
				Test Averages					6.8	34	24527		
345+76	9 RT	6/16/2021	8kg	0	0	0	0						
				1 to 3	3	0.08	25.4					First 3 blows discounted as "seating" blows.	
				4 to 8	5	0.17	52.7	5.5	44	28630	27		
				9 to 10	2	0.21	64.5	5.9	40	27083	12	Discount, < 20mm travel.	
				Test Averages					5.5	44	28630		
351+80	4 RT	6/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.10	30.2					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.20	59.6	7.4	31	23136	29		
				7 to 10	4	0.27	83	5.9	40	27248	23		
				Test Averages					6.6	35	24991		
360+23	11 RT	6/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.05	14.5					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.14	44	5.9	40	27083	30		
				8 to 10	3	0.20	60.9	5.6	42	27995	17	Discount, < 20mm travel.	
				Test Averages					5.9	40	27083		
362+87	? RT	6/16/2021	8kg	0	0	0	0						
				1 to 2	2	0.11	33.4					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.20	61.6	9.4	24	19395	28		
				6 to 8	3	0.29	87.9	8.8	26	20390	26		
				9 to 11	3	0.36	108.5	6.9	34	24292	21		
				Test Averages					8.3	27	21124		

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Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
368+95	3 RT	6/16/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.06	19.3					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	49.6	6.1	39	26568	30	
				8 to 10	3	0.21	63.1	4.5	54	32886	14	Discount, < 20mm travel.
			Test Averages					6.1	39	26568		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
1+04	5 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.10	32					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.19	57	8.3	27	21144	25	
				6 to 9	4	0.28	84	6.8	34	24592	27	
				10	1	0.30	90	6.0	39	26758	6	Discount, < 20mm travel.
			Test Averages					7.5	30	22713		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
3+48	4 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0.00	22					
				1 to 2	2	0.06	40					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	70	10.0	22	18554	30	
				6 to 9	4	0.25	99	7.3	32	23364	29	
				10	1	0.27	103	4.0	62	35783	4	Discount, < 20mm travel.
			Test Averages					8.6	26	20629		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
5+03	8 LT	UNKNOWN	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0.00	26					
				1 to 2	2	0.05	40					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.16	74	11.3	19	16962	34	
				6 to 9	4	0.24	100	6.5	36	25266	26	
				10 to	2	0.29	113	6.5	36	25266	13	Discount, < 20mm travel.
			Test Averages					8.9	25	20143		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
6+36	10 LT	UNKNOWN	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.17	51	6.8	34	24592	27	
				7 to 10	4	0.24	72	5.3	46	29446	21	
			Test Averages					6.0	39	26758		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
6+69	5 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0						
				1 to 2	2	0.09	26					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.18	56	7.5	31	22803	30		
				7 to 10	4	0.26	78	5.5	43	28480	22		
								6.5	36	25266			
				Test Averages									
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
6+00	12 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0						
				1 to 2	2	0.09	28					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	54	8.7	26	20558	26		
				6 to 9	4	0.26	79	6.3	37	25987	25		
				10	1	0.28	84	5.0	48	30494	5	Discount, < 20mm travel.	
								7.5	31	22894			
				Test Averages									
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
8+92	2 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	38						
				1 to 2	2	0.07	60					First 2 blows discounted as "seating" blows.	
				3 to 4	2	0.24	110	25.0	8	9620	50		
				5 to 6	2	0.36	148	19.0	11	11712	38		
				7 to 8	2	0.47	180	16.0	13	13247	32		
				8 to 10	2	0.53	200	10.0	22	18554	20		
								17.5	12	12423			
				Test Averages									
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
9+65	4 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 5	3	0.18	54	11.3	19	16962	34		
				6 to 8	3	0.30	90	12.0	18	16281	36		
				9 to 10	2	0.37	112	11.0	20	17329	22		
								11.4	19	16844			
				Test Averages									
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
13+32	2 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
				0	0	0.00	470						
				1 to 2	2	0.07	491					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	520	7.3	32	23364	29		
				7 to 10	4	0.24	543	5.8	41	27587	23		
								6.5	36	25266			
				Test Averages									

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
14+35	10 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.06	19					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	50	7.8	29	22273	31	
				7 to 10	4	0.24	74	6.0	39	26758	24	
			Test Averages					6.9	34	24271		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
14+45	13 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.20	61	10.3	21	18123	31	
				7 to 9	3	0.29	89	9.3	24	19495	28	
				10	1	0.31	94	5.0	48	30494	5	Discount, < 20mm travel.
			Test Averages					9.8	23	18779		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
15+50	5 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.22	66	10.7	21	17715	32	
				6 to 10	5	0.32	97	6.2	38	26137	31	
			Test Averages					8.4	27	20964		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
15+75	7 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.10	29					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.19	57	9.3	24	19495	28	
				6 to 8	3	0.27	83	8.7	26	20558	26	
				9 to 10	2	0.31	93	5.0	48	30494	10	Discount, < 20mm travel.
			Test Averages					9.0	25	20009		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
15+98	5 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.14	44					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.26	80	18.0	11	12175	36	
				5 to 6	2	0.38	116	18.0	11	12175	36	
				7 to 8	2	0.47	144	14.0	15	14578	28	
				8 to 10	2	0.53	161	8.5	27	20846	17	Discount, < 20mm travel.
			Test Averages					16.7	13	12865		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
17+09	7 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.13	40					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.22	68	14.0	15	14578	28	
				5 to 7	3	0.32	98	10.0	22	18554	30	
				8 to 10	3	0.40	122	8.0	28	21772	24	
								10.7	21	17715		
18+30	5 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.30	90					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.39	120	7.5	31	22803	30	
				7 to 10	4	0.47	144	6.0	39	26758	24	
								6.8	34	24592		
21+65	13 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.16	48					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.25	77	14.5	15	14216	29	
				5 to 6	2	0.33	102	12.5	17	15811	25	
				7 to 9	3	0.42	128	8.7	26	20558	26	
				10	1	0.45	137	9.0	25	20009	9	Discount, < 20mm travel.
								11.9	18	16390		
21+75	8 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.11	34					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.22	68	11.3	19	16962	34	
				5 to 7	3	0.31	93	8.3	27	21144	25	
				8 to 10	3	0.39	118	8.3	27	21144	25	
								9.3	24	19495		
23+05	3 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.16	50					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.25	76	13.0	17	15373	26	
				5 to 8	4	0.36	110	8.5	27	20846	34	
				9 to 10	2	0.41	125	7.5	31	22803	15	Discount, < 20mm travel.
								10.8	20	17617		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
23+08	2 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.21	64					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.31	96	16.0	13	13247	32	
				5 to 7	3	0.40	122	8.7	26	20558	26	
				8 to 10	3	0.46	140	6.0	39	26758	18	Discount, < 20mm travel.
				Test Averages				12.3	18	15964		
367+95	4 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.09	27					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.19	57	6.0	39	26758	30	
				8 to 10	3	0.24	73	5.3	45	29115	16	Discount, < 20mm travel.
				Test Averages				6.0	39	26758		
370+34	8 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.12	38					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.21	65	5.4	44	28857	27	
				8 to 10	3	0.27	82	5.7	42	27877	17	Discount, < 20mm travel.
				Test Averages				5.4	44	28857		
376+73	12 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.16	50	5.6	42	28115	28	
				8 to 10	3	0.23	69	6.3	37	25741	19	Discount, < 20mm travel.
				Test Averages				5.6	42	28115		
376+75	2 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.10	29					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	59	7.5	31	22803	30	
				7 to 10	4	0.28	84	6.3	37	25987	25	
				Test Averages				6.9	34	24271		
379+48	12 RT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.07	22					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	49	6.8	34	24592	27	
				7 to 10	4	0.23	71	5.5	43	28480	22	
				Test Averages				6.1	38	26366		



Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)		
380+05	5 LT	Unknown	8kg	0	0	0	0						
				1 to 2	2	0.07	21					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	6.8	34	24592	27		
				7 to 10	4	0.24	72	6.0	39	26758	24		
				Test Averages					6.4	37	25620		
380+24	9 LT	Unknown	8kg	0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 6	4	0.16	48	7.0	33	23959	28		
				7 to 10	4	0.25	77	7.3	32	23364	29		
				Test Averages					7.1	32	23657		
382+03	9 RT	6/10/2021	8kg	0	0	0	0						
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.16	50	6.0	39	26758	30		
				8 to 10	3	0.23	71	7.0	33	23959	21		
				Test Averages					6.5	36	25266		
385+39	2 RT	6/10/2021	8kg	0	0	0	0						
				1 to 2	2	0.06	17					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.15	45	5.6	42	28115	28		
				8 to 10	3	0.20	60	5.0	48	30494	15	Discount, < 20mm travel.	
				Test Averages					5.6	42	28115		
386+14	5 LT	Unknown	8kg	0	0	0	0						
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.	
				3 to 7	5	0.20	60	7.2	32	23480	36		
				8 to 10	3	0.28	86	8.7	26	20558	26		
				Test Averages					7.9	29	21903		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
387+20	7 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.08	25					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.17	51	5.2	46	29649	26	
				8 to 10	3	0.25	76	8.3	27	21144	25	
				<b>Test Averages</b>				6.8	34	24548		
390+54	3 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.05	16					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	49	8.3	27	21297	33	
				8 to 10	3	0.23	70	7.0	33	23959	21	
				<b>Test Averages</b>				7.6	30	22534		
391+90	5 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.11	33					First 2 blows discounted as "seating" blows.
				3 to 4	2	0.20	61	14.0	15	14578	28	
				5 to 9	5	0.31	93	6.4	37	25549	32	
				10	1	0.32	97	4.0	62	35783	4	Discount, < 20mm travel.
				<b>Test Averages</b>				10.2	22	18292		
392+35	6 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.15	45	6.3	37	25987	25	
				7 to 10	4	0.22	68	5.8	41	27587	23	
				<b>Test Averages</b>				6.0	39	26758		
395+07	4 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.09	28				28	First 2 blows discounted as "seating" blows.
				3 to 6	4	0.19	59	7.8	29	22273	31	
				7 to 10	4	0.27	83	6.0	39	26758	24	
				<b>Test Averages</b>				6.9	34	24271		
397+09	11 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.06	18					First 2 blows discounted as "seating" blows.
				3 to 6	4	0.16	50	8.0	28	21772	32	
				7 to 10	4	0.23	71	5.3	46	29446	21	
				<b>Test Averages</b>				6.6	35	24924		

Appendix I – Resilient Modulus Data Reduction for Cavendish-Weathersfield STP 0146(14)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
				(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
398+00	8 RT	6/10/2021	8kg	0	0	0	0					
				1 to 2	2	0.10	30					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	56	8.7	26	20558	26	
				6 to 9	4	0.29	87	7.8	29	22273	31	
				10	1	0.30	92	5.0	48	30494	5	Discount, < 20mm travel.
Test Averages								8.2	28	21375		
400+80	8 LT	Unknown	8kg	0	0	0	0					
				1 to 2	2	0.10	31					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.18	56	8.3	27	21144	25	
				6 to 9	4	0.27	83	6.8	34	24592	27	
				10	1	0.30	91	8.0	28	21772	8	Discount, < 20mm travel.
Test Averages								7.5	30	22713		
401+80	10 (no offset dir.)	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.14	42					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.24	74	10.7	21	17715	32	
				6 to 8	3	0.35	106	10.7	21	17715	32	
				9 to 10	2	0.41	126	10.0	22	18554	20	
Test Averages								10.4	21	17985		
402+97	8 RT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.08	24					First 2 blows discounted as "seating" blows.
				3 to 7	5	0.18	56	6.4	37	25549	32	
				8 to 10	3	0.26	78	7.3	31	23173	22	
Test Averages								6.9	34	24292		
403+10	3 RT	6/10/2021	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.12	36					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.22	67	10.3	21	18123	31	
				6 to 8	3	0.31	94	9.0	25	20009	27	
				8 to 10	2	0.33	102	4.0	62	35783	8	Discount, < 20mm travel.
Test Averages								9.7	23	19010		
403+50	6 LT	Unknown	8kg	(#)	(#)	(ft)	(mm)	(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0					
				1 to 2	2	0.07	20					First 2 blows discounted as "seating" blows.
				3 to 5	3	0.15	46	8.7	26	20558	26	
				6 to 9	4	0.23	71	6.3	37	25987	25	
				10	1	0.25	75	4.0	62	35783	4	Discount, < 20mm travel.
Test Averages								7.5	31	22894		



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX J – RESILIENT MODULUS DATA REDUCTION FOR ESSEX-RICHMOND STP 2931(1)



GEODesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722070.9	1493256.1	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	358					
						5	5	0.16	407					First 5 blows discounted as "seating" blows.
						10	5	0.25	434	5.4	44	28857	27	
						10 to 20	10	0.37	471	3.7	67	37840	37	Combined 10 blows to achieve >25mm pen.
						25	5	0.44	492	4.2	59	34553	21	
						<b>Test Averages</b>			128*	4.4	55	33240		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722065.2	1493254.6	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	360					
						5	5	0.08	385					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.19	418	3.3	77	41074	33	Combined 10 blows to achieve >25mm pen.
						15 to 25	10	0.29	448	3.0	85	43978	30	Combined 10 blows to achieve >25mm pen.
						<b>Test Averages</b>			126.6*	3.2	81	42467		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722058.7	1493253.3	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	380					
						5	5	0.09	407					First 5 blows discounted as "seating" blows.
						10	5	0.16	429	4.4	56	33420	22	
						15	5	0.24	453	4.8	50	31399	24	
						20	5	0.31	476	4.6	53	32372	23	
						25	5	0.39	498	4.4	56	33420	22	
						<b>Test Averages</b>			130.8*	4.6	54	32627		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722067.9	1493264.7	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	369					
						5	5	0.11	404					First 5 blows discounted as "seating" blows.
						10	5	0.19	426	4.4	56	33420	22	
						15	5	0.26	448	4.4	56	33420	22	
						20	5	0.33	469	4.2	59	34553	21	
						25	5	0.39	488	3.8	65	37123	19	Discount, < 20mm travel.
						<b>Test Averages</b>			134.3*	4.3	57	33788		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722064.1	1493264.2	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	367						
						5	5	0.10	398					First 5 blows discounted as "seating" blows.	
						10	5	0.18	422	4.8	50	31399	24		
						15	5	0.26	446	4.8	50	31399	24		
						20	5	0.33	468	4.4	56	33420	22		
						25	5	0.36	477	1.8	151	63424	9	Discount, < 20mm travel.	
						Test Averages			125*	4.7	52	32040			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722060.1	1493263.6	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	372						
						5	5	0.09	399					First 5 blows discounted as "seating" blows.	
						5 to 15	10	0.22	440	4.1	60	35155	41	Combined 10 blows to achieve >25mm pen.	
						20	5	0.29	461	4.2	59	34553	21		
						25	5	0.36	483	4.4	56	33420	22		
						Test Averages			125.4*	4.2	58	34358			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722066.1	1493274.8	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	363						
						5	5	0.16	412					First 5 blows discounted as "seating" blows.	
						10	5	0.26	442	6.0	39	26758	30		
						15	5	0.34	468	5.2	46	29649	26		
						20	5	0.43	494	5.2	46	29649	26		
						25	5	0.52	522	5.6	42	28115	28		
						Test Averages			133.9*	5.5	43	28480			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722062.1	1493273.6	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	367						
						5	5	0.11	402					First 5 blows discounted as "seating" blows.	
						10	5	0.18	423	4.2	59	34553	21		
						15	5	0.26	445	4.4	56	33420	22		
						20	5	0.32	465	4.0	62	35783	20		
						25	5	0.38	482	3.4	74	40204	17	Discount, < 20mm travel.	
						Test Averages			126.4*	4.2	59	34553			
						(Dry Density from Raw Sheets*)									

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
		722058.2	1493273	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	366					
						5	5	0.11	400					First 5 blows discounted as "seating" blows.
						10	5	0.18	421	4.2	59	34553	21	
						15	5	0.25	441	4.0	62	35783	20	
						20	5	0.31	462	4.2	59	34553	21	
						25	5	0.39	486	4.8	50	31399	24	
						Test Averages			125.6*	4.3	57	33975		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
		722064.6	1493284.1	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	376					
						5	5	0.16	425					First 5 blows discounted as "seating" blows.
						10	5	0.26	456	6.2	38	26137	31	
						15	5	0.37	490	6.8	34	24462	34	
						20	5	0.49	524	6.8	34	24462	34	
						25	5	0.56	546	4.4	56	33420	22	
						Test Averages			134.1*	6.1	39	26600		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
		722060.9	1493283.3	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	361					
						5	5	0.11	396					First 5 blows discounted as "seating" blows.
						10	5	0.20	423	5.4	44	28857	27	
						15	5	0.29	448	5.0	48	30494	25	
						20	5	0.36	471	4.6	53	32372	23	
						25	5	0.43	493	4.4	56	33420	22	
						Test Averages			127.8*	4.9	50	31167		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
		722056.2	1493282.7	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	367					
						5	5	0.14	411					First 5 blows discounted as "seating" blows.
						10	5	0.23	437	5.2	46	29649	26	
						15	5	0.31	462	5.0	48	30494	25	
						20	5	0.41	491	5.8	41	27416	29	
						25	5	0.49	517	5.2	46	29649	26	
						Test Averages			133.4*	5.3	45	29247		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
		722062.2	1493293.8	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	367					
						5	5	0.21	431					First 5 blows discounted as "seating" blows.
						10	5	0.33	469	7.6	30	22588	38	
						15	5	0.44	501	6.4	37	25549	32	
						20	5	0.52	525	4.8	50	31399	24	
						25	5	0.63	558	6.6	35	24991	33	
						Test Averages			136*	6.4	37	25693		
						(Dry Density from Raw Sheets*)								

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722059	1493292.7	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	366					First 5 blows discounted as "seating" blows.	
						5	5	0.11	401						
						10	5	0.21	430	5.8	41	27416	29		
						15	5	0.28	450	4.0	62	35783	20		
						20	5	0.34	471	4.2	59	34553	21		
						25	5	0.41	490	3.8	65	37123	19	Discount, < 20mm travel.	
						Test Averages			129.7*	4.7	52	32040			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722054.4	1493291.9	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	367					First 5 blows discounted as "seating" blows.	
						5	5	0.11	401						
						10	5	0.19	425	4.8	50	31399	24		
						15	5	0.29	454	5.8	41	27416	29		
						20	5	0.37	481	5.4	44	28857	27		
						25	5	0.47	510	5.8	41	27416	29		
						Test Averages			139.9*	5.5	44	28667			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722060.7	1493303.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	336					First 5 blows discounted as "seating" blows.	
						5	5	0.38	451						
						10	5	0.56	506	11.0	20	17329	55		
						15	5	0.71	552	9.2	24	19697	46		
						20	5	0.81	582	6.0	39	26758	30		
						25	5	0.89	608	5.2	46	29649	26		
						Test Averages			139.4*	7.9	29	22070			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722057.3	1493302.5	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	365					First 5 blows discounted as "seating" blows.	
						5	5	0.16	415						
						10	5	0.31	458	8.6	26	20672	43		
						15	5	0.44	498	8.0	28	21772	40		
						20	5	0.55	534	7.2	32	23480	36		
						25	5	0.66	567	6.6	35	24991	33		
						Test Averages			135.7*	7.6	30	22588			
						(Dry Density from Raw Sheets*)									



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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722052.8	1493301.5	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	359					First 5 blows discounted as "seating" blows.
						5	5	0.12	396					
						10	5	0.22	426	6.0	39	26758	30	
						15	5	0.33	459	6.6	35	24991	33	
						20	5	0.43	491	6.4	37	25549	32	
						25	5	0.53	520	5.8	41	27416	29	
						<b>Test Averages</b>			131.7*	6.2	38	26137		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722058.9	1493313.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	363					First 5 blows discounted as "seating" blows.
						5	5	0.34	467					
						10	5	0.52	523	11.2	20	17106	56	
						15	5	0.68	570	9.4	24	19395	47	
						20	5	0.77	597	5.4	44	28857	27	
						25	5	0.88	630	6.6	35	24991	33	
						<b>Test Averages</b>			132.1*	8.2	28	21484		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722055.4	1493312	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	362					First 5 blows discounted as "seating" blows.
						5	5	0.19	420					
						10	5	0.37	475	11.0	20	17329	55	
						15	5	0.58	539	12.8	17	15545	64	
						20	5	0.86	624	17.0	12	12684	85	
						25	5	1.23	738	22.8	9	10277	114	
						<b>Test Averages</b>			127.6*	15.9	13	13307		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722050.5	1493311.3	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	362					First 5 blows discounted as "seating" blows.
						5	5	0.13	402					
						10	5	0.23	431	5.8	41	27416	29	
						15	5	0.32	460	5.8	41	27416	29	
						20	5	0.41	487	5.4	44	28857	27	
						25	5	0.49	510	4.6	53	32372	23	
						<b>Test Averages</b>			124.5*	5.4	44	28857		
						(Dry Density from Raw Sheets*)								

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722057.1	1493323.1	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	366					First 5 blows discounted as "seating" blows.	
						5	5	0.29	453						
						10	5	0.47	510	11.4	19	16891	57		
						15	5	0.59	547	7.4	31	23023	37		
						20	5	0.71	582	7.0	33	23959	35		
						25	5	0.83	618	7.2	32	23480	36		
						<b>Test Averages</b>			132.2*	8.3	27	21297			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722053.4	1493321.9	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	361					First 5 blows discounted as "seating" blows.	
						5	5	0.24	434						
						10	5	0.49	509	15.0	14	13874	75		
						15	5	0.83	614	21.0	10	10901	105		
						20	5	1.12	701	17.4	12	12474	87		
						25	5	1.41	792	18.2	11	12079	91		
						<b>Test Averages</b>			137.5*	17.9	12	12223			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722049.4	1493321.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	367					First 5 blows discounted as "seating" blows.	
						5	5	0.14	411						
						10	5	0.24	441	6.0	39	26758	30		
						15	5	0.34	470	5.8	41	27416	29		
						20	5	0.41	493	4.6	53	32372	23		
						25	5	0.49	515	4.4	56	33420	22		
						<b>Test Averages</b>			133.8*	5.2	46	29649			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722055.6	1493332.8	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	390					First 5 blows discounted as "seating" blows.	
						5	5	0.25	467						
						10	5	0.38	506	7.8	29	22171	39		
						15	5	0.54	556	10.0	22	18554	50		
						20	5	0.64	585	5.8	41	27416	29		
						25	5	0.72	608	4.6	53	32372	23		
						<b>Test Averages</b>			143.4*	7.1	33	23837			
						(Dry Density from Raw Sheets*)									

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722051.4	1493331.9	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	366					First 5 blows discounted as "seating" blows.	
						5	5	0.35	473						
						10	5	0.51	520	9.4	24	19395	47		
						15	5	0.63	557	7.4	31	23023	37		
						20	5	0.74	592	7.0	33	23959	35		
						25	5	0.87	631	7.8	29	22171	39		
						Test Averages			132.9*	7.9	29	21969			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722047.5	1493331.2	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	356					First 5 blows discounted as "seating" blows.	
						5	5	0.23	426						
						10	5	0.36	467	8.2	28	21390	41		
						15	5	0.47	499	6.4	37	25549	32		
						20	5	0.55	525	5.2	46	29649	26		
						25	5	0.64	550	5.0	48	30494	25		
						Test Averages			132.9*	6.2	38	26137			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722054	1493342.7	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	375					First 5 blows discounted as "seating" blows.	
						5	5	0.18	430						
						10	5	0.36	486	11.2	20	17106	56		
						15	5	0.47	517	6.2	38	26137	31		
						20	5	0.57	549	6.4	37	25549	32		
						25	5	0.71	590	8.2	28	21390	41		
						Test Averages			134.5*	8.0	28	21772			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722049.8	1493341.7	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	363					First 5 blows discounted as "seating" blows.	
						5	5	0.28	448						
						10	5	0.42	492	8.8	26	20334	44		
						15	5	0.56	534	8.4	27	21024	42		
						20	5	0.69	573	7.8	29	22171	39		
						25	5	0.88	630	11.4	19	16891	57		
						Test Averages			143.9*	9.1	25	19852			
						(Dry Density from Raw Sheets*)									

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722046	1493341.1	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	370					
						5	5	0.20	430					First 5 blows discounted as "seating" blows.
						10	5	0.31	466	7.2	32	23480	36	
						15	5	0.42	497	6.2	38	26137	31	
						20	5	0.50	522	5.0	48	30494	25	
						25	5	0.59	550	5.6	42	28115	28	
						Test Averages			137.6*	6.0	39	26758		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722052.1	1493352.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	368					
						5	5	0.33	470					First 5 blows discounted as "seating" blows.
						10	5	0.48	514	8.8	26	20334	44	
						15	5	0.63	560	9.2	24	19697	46	
						20	5	0.83	620	12.0	18	16281	60	
						25	5	1.06	690	14.0	15	14578	70	
						Test Averages			134.2*	11.0	20	17329		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722048.5	1493352.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	370					
						5	5	0.27	452					First 5 blows discounted as "seating" blows.
						10	5	0.46	511	11.8	18	16478	59	
						15	5	0.63	561	10.0	22	18554	50	
						20	5	0.84	627	13.2	16	15206	66	
						25	5	1.30	767	28.0	7	8870	140	
						Test Averages			137.7*	15.8	13	13398		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722044.4	1493350.9	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	360					
						5	5	0.18	415					First 5 blows discounted as "seating" blows.
						10	5	0.29	449	6.8	34	24462	34	
						15	5	0.39	480	6.2	38	26137	31	
						20	5	0.49	510	6.0	39	26758	30	
						25	5	0.58	538	5.6	42	28115	28	
						Test Averages			139.9*	6.2	38	26289		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722050.6	1493362.4	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	360					
						5	5	0.28	444					First 5 blows discounted as "seating" blows.
						10	5	0.44	493	9.8	23	18825	49	
						15	5	0.57	533	8.0	28	21772	40	
						20	5	0.68	566	6.6	35	24991	33	
						25	5	0.76	592	5.2	46	29649	26	
						Test Averages			132.7*	7.4	31	23023		
						(Dry Density from Raw Sheets*)								

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722046.8	1493361.6	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	357					First 5 blows discounted as "seating" blows.	
						5	5	0.18	411						
						10	5	0.28	443	6.4	37	25549	32		
						15	5	0.41	481	7.6	30	22588	38		
						20	5	0.53	518	7.4	31	23023	37		
						25	5	0.67	561	8.6	26	20672	43		
						Test Averages			134.9*	7.5	31	22803			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722042.4	1493360.9	8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	356					First 5 blows discounted as "seating" blows.	
						5	5	0.21	421						
						10	5	0.36	467	9.2	24	19697	46		
						15	5	0.47	500	6.6	35	24991	33		
						20	5	0.57	530	6.0	39	26758	30		
						25	5	0.66	556	5.2	46	29649	26		
						Test Averages			134*	6.8	34	24592			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
237+00	10.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	362					First 5 blows discounted as "seating" blows.	
						5	5	0.28	446						
						10	5	0.41	487	8.2	28	21390	41		
						15	5	0.53	523	7.2	32	23480	36		
						20	5	0.64	556	6.6	35	24991	33		
						25	5	0.79	603	9.4	24	19395	47		
						Test Averages			135.1*	7.9	29	22070			
						(Dry Density from Raw Sheets*)									
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
242+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	357					First 5 blows discounted as "seating" blows.	
						5	5	0.18	411						
						10	5	0.30	449	7.6	30	22588	38		
						15	5	0.48	504	11.0	20	17329	55		
						20	5	0.67	562	11.6	19	16681	58		
						25	5	0.87	623	12.2	18	16089	61		
						Test Averages			134.6*	10.6	21	17795			
						(Dry Density from Raw Sheets*)									

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
	7.5 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	367					
						5	5	0.17	420					First 5 blows discounted as "seating" blows.
						10	5	0.30	459	7.8	29	22171	39	
						15	5	0.42	495	7.2	32	23480	36	
						20	5	0.53	529	6.8	34	24462	34	
						25	5	0.63	558	5.8	41	27416	29	
				Test Averages					136.8*	6.9	34	24207		
				(Dry Density from Raw Sheets*)										
	5.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	365					
						5	5	0.24	437					First 5 blows discounted as "seating" blows.
						10	5	0.35	472	7.0	33	23959	35	
						15	5	0.45	503	6.2	38	26137	31	
						20	5	0.54	531	5.6	42	28115	28	
						25	5	0.63	558	5.4	44	28857	27	
				Test Averages					135*	6.1	39	26600		
				(Dry Density from Raw Sheets*)										
	3.5 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	363					
						5	5	0.20	424					First 5 blows discounted as "seating" blows.
						10	5	0.30	453	5.8	41	27416	29	
						15	5	0.42	490	7.4	31	23023	37	
						20	5	0.58	541	10.2	22	18292	51	
						25	5	0.77	597	11.2	20	17106	56	
				Test Averages					133.8*	8.7	26	20587		
				(Dry Density from Raw Sheets*)										
261+00	11.5 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	360					
						5	5	0.21	423					First 5 blows discounted as "seating" blows.
						10	5	0.34	464	8.2	28	21390	41	
						15	5	0.49	509	9.0	25	20009	45	
						20	5	0.59	540	6.2	38	26137	31	
						25	5	0.70	572	6.4	37	25549	32	
				Test Averages					134.8*	7.5	31	22913		
				(Dry Density from Raw Sheets*)										

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
263+50	7.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	364						
						5	5	0.22	430					First 5 blows discounted as "seating" blows.	
						10	5	0.31	460	6.0	39	26758	30		
						15	5	0.39	483	4.6	53	32372	23		
						15 to 25	10	0.55	532	4.9	49	30939	49	Combined 10 blows to achieve >25mm pen.	
						<b>Test Averages</b>			132.3*	5.2	46	29786			
						(Dry Density from Raw Sheets*)									
268+50	3.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	366						
						5	5	0.17	417					First 5 blows discounted as "seating" blows.	
						10	5	0.24	439	4.4	56	33420	22		
						15	5	0.31	460	4.2	59	34553	21		
						20	5	0.41	492	6.4	37	25549	32		
						25	5	0.56	536	8.8	26	20334	44		
						<b>Test Averages</b>			132.3*	6.0	40	26919			
						(Dry Density from Raw Sheets*)									
273+50	8.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	361						
						5	5	0.19	420					First 5 blows discounted as "seating" blows.	
						10	5	0.32	460	8.0	28	21772	40		
						15	5	0.42	490	6.0	39	26758	30		
						20	5	0.52	518	5.6	42	28115	28		
						25	5	0.59	540	4.4	56	33420	22		
						<b>Test Averages</b>			142.2*	6.0	39	26758			
						(Dry Density from Raw Sheets*)									
278+50	12.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0.00	371						
						5	5	0.17	422					First 5 blows discounted as "seating" blows.	
						10	5	0.26	451	5.8	41	27416	29		
						15	5	0.35	478	5.4	44	28857	27		
						20	5	0.43	503	5.0	48	30494	25		
						25	5	0.51	526	4.6	53	32372	23		
						<b>Test Averages</b>			136.8*	5.2	46	29649			
						(Dry Density from Raw Sheets*)									

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
263+00	12.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	355					
						5	5	0.15	400					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.25	432	3.2	79	41990	32	Combined 10 blows to achieve >25mm pen.
						15 to 25	10	0.38	471	3.9	64	36439	39	Combined 10 blows to achieve >25mm pen.
Test Averages									133.1*	3.6	71	38979		
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
268+00	7.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	361					
						5	5	0.14	403					First 5 blows discounted as "seating" blows.
						10	5	0.24	434	6.2	38	26137	31	
						15	5	0.33	463	5.8	41	27416	29	
						20	5	0.43	492	5.8	41	27416	29	
25	5	0.54	525	6.6	35	24991	33							
Test Averages									133.3*	6.1	39	26443		
(Dry Density from Raw Sheets*)														
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
273+00	3.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	389					
						5	5	0.14	431					First 5 blows discounted as "seating" blows.
						10	5	0.23	460	5.8	41	27416	29	
						15	5	0.31	482	4.4	56	33420	22	
						20	5	0.39	507	5.0	48	30494	25	
25	5	0.48	535	5.6	42	28115	28							
Test Averages									139.6*	5.2	46	29649		
(Dry Density from Raw Sheets*)														
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
278+00	10.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	363					
						5	5	0.09	390					First 5 blows discounted as "seating" blows.
						5 to 20	15	0.19	422	2.1	125	56152	32	Combined 15 blows to achieve > 25mm pen.
						25	5	0.22	430	1.6	172	69012	8	Discount, < 20mm travel.
Test Averages									142.1*	2.1	125	56152		
(Dry Density from Raw Sheets*)														



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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
322+00	12.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	367					
						5	5	0.12	403					First 5 blows discounted as "seating" blows.
						10	5	0.21	432	5.8	41	27416	29	
						15	5	0.30	459	5.4	44	28857	27	
						20	5	0.38	483	4.8	50	31399	24	
						25	5	0.46	508	5.0	48	30494	25	
						Test Averages			138.7*	5.3	46	29446		
						(Dry Density from Raw Sheets*)								
317+00	4.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	366					
						5	5	0.14	409					First 5 blows discounted as "seating" blows.
						10	5	0.21	430	4.2	59	34553	21	
						10 to 20	10	0.34	469	3.9	64	36439	39	Combined 10 blows to achieve >25mm pen.
						25	5	0.40	487	3.6	70	38590	18	Discount, < 20mm travel.
						Test Averages			135*	4.1	61	35466		
						(Dry Density from Raw Sheets*)								
312+00	11.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	366					
						5	5	0.13	406					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.23	437	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.32	465	2.8	92	46208	28	Combined 10 blows to achieve > 25mm pen.
						Test Averages			141.2*	3.0	87	44511		
						(Dry Density from Raw Sheets*)								
307+00	7.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	366					
						5	5	0.12	403					First 5 blows discounted as "seating" blows.
						10	5	0.19	425	4.4	56	33420	22	
						15	5	0.26	445	4.0	62	35783	20	
						20	5	0.33	467	4.4	56	33420	22	
						25	5	0.38	483	3.2	79	41990	16	Discount, < 20mm travel.
						Test Averages			141.7*	4.3	58	34166		
						(Dry Density from Raw Sheets*)								
302+00	8.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	364					
						5	5	0.20	424					First 5 blows discounted as "seating" blows.
						10	5	0.29	451	5.4	44	28857	27	
						15	5	0.36	474	4.6	53	32372	23	
						15 to 25	10	0.49	513	3.9	64	36439	39	Combined 10 blows to achieve > 25mm pen.
						Test Averages			140.6*	4.6	52	32205		
						(Dry Density from Raw Sheets*)								

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
297+00	10.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0.00	360					
						5	5	0.10	389					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.18	415	2.6	100	48728	26	Combined 10 blows to achieve >25mm pen.
						15 to 25	10	0.28	444	2.9	89	45060	29	Combined 10 blows to achieve >25mm pen.
						<b>Test Averages</b>			139.9*	2.8	94	46808		
						(Dry Density from Raw Sheets*)								
292+00	3.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.12	401					First 5 blows discounted as "seating" blows.
						10	5	0.21	427	5.2	46	29649	26	
						15	5	0.29	452	5.0	48	30494	25	
						15 to 25	10	0.40	485	3.3	77	41074	33	Combined 10 blows to achieve >25mm pen.
						<b>Test Averages</b>			137.2*	4.5	54	32886		
						(Dry Density from Raw Sheets*)								
322+00	2.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.21	425					First 5 blows discounted as "seating" blows.
						10	5	0.31	457	6.4	37	25549	32	
						15	5	0.40	483	5.2	46	29649	26	
						20	5	0.47	506	4.6	53	32372	23	
						25	5	0.54	527	4.2	59	34553	21	
						<b>Test Averages</b>			132.1*	5.1	47	30064		
						(Dry Density from Raw Sheets*)								
317+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	368					
						5	5	0.09	394					First 5 blows discounted as "seating" blows.
						5 to 20	15	0.19	425	2.1	130	57445	31	Combined 15 blows to achieve > 25mm pen.
						25	5	0.22	435	2.0	134	58811	10	Discount, < 20mm travel.
						<b>Test Averages</b>			125.9*	2.1	130	57445		
						(Dry Density from Raw Sheets*)								
312+00	2.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	359					
						5	5	0.09	387					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	412	2.5	105	50118	25	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.25	436	2.4	110	51606	24	
						<b>Test Averages</b>			128.7*	2.5	107	50849		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>r</sub>	Pen. / Reading	Notes
307+00	5.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	369					
						5	5	0.23	439					First 5 blows discounted as "seating" blows.
						10	5	0.34	472	6.6	35	24991	33	
						15	5	0.42	498	5.2	46	29649	26	
						20	5	0.52	527	5.8	41	27416	29	
						25	5	0.61	554	5.4	44	28857	27	
						Test Averages			133.2*	5.8	41	27587		
						(Dry Density from Raw Sheets*)								
302+00	2.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.10	395					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.19	425	3.0	85	43978	30	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.30	456	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						Test Averages			132.9*	3.1	84	43460		
						(Dry Density from Raw Sheets*)								
297+00	6.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.09	388					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.20	420	3.2	79	41990	32	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.27	441	2.1	127	56790	21	
						Test Averages			135*	2.7	98	48068		
						(Dry Density from Raw Sheets*)								
292+00	7.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.19	425					First 5 blows discounted as "seating" blows.
						10	5	0.30	457	6.4	37	25549	32	
						15	5	0.39	485	5.6	42	28115	28	
						20	5	0.48	513	5.6	42	28115	28	
						25	5	0.58	544	6.2	38	26137	31	
						Test Averages			141*	6.0	40	26919		
						(Dry Density from Raw Sheets*)								
361+00	6.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.07	381					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.18	415	3.4	74	40204	34	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.29	450	3.5	72	39377	35	Combined 10 blows to achieve > 25mm pen.
						Test Averages			na*	3.5	73	39786		
						(Dry Density from Raw Sheets*)								

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
355+00	7.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.08	384					First 5 blows discounted as "seating" blows.
						10	5	0.15	406	4.4	56	33420	22	
						10 to 20	10	0.24	432	2.6	100	48728	26	Combined 10 blows to achieve >25mm pen.
						25	5	0.28	444	2.4	110	51606	12	Discount, < 20mm travel.
						Test Averages			122*	3.5	72	39377		
						(Dry Density from Raw Sheets*)								
350+00	2.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.13	406					First 5 blows discounted as "seating" blows.
						10	5	0.21	431	5.0	48	30494	25	
						15	5	0.29	454	4.6	53	32372	23	
						20	5	0.36	475	4.2	59	34553	21	
						25	5	0.43	496	4.2	59	34553	21	
						Test Averages			124.6*	4.5	54	32886		
						(Dry Density from Raw Sheets*)								
345+00	3.5 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.08	385					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.16	410	2.5	105	50118	25	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.23	431	2.1	127	56790	21	
						Test Averages			124.6*	2.3	115	53205		
						(Dry Density from Raw Sheets*)								
340+00	4.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.08	385					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	415	3.0	85	43978	30	Combined 10 blows to achieve >25mm pen.
						15 to 25	10	0.26	441	2.6	100	48728	26	Combined 10 blows to achieve >25mm pen.
						Test Averages			129.9*	2.8	92	46208		
						(Dry Density from Raw Sheets*)								
355+00	6.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.15	407					First 5 blows discounted as "seating" blows.
						10	5	0.24	432	5.0	48	30494	25	
						15	5	0.31	455	4.6	53	32372	23	
						20	5	0.38	477	4.4	56	33420	22	
						25	5	0.45	497	4.0	62	35783	20	
						Test Averages			134.1*	4.5	54	32886		
						(Dry Density from Raw Sheets*)								

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
330+00	7.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	372					
						5	5	0.07	394					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	423	2.9	89	45060	29	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.25	447	2.4	110	51606	24	
						Test Averages			132*	2.7	98	48068		
						(Dry Density from Raw Sheets*)								
326+00	3.5 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.07	386					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	416	3.0	85	43978	30	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.25	441	2.5	105	50118	25	Combined 10 blows to achieve > 25mm pen.
						Test Averages			129.9*	2.8	94	46808		
						(Dry Density from Raw Sheets*)								
361+00	3.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.15	406					First 5 blows discounted as "seating" blows.
						10	5	0.24	435	5.8	41	27416	29	
						15	5	0.33	462	5.4	44	28857	27	
						20	5	0.41	486	4.8	50	31399	24	
						25	5	0.52	521	7.0	33	23959	35	
						Test Averages			126.5*	5.8	41	27587		
						(Dry Density from Raw Sheets*)								
355+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.08	387					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.18	416	2.9	89	45060	29	Combined 10 blows to achieve > 25mm pen.
						15 to 25	5	0.26	440	4.8	50	31399	24	
						Test Averages			126.7*	3.9	65	36777		
						(Dry Density from Raw Sheets*)								
350+00	3.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.08	385					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	411	2.6	100	48728	26	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.23	429	1.8	151	63424	18	
						Test Averages			124.9*	2.6	100	48728		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
345+00	8.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	366						
						5	5	0.09	392					First 5 blows discounted as "seating" blows.	
						5 to 25	20	0.17	418	1.3	218	80087	26	Combined 20 blows to achieve > 25mm pen.	
						Test Averages			124.6*	1.3	218	80087			
						(Dry Density from Raw Sheets*)									
340+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	362						
						5	5	0.08	385					First 5 blows discounted as "seating" blows.	
						5 to 15	10	0.16	412	2.7	96	47428	27	Combined 10 blows to achieve > 25mm pen.	
						15 to 25	5	0.28	446	6.8	34	24462	34	Combined 10 blows to achieve > 25mm pen.	
						Test Averages			127.7*	4.8	51	31636			
						(Dry Density from Raw Sheets*)									
335+00	8.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	370						
						5	5	0.11	404					First 5 blows discounted as "seating" blows.	
						10	5	0.20	430	5.2	46	29649	26		
						15	5	0.27	451	4.2	59	34553	21		
						20	5	0.33	472	4.2	59	34553	21		
						25	5	0.39	488	3.2	79	41990	16	Discount, < 20mm travel.	
						Test Averages			128.2*	4.2	59	34553			
						(Dry Density from Raw Sheets*)									
330+00	8.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	357						
						5	5	0.07	377					First 5 blows discounted as "seating" blows.	
						10	5	0.15	403	5.2	46	29649	26		
						15	5	0.25	434	6.2	38	26137	31		
						20	5	0.37	469	7.0	33	23959	35		
						25	5	0.47	500	6.2	38	26137	31		
						Test Averages			123.8*	6.2	38	26289			
						(Dry Density from Raw Sheets*)									
326+00	8.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	358						
						5	5	0.08	382					First 5 blows discounted as "seating" blows.	
						5 to 15	10	0.18	412	3.0	85	43978	30	Combined 10 blows to achieve > 25mm pen.	
						15 to 20	10	0.27	440	2.8	92	46208	28	Combined 10 blows to achieve > 25mm pen.	
						Test Averages			136.6*	2.9	89	45060			
						(Dry Density from Raw Sheets*)									

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
24+00	5.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	361						
						5	5	0.12	397					First 5 blows discounted as "seating" blows.	
						10	5	0.20	421	4.8	50	31399	24		
						10 to 25	15	0.29	448	1.8	151	63424	27	Combined 15 blows to achieve > 25mm pen.	
						Test Averages			136.2*	3.3	77	41074			
						(Dry Density from Raw Sheets*)									
19+00	1.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	389						
						5	5	0.14	431					First 5 blows discounted as "seating" blows.	
						10	5	0.25	464	6.6	35	24991	33		
						15	5	0.38	504	8.0	28	21772	40		
						20	5	0.53	550	9.2	24	19697	46		
						25	5	0.68	595	9.0	25	20009	45		
						Test Averages			133.1*	8.2	28	21390			
						(Dry Density from Raw Sheets*)									
14+00	4.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	362						
						5	5	0.09	390					First 5 blows discounted as "seating" blows.	
						10	5	0.16	412	4.4	56	33420	22		
						15	5	0.24	434	4.4	56	33420	22		
						20	5	0.33	463	5.8	41	27416	29		
						25	5	0.43	494	6.2	38	26137	31		
						Test Averages			125.8*	5.2	46	29649			
						(Dry Density from Raw Sheets*)									
9+00	2.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	367						
						5	5	0.19	424					First 5 blows discounted as "seating" blows.	
						10	5	0.32	464	8.0	28	21772	40		
						15	5	0.41	492	5.6	42	28115	28		
						20	5	0.48	512	4.0	62	35783	20		
						25	5	0.54	531	3.8	65	37123	19	Discount, < 20mm travel.	
						Test Averages			128.1*	5.9	40	27193			
						(Dry Density from Raw Sheets*)									

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes					
4+00	6.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)						
						0	0	0	376										
						5	5	0.23	447					First 5 blows discounted as "seating" blows.					
						10	5	0.47	519	14.4	15	14286	72						
						15	5	0.74	603	16.8	12	12792	84						
						20	5	1.00	682	15.8	13	13367	79						
						25	5	1.52	838	31.2	6	8208	156	Point not included. Inferred to have punched through stabilized base layer.					
						Test Averages			125.9*	15.7	13	13449							
						(Dry Density from Raw Sheets*)													
370+00	10.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)						
						0	0	0	360										
						5	5	0.10	390					First 5 blows discounted as "seating" blows.					
						10	5	0.19	419	5.8	41	27416	29						
						15	5	0.31	454	7.0	33	23959	35						
						20	5	0.43	492	7.6	30	22588	38						
						25	5	0.54	525	6.6	35	24991	33						
						Test Averages			124.7*	6.8	34	24592							
						(Dry Density from Raw Sheets*)													
365+00	13.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)						
						0	0	0	363										
						5	5	0.16	413					First 5 blows discounted as "seating" blows.					
						10	5	0.27	445	6.4	37	25549	32						
						15	5	0.34	467	4.4	56	33420	22						
						20	5	0.41	488	4.2	59	34553	21						
						25	5	0.48	510	4.4	56	33420	22						
						Test Averages			129.8*	4.9	50	31167							
						(Dry Density from Raw Sheets*)													
24+00	3.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)						
						0	0	0	360										
						5	5	0.19	418					First 5 blows discounted as "seating" blows.					
						10	5	0.34	463	9.0	25	20009	45						
						15	5	0.52	517	10.8	20	17558	54						
						20	5	0.68	566	9.8	23	18825	49						
						25	5	0.91	638	14.4	15	14286	72						
						Test Averages			134.2*	11.0	20	17329							
						(Dry Density from Raw Sheets*)													
19+00	7.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)						
						0	0	0	362										
						5	5	0.17	414					First 5 blows discounted as "seating" blows.					
						10	5	0.32	460	9.2	24	19697	46						
						15	5	0.44	495	7.0	33	23959	35						
						20	5	0.53	524	5.8	41	27416	29						
						25	5	0.62	551	5.4	44	28857	27						
						Test Averages			136.2*	6.9	34	24334							
						(Dry Density from Raw Sheets*)													



## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
14+00	3.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.19	421					First 5 blows discounted as "seating" blows.
						10	5	0.30	456	7.0	33	23959	35	
						15	5	0.40	486	6.0	39	26758	30	
						20	5	0.48	509	4.6	53	32372	23	
						25	5	0.53	525	3.2	79	41990	16	Discount, < 20mm travel.
Test Averages									124.5*	5.9	40	27193		
(Dry Density from Raw Sheets*)														
9+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.20	422					First 5 blows discounted as "seating" blows.
						10	5	0.35	468	9.2	24	19697	46	
						15	5	0.50	513	9.0	25	20009	45	
						20	5	0.69	570	11.4	19	16891	57	
						25	5	0.94	647	15.4	14	13615	77	
Test Averages									130.5*	11.3	19	17052		
(Dry Density from Raw Sheets*)														
4+00	7.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					
						5	5	0.13	406					First 5 blows discounted as "seating" blows.
						10	5	0.27	450	8.8	26	20334	44	
						15	5	0.39	486	7.2	32	23480	36	
						20	5	0.48	512	5.2	46	29649	26	
						25	5	0.54	531	3.8	65	37123	19	Discount, < 20mm travel.
Test Averages									124.5*	7.1	33	23797		
(Dry Density from Raw Sheets*)														
370+00	4.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	355					
						5	5	0.17	406					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.26	434	2.8	92	46208	28	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.42	484	5.0	48	30494	50	Combined 10 blows to achieve > 25mm pen.
Test Averages									133.5*	3.9	64	36439		
(Dry Density from Raw Sheets*)														

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
365+00	8.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.16	419					First 5 blows discounted as "seating" blows.
						10	5	0.26	450	6.2	38	26137	31	
						15	5	0.38	485	7.0	33	23959	35	
						20	5	0.51	524	7.8	29	22171	39	
						25	5	0.69	581	11.4	19	16891	57	
						Test Averages			126*	8.1	28	21579		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
56+00	13.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.11	394					First 5 blows discounted as "seating" blows.
						10	5	0.20	422	5.6	42	28115	28	
						15	5	0.32	459	7.4	31	23023	37	
						20	5	0.44	494	7.0	33	23959	35	
						25	5	0.56	533	7.8	29	22171	39	
						Test Averages			137.1*	7.0	33	24082		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
51+00	4.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.15	417					First 5 blows discounted as "seating" blows.
						10	5	0.24	444	5.4	44	28857	27	
						15	5	0.35	476	6.4	37	25549	32	
						20	5	0.44	503	5.4	44	28857	27	
						25	5	0.50	521	3.6	70	38590	18	Discount, < 20mm travel.
						Test Averages			136.1*	5.7	41	27645		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
46+00	8.5 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.17	416					First 5 blows discounted as "seating" blows.
						10	5	0.29	451	7.0	33	23959	35	
						15	5	0.39	483	6.4	37	25549	32	
						20	5	0.50	515	6.4	37	25549	32	
						25	5	0.62	553	7.6	30	22588	38	
						Test Averages			132.9*	6.9	34	24334		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
41+00	6.5 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	357						
						5	5	0.10	386					First 5 blows discounted as "seating" blows.	
						10	5	0.16	406	4.0	62	35783	20		
						15	5	0.23	427	4.2	59	34553	21		
						20	5	0.30	447	4.0	62	35783	20		
						25	5	0.39	475	5.6	42	28115	28		
						<b>Test Averages</b>			135.3*	4.5	55	33151			
						(Dry Density from Raw Sheets*)									
36+00	8.5 LY			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	368						
						5	5	0.19	425					First 5 blows discounted as "seating" blows.	
						10	5	0.30	458	6.6	35	24991	33		
						15	5	0.39	487	5.8	41	27416	29		
						15 to 25	10	0.51	524	3.7	67	37840	37	Combined 10 blows to achieve > 25mm pen.	
						<b>Test Averages</b>			133.3*	5.4	44	28986			
						(Dry Density from Raw Sheets*)									
31+00	7.0 LT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	368						
						5	5	0.11	401					First 5 blows discounted as "seating" blows.	
						10	5	0.18	423	4.4	56	33420	22		
						15	5	0.25	445	4.4	56	33420	22		
						20	5	0.32	465	4.0	62	35783	20		
						25	5	0.40	490	5.0	48	30494	25		
						<b>Test Averages</b>			132.9*	4.5	55	33151			
						(Dry Density from Raw Sheets*)									
56+00	5.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	375						
						5	5	0.09	401					First 5 blows discounted as "seating" blows.	
						5 to 15	10	0.19	434	3.3	77	41074	33		Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.31	469	3.5	72	39377	35	Combined 10 blows to achieve > 25mm pen.	
						<b>Test Averages</b>			143*	3.4	74	40204			
						(Dry Density from Raw Sheets*)									

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
51+00	2.0 RT			8/7/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	372					
						5	5	0.11	405					First 5 blows discounted as "seating" blows.
						10	5	0.21	435	6.0	39	26758	30	
						15	5	0.31	465	6.0	39	26758	30	
						20	5	0.40	495	6.0	39	26758	30	
						25	5	0.47	515	4.0	62	35783	20	
						Test Averages			133.7*	5.5	43	28480		
						(Dry Density from Raw Sheets*)								
		722070.9	1493256.1	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	373					
						5	5	0.10	403					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.22	439	3.6	70	38590	36	Combined 10 blows to achieve > 25mm pen.
						15 to 25	5	0.32	471	6.4	37	25549	32	Combined 10 blows to achieve > 25mm pen.
						Test Averages			128*	5.0	48	30494		
						(Dry Density from Raw Sheets*)								
		722065.2	1493254.6	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.13	400					First 5 blows discounted as "seating" blows.
						10	5	0.23	430	6.0	39	26758	30	
						15	5	0.31	456	5.2	46	29649	26	
						20	5	0.40	483	5.4	44	28857	27	
						25	5	0.49	510	5.4	44	28857	27	
						Test Averages			126.6*	5.5	43	28480		
						(Dry Density from Raw Sheets*)								
		722058.7	1493253.3	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	371					
						5	5	0.10	401					First 5 blows discounted as "seating" blows.
						10	5	0.19	428	5.4	44	28857	27	
						15	5	0.29	460	6.4	37	25549	32	
						20	5	0.39	489	5.8	41	27416	29	
						25	5	0.47	514	5.0	48	30494	25	
						Test Averages			130.8*	5.7	42	27936		
						(Dry Density from Raw Sheets*)								

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722067.9	1493264.7	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.11	399					First 5 blows discounted as "seating" blows.
						10	5	0.19	423	4.8	50	31399	24	
						15	5	0.27	446	4.6	53	32372	23	
						20	5	0.33	466	4.0	62	35783	20	
						25	5	0.41	488	4.4	56	33420	22	
						Test Averages			134.3*	4.5	55	33151		
						(Dry Density from Raw Sheets*)								
		722064.1	1493264.2	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	356					
						5	5	0.15	402					First 5 blows discounted as "seating" blows.
						10	5	0.25	431	5.8	41	27416	29	
						15	5	0.32	455	4.8	50	31399	24	
						20	5	0.40	477	4.4	56	33420	22	
						25	5	0.47	500	4.6	53	32372	23	
						Test Averages			125*	4.9	49	30939		
						(Dry Density from Raw Sheets*)								
		722060.1	1493263.6	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.11	396					First 5 blows discounted as "seating" blows.
						10	5	0.21	425	5.8	41	27416	29	
						15	5	0.30	454	5.8	41	27416	29	
						20	5	0.41	486	6.4	37	25549	32	
						25	5	0.50	515	5.8	41	27416	29	
						Test Averages			125.4*	6.0	40	26919		
						(Dry Density from Raw Sheets*)								
		722066.1	1493274.8	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.11	395					First 5 blows discounted as "seating" blows.
						10	5	0.18	416	4.2	59	34553	21	
						15	5	0.25	436	4.0	62	35783	20	
						15 to 25	10	0.36	470	3.4	74	40204	34	Combined 10 blows to achieve > 25mm pen.
						Test Averages			133.9*	3.9	64	36663		
						(Dry Density from Raw Sheets*)								
		722062.1	1493273.6	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	363					
						5	5	0.12	401					First 5 blows discounted as "seating" blows.
						10	5	0.20	425	4.8	50	31399	24	
						15	5	0.27	446	4.2	59	34553	21	
						15 to 25	10	0.41	487	4.1	60	35155	41	Combined 10 blows to achieve > 25mm pen.
						Test Averages			126.4*	4.4	56	33603		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722058.2	1493273	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	353					
						5	5	0.07	373					First 5 blows discounted as "seating" blows.
						5 to 20	15	0.19	410	2.5	106	50602	37	Combined 15 blows to achieve > 25mm pen.
						25	5	0.23	423	2.6	100	48728	13	Discount, < 20mm travel.
						<b>Test Averages</b>			125.6*	2.5	106	50602		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722064.6	1493284.1	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	357					
						5	5	0.10	389					First 5 blows discounted as "seating" blows.
						10	5	0.17	410	4.2	59	34553	21	
						15	5	0.24	431	4.2	59	34553	21	
						20	5	0.32	454	4.6	53	32372	23	
						25	5	0.39	476	4.4	56	33420	22	
						<b>Test Averages</b>			134.1*	4.4	56	33695		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722060.9	1493283.3	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					
						5	5	0.14	410					First 5 blows discounted as "seating" blows.
						10	5	0.21	432	4.4	56	33420	22	
						15	5	0.29	454	4.4	56	33420	22	
						20	5	0.35	475	4.2	59	34553	21	
						25	5	0.42	495	4.0	62	35783	20	
						<b>Test Averages</b>			127.8*	4.3	58	34262		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722056.2	1493282.7	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.07	383					First 5 blows discounted as "seating" blows.
						5 to 20	15	0.19	419	2.4	110	51606	36	Combined 15 blows to achieve > 25mm pen.
						25	5	0.24	433	2.8	92	46208	14	Discount, < 20mm travel.
						<b>Test Averages</b>			133.4*	2.4	110	51606		
						(Dry Density from Raw Sheets*)								
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722062.2	1493293.8	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	375					
						5	5	0.09	403					First 5 blows discounted as "seating" blows.
						10	5	0.16	424	4.2	59	34553	21	
						10 to 20	10	0.27	457	3.3	77	41074	33	Combined 10 blows to achieve > 25mm pen.
						25	5	0.33	476	3.8	65	37123	19	Discount, < 20mm travel.
						<b>Test Averages</b>			136*	3.8	66	37477		
						(Dry Density from Raw Sheets*)								

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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722059	1493292.7	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	373					
						5	5	0.15	418					First 5 blows discounted as "seating" blows.
						10	5	0.22	440	4.4	56	33420	22	
						15	5	0.30	463	4.6	53	32372	23	
						20	5	0.36	484	4.2	59	34553	21	
						25	5	0.45	510	5.2	46	29649	26	
						Test Averages			129.7*	4.6	53	32372		
						(Dry Density from Raw Sheets*)								
		722054.4	1493291.9	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.07	391					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.17	422	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.28	454	3.2	79	41990	32	Combined 10 blows to achieve > 25mm pen.
						Test Averages			139.9*	3.2	81	42467		
						(Dry Density from Raw Sheets*)								
		722060.7	1493303.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.08	390					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.18	421	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.28	452	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						Test Averages			139.4*	3.1	82	42956		
						(Dry Density from Raw Sheets*)								
		722057.3	1493302.5	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	363					
						5	5	0.17	416					First 5 blows discounted as "seating" blows.
						10	5	0.27	444	5.6	42	28115	28	
						15	5	0.33	464	4.0	62	35783	20	
						20	5	0.41	489	5.0	48	30494	25	
						25	5	0.50	514	5.0	48	30494	25	
						Test Averages			135.7*	4.9	49	30939		
						(Dry Density from Raw Sheets*)								
		722052.8	1493301.5	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.12	398					First 5 blows discounted as "seating" blows.
						5 to 15	10	0.22	430	3.2	79	41990	32	Combined 10 blows to achieve > 25mm pen.
						15 to 25	10	0.32	461	3.1	82	42956	31	Combined 10 blows to achieve > 25mm pen.
						Test Averages			131.7*	3.2	81	42467		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722058.9	1493313.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	374						
						5	5	0.09	401					First 5 blows discounted as "seating" blows.	
						10	5	0.16	423	4.4	56	33420	22		
						15	5	0.23	445	4.4	56	33420	22		
						20	5	0.30	465	4.0	62	35783	20		
						25	5	0.37	486	4.2	59	34553	21		
						Test Averages			132.1*	4.3	58	34262			
						(Dry Density from Raw Sheets*)									
		722055.4	1493312	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	361						
						5	5	0.11	394					First 5 blows discounted as "seating" blows.	
						10	5	0.19	420	5.2	46	29649	26		
						15	5	0.26	441	4.2	59	34553	21		
						20	5	0.34	466	5.0	48	30494	25		
						25	5	0.42	490	4.8	50	31399	24		
						Test Averages			127.6*	4.8	50	31399			
						(Dry Density from Raw Sheets*)									
		722050.5	1493311.3	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	411						
						5	5	0.08	435					First 5 blows discounted as "seating" blows.	
						10	5	0.15	457	4.4	56	33420	22		
						15	5	0.23	481	4.8	50	31399	24		
						20	5	0.23	481	0.0				Point not included. Inferred to be a recording error.	
						25	5	0.31	507	5.2	46	29649	26		
						Test Averages			124.5*	4.8	50	31399			
						(Dry Density from Raw Sheets*)									
		722057.1	1493323.1	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	365						
						5	5	0.15	411					First 5 blows discounted as "seating" blows. DCP Reading reported as "138". Appears to be a typo. Changed to 438.	
						10	5	0.24	438	5.4	44	28857	27		
						15	5	0.32	463	5.0	48	30494	25		
						20	5	0.40	487	4.8	50	31399	24		
						25	5	0.49	513	5.2	46	29649	26		
						Test Averages			132.2*	5.1	47	30064			
						(Dry Density from Raw Sheets*)									
		722053.4	1493321.9	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	363						
						5	5	0.13	404					First 5 blows discounted as "seating" blows.	
						10	5	0.22	430	5.2	46	29649	26		
						15	5	0.32	460	6.0	39	26758	30		
						20	5	0.41	487	5.4	44	28857	27		
						25	5	0.49	513	5.2	46	29649	26		
						Test Averages			137.5*	5.5	44	28667			
						(Dry Density from Raw Sheets*)									



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Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722049.4	1493321.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	373						
						5	5	0.12	411					First 5 blows discounted as "seating" blows.	
						10	5	0.22	440	5.8	41	27416	29		
						15	5	0.29	462	4.4	56	33420	22		
						20	5	0.38	489	5.4	44	28857	27		
						25	5	0.46	514	5.0	48	30494	25		
						Test Averages			133.8*	5.2	47	29855			
						(Dry Density from Raw Sheets*)									
		722055.6	1493332.8	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	366						
						5	5	0.12	403					First 5 blows discounted as "seating" blows.	
						10	5	0.19	424	4.2	59	34553	21		
						15	5	0.27	448	4.8	50	31399	24		
						20	5	0.34	471	4.6	53	32372	23		
						25	5	0.42	494	4.6	53	32372	23		
						Test Averages			143.4*	4.6	54	32627			
						(Dry Density from Raw Sheets*)									
		722051.4	1493331.9	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	360						
						5	5	0.15	405					First 5 blows discounted as "seating" blows.	
						10	5	0.25	435	6.0	39	26758	30		
						15	5	0.34	463	5.6	42	28115	28		
						20	5	0.43	490	5.4	44	28857	27		
						25	5	0.53	521	6.2	38	26137	31		
						Test Averages			132.9*	5.8	41	27416			
						(Dry Density from Raw Sheets*)									
		722047.5	1493331.2	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	366						
						5	5	0.12	404					First 5 blows discounted as "seating" blows.	
						10	5	0.21	430	5.2	46	29649	26		
						15	5	0.28	452	4.4	56	33420	22		
						20	5	0.36	477	5.0	48	30494	25		
						25	5	0.44	501	4.8	50	31399	24		
						Test Averages			132.9*	4.9	50	31167			
						(Dry Density from Raw Sheets*)									

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
		722054	1493342.7	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	367						
						5	5	0.14	409					First 5 blows discounted as "seating" blows.	
						10	5	0.23	436	5.4	44	28857	27		
						15	5	0.31	461	5.0	48	30494	25		
						20	5	0.40	488	5.4	44	28857	27		
						25	5	0.49	517	5.8	41	27416	29		
						Test Averages			134.5*	5.4	44	28857			
						(Dry Density from Raw Sheets*)									
		722049.8	1493341.7	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	364						
						5	5	0.13	404					First 5 blows discounted as "seating" blows.	
						10	5	0.24	438	6.8	34	24462	34		
						15	5	0.33	466	5.6	42	28115	28		
						20	5	0.43	495	5.8	41	27416	29		
						25	5	0.51	520	5.0	48	30494	25		
						Test Averages			143.9*	5.8	41	27416			
						(Dry Density from Raw Sheets*)									
		722046	1493341.1	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	362						
						5	5	0.12	400					First 5 blows discounted as "seating" blows.	
						10	5	0.21	427	5.4	44	28857	27		
						15	5	0.28	447	4.0	62	35783	20		
						20	5	0.36	471	4.8	50	31399	24		
						25	5	0.43	492	4.2	59	34553	21		
						Test Averages			137.6*	4.6	53	32372			
						(Dry Density from Raw Sheets*)									
		722052.1	1493352.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	368						
						5	5	0.13	407					First 5 blows discounted as "seating" blows.	
						10	5	0.21	431	4.8	50	31399	24		
						15	5	0.28	453	4.4	56	33420	22		
						20	5	0.35	476	4.6	53	32372	23		
						25	5	0.44	501	5.0	48	30494	25		
						Test Averages			134.2*	4.7	52	31877			
						(Dry Density from Raw Sheets*)									
		722048.5	1493352.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)		
						0	0	0	363						
						5	5	0.12	400					First 5 blows discounted as "seating" blows.	
						10	5	0.22	430	6.0	39	26758	30		
						15	5	0.31	457	5.4	44	28857	27		
						20	5	0.40	484	5.4	44	28857	27		
						25	5	0.49	512	5.6	42	28115	28		
						Test Averages			137.7*	5.6	42	28115			
						(Dry Density from Raw Sheets*)									

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722044.4	1493350.9	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					First 5 blows discounted as "seating" blows.
						5	5	0.13	404					
						10	5	0.22	432	5.6	42	28115	28	
						15	5	0.31	458	5.2	46	29649	26	
						20	5	0.39	482	4.8	50	31399	24	
						25	5	0.46	504	4.4	56	33420	22	
						<b>Test Averages</b>			139.9*	5.0	48	30494		
(Dry Density from Raw Sheets*)														
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722050.6	1493362.4	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					First 5 blows discounted as "seating" blows.
						5	5	0.14	410					
						10	5	0.23	438	5.6	42	28115	28	
						15	5	0.32	464	5.2	46	29649	26	
						20	5	0.40	490	5.2	46	29649	26	
						25	5	0.50	518	5.6	42	28115	28	
						<b>Test Averages</b>			132.7*	5.4	44	28857		
(Dry Density from Raw Sheets*)														
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722046.8	1493361.6	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					First 5 blows discounted as "seating" blows.
						5	5	0.17	412					
						10	5	0.28	446	6.8	34	24462	34	
						15	5	0.40	482	7.2	32	23480	36	
						20	5	0.51	515	6.6	35	24991	33	
						25	5	0.60	543	5.6	42	28115	28	
						<b>Test Averages</b>			134.9*	6.6	36	25128		
(Dry Density from Raw Sheets*)														
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
		722042.4	1493360.9	8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	363					First 5 blows discounted as "seating" blows.
						5	5	0.12	400					
						10	5	0.21	427	5.4	44	28857	27	
						15	5	0.29	452	5.0	48	30494	25	
						20	5	0.38	478	5.2	46	29649	26	
						25	5	0.47	505	5.4	44	28857	27	
						<b>Test Averages</b>			134*	5.3	46	29446		
(Dry Density from Raw Sheets*)														

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
237+00	10.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					
						5	5	0.13	406					First 5 blows discounted as "seating" blows.
						10	5	0.22	434	5.6	42	28115	28	
						15	5	0.31	461	5.4	44	28857	27	
						20	5	0.37	481	4.0	62	35783	20	
						25	5	0.46	508	5.4	44	28857	27	
						Test Averages			135.1*	5.1	47	30064		
						(Dry Density from Raw Sheets*)								
242+00	4.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.14	404					First 5 blows discounted as "seating" blows.
						10	5	0.25	437	6.6	35	24991	33	
						15	5	0.34	465	5.6	42	28115	28	
						20	5	0.41	485	4.0	62	35783	20	
						25	5	0.48	507	4.4	56	33420	22	
						Test Averages			134.6*	5.2	47	29855		
						(Dry Density from Raw Sheets*)								
247+00	7.5 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.13	401					First 5 blows discounted as "seating" blows.
						10	5	0.21	424	4.6	53	32372	23	
						15	5	0.28	445	4.2	59	34553	21	
						20	5	0.35	469	4.8	50	31399	24	
						25	5	0.43	493	4.8	50	31399	24	
						Test Averages			136.8*	4.6	53	32372		
						(Dry Density from Raw Sheets*)								
251+00	5.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.14	413					First 5 blows discounted as "seating" blows.
						10	5	0.22	437	4.8	50	31399	24	
						15	5	0.29	458	4.2	59	34553	21	
						20	5	0.38	486	5.6	42	28115	28	
						25	5	0.47	513	5.4	44	28857	27	
						Test Averages			135*	5.0	48	30494		
						(Dry Density from Raw Sheets*)								
256+00	3.5 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.14	414					First 5 blows discounted as "seating" blows.
						10	5	0.25	446	6.4	37	25549	32	
						15	5	0.35	476	6.0	39	26758	30	
						20	5	0.46	510	6.8	34	24462	34	
						25	5	0.57	543	6.6	35	24991	33	
						Test Averages			133.8*	6.5	36	25406		
						(Dry Density from Raw Sheets*)								

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
261+00	11.5 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.10	395					First 5 blows discounted as "seating" blows.
						10	5	0.18	420	5.0	48	30494	25	
						15	5	0.25	442	4.4	56	33420	22	
						20	5	0.32	464	4.4	56	33420	22	
						25	5	0.40	487	4.6	53	32372	23	
				Test Averages					134.8*	4.6	53	32372		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
263+50	7.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.11	403					First 5 blows discounted as "seating" blows.
						10	5	0.20	431	5.6	42	28115	28	
						15	5	0.28	456	5.0	48	30494	25	
						20	5	0.37	482	5.2	46	29649	26	
						25	5	0.44	505	4.6	53	32372	23	
				Test Averages					132.3*	5.1	47	30064		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
268+50	3.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.18	425					First 5 blows discounted as "seating" blows.
						10	5	0.31	466	8.2	28	21390	41	
						15	5	0.45	506	8.0	28	21772	40	
						20	5	0.57	545	7.8	29	22171	39	
						25	5	0.67	575	6.0	39	26758	30	
				Test Averages					132.3*	7.5	31	22803		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
268+50	3.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	368					
						5	5	0.12	406					First 5 blows discounted as "seating" blows.
						10	5	0.21	431	5.0	48	30494	25	
						15	5	0.29	455	4.8	50	31399	24	
						20	5	0.37	481	5.2	46	29649	26	
						25	5	0.46	508	5.4	44	28857	27	
				Test Averages					132.3*	5.1	47	30064		
				(Dry Density from Raw Sheets*)										

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
273+50	8.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.12	397					First 5 blows discounted as "seating" blows.
						10	5	0.19	420	4.6	53	32372	23	
						10 to 20	10	0.31	455	3.5	72	39377	35	Combined 10 blows to achieve > 25mm pen.
						25	5	0.36	472	3.4	74	40204	17	Discount, < 20mm travel.
						<b>Test Averages</b>			142.2*	4.1	61	35466		
						(Dry Density from Raw Sheets*)								
278+50	12.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.13	405					First 5 blows discounted as "seating" blows.
						10	5	0.22	432	5.4	44	28857	27	
						15	5	0.29	454	4.4	56	33420	22	
						20	5	0.36	476	4.4	56	33420	22	
						25	5	0.45	502	5.2	46	29649	26	
						<b>Test Averages</b>			136.8*	4.9	50	31167		
						(Dry Density from Raw Sheets*)								
263+00	12.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	371					
						5	5	0.13	410					First 5 blows discounted as "seating" blows.
						10	5	0.22	438	5.6	42	28115	28	
						15	5	0.31	466	5.6	42	28115	28	
						20	5	0.39	490	4.8	50	31399	24	
						25	5	0.48	516	5.2	46	29649	26	
						<b>Test Averages</b>			133.1*	5.3	45	29247		
						(Dry Density from Raw Sheets*)								
268+00	7.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.14	407					First 5 blows discounted as "seating" blows.
						10	5	0.25	440	6.6	35	24991	33	
						15	5	0.34	468	5.6	42	28115	28	
						20	5	0.43	497	5.8	41	27416	29	
						25	5	0.52	525	5.6	42	28115	28	
						<b>Test Averages</b>			133.3*	5.9	40	27083		
						(Dry Density from Raw Sheets*)								

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
273+00	3.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.13	400					First 5 blows discounted as "seating" blows.
						10	5	0.21	424	4.8	50	31399	24	
						15	5	0.30	450	5.2	46	29649	26	
						20	5	0.37	473	4.6	53	32372	23	
						25	5	0.45	497	4.8	50	31399	24	
				Test Averages					139.6*	4.9	50	31167		
				(Dry Density from Raw Sheets*)										
278+00	10.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.17	423					First 5 blows discounted as "seating" blows.
						10	5	0.31	465	8.4	27	21024	42	
						15	5	0.44	503	7.6	30	22588	38	
						20	5	0.52	530	5.4	44	28857	27	
						25	5	0.60	552	4.4	56	33420	22	
				Test Averages					142.1*	6.5	36	25406		
				(Dry Density from Raw Sheets*)										
322+00	12.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.13	404					First 5 blows discounted as "seating" blows.
						10	5	0.23	434	6.0	39	26758	30	
						15	5	0.31	458	4.8	50	31399	24	
						20	5	0.40	486	5.6	42	28115	28	
						25	5	0.49	512	5.2	46	29649	26	
				Test Averages					138.7*	5.4	44	28857		
				(Dry Density from Raw Sheets*)										
317+00	4.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.12	403					First 5 blows discounted as "seating" blows.
						10	5	0.22	431	5.6	42	28115	28	
						15	5	0.30	455	4.8	50	31399	24	
						20	5	0.37	477	4.4	56	33420	22	
						25	5	0.45	502	5.0	48	30494	25	
				Test Averages					135*	5.0	49	30714		
				(Dry Density from Raw Sheets*)										

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
312+00	11.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.15	415					First 5 blows discounted as "seating" blows.
						10	5	0.28	456	8.2	28	21390	41	
						15	5	0.40	493	7.4	31	23023	37	
						20	5	0.51	525	6.4	37	25549	32	
						25	5	0.59	550	5.0	48	30494	25	
				Test Averages					141.2*	6.8	34	24592		
				(Dry Density from Raw Sheets*)										
307+00	7.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					
						5	5	0.13	407					First 5 blows discounted as "seating" blows.
						10	5	0.23	438	6.2	38	26137	31	
						15	5	0.33	469	6.2	38	26137	31	
						20	5	0.43	498	5.8	41	27416	29	
						25	5	0.53	528	6.0	39	26758	30	
				Test Averages					141.7*	6.1	39	26600		
				(Dry Density from Raw Sheets*)										
302+00	8.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	364					
						5	5	0.13	405					First 5 blows discounted as "seating" blows.
						10	5	0.23	433	5.6	42	28115	28	
						15	5	0.31	458	5.0	48	30494	25	
						20	5	0.39	483	5.0	48	30494	25	
						25	5	0.47	507	4.8	50	31399	24	
				Test Averages					140.6*	5.1	47	30064		
				(Dry Density from Raw Sheets*)										
297+00	10.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	372					
						5	5	0.14	414					First 5 blows discounted as "seating" blows.
						10	5	0.26	451	7.4	31	23023	37	
						15	5	0.38	489	7.6	30	22588	38	
						20	5	0.46	513	4.8	50	31399	24	
						25	5	0.55	540	5.4	44	28857	27	
				Test Averages					139.9*	6.3	37	25839		
				(Dry Density from Raw Sheets*)										



Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
292+00	3.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.11	400					First 5 blows discounted as "seating" blows.
						10	5	0.20	427	5.4	44	28857	27	
						15	5	0.28	451	4.8	50	31399	24	
						20	5	0.35	473	4.4	56	33420	22	
						25	5	0.43	495	4.4	56	33420	22	
				Test Averages					137.2*	4.8	51	31636		
				(Dry Density from Raw Sheets*)										
322+00	2.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.19	420					First 5 blows discounted as "seating" blows.
						10	5	0.34	465	9.0	25	20009	45	
						15	5	0.50	513	9.6	23	19105	48	
						20	5	0.62	550	7.4	31	23023	37	
						25	5	0.72	580	6.0	39	26758	30	
				Test Averages					132.1*	8.0	28	21772		
				(Dry Density from Raw Sheets*)										
317+00	4.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.16	419					First 5 blows discounted as "seating" blows.
						10	5	0.27	453	6.8	34	24462	34	
						15	5	0.39	490	7.4	31	23023	37	
						20	5	0.50	521	6.2	38	26137	31	
						25	5	0.59	550	5.8	41	27416	29	
				Test Averages					125.9*	6.6	36	25128		
				(Dry Density from Raw Sheets*)										
312+00	2.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	363					
						5	5	0.15	410					First 5 blows discounted as "seating" blows.
						10	5	0.24	437	5.4	44	28857	27	
						15	5	0.33	464	5.4	44	28857	27	
						20	5	0.43	494	6.0	39	26758	30	
						25	5	0.52	521	5.4	44	28857	27	
				Test Averages					128.7*	5.6	43	28296		
				(Dry Density from Raw Sheets*)										

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
307+00	5.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.17	418					First 5 blows discounted as "seating" blows.
						10	5	0.29	453	7.0	33	23959	35	
						15	5	0.45	502	9.8	23	18825	49	
						20	5	0.57	540	7.6	30	22588	38	
						25	5	0.64	561	4.2	59	34553	21	
				Test Averages					133.2*	7.2	32	23598		
				(Dry Density from Raw Sheets*)										
302+00	2.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.13	409					First 5 blows discounted as "seating" blows.
						10	5	0.22	436	5.4	44	28857	27	
						15	5	0.31	463	5.4	44	28857	27	
						20	5	0.40	491	5.6	42	28115	28	
						25	5	0.49	520	5.8	41	27416	29	
				Test Averages					132.9*	5.6	43	28296		
				(Dry Density from Raw Sheets*)										
297+00	6.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	373					
						5	5	0.13	413					First 5 blows discounted as "seating" blows.
						10	5	0.23	443	6.0	39	26758	30	
						15	5	0.32	471	5.6	42	28115	28	
						20	5	0.39	493	4.4	56	33420	22	
						25	5	0.48	519	5.2	46	29649	26	
				Test Averages					135*	5.3	45	29247		
				(Dry Density from Raw Sheets*)										
292+00	7.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	367					
						5	5	0.19	426					First 5 blows discounted as "seating" blows.
						10	5	0.36	477	10.2	22	18292	51	
						15	5	0.52	525	9.6	23	19105	48	
						20	5	0.62	557	6.4	37	25549	32	
						25	5	0.69	578	4.2	59	34553	21	
				Test Averages					141*	7.6	30	22588		
				(Dry Density from Raw Sheets*)										

Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
361+00	6.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	368					
						5	5	0.15	414					First 5 blows discounted as "seating" blows.
						10	5	0.26	446	6.4	37	25549	32	
						15	5	0.38	483	7.4	31	23023	37	
						20	5	0.48	513	6.0	39	26758	30	
						25	5	0.56	539	5.2	46	29649	26	
				Test Averages					na*	6.3	37	25987		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
355+00	7.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	363					
						5	5	0.13	403					First 5 blows discounted as "seating" blows.
						10	5	0.23	434	6.2	38	26137	31	
						15	5	0.32	461	5.4	44	28857	27	
						20	5	0.40	486	5.0	48	30494	25	
						25	5	0.49	513	5.4	44	28857	27	
				Test Averages					122*	5.5	43	28480		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
350+00	2.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	371					
						5	5	0.13	412					First 5 blows discounted as "seating" blows.
						10	5	0.24	443	6.2	38	26137	31	
						15	5	0.34	475	6.4	37	25549	32	
						20	5	0.44	506	6.2	38	26137	31	
						25	5	0.52	528	4.4	56	33420	22	
				Test Averages					124.6*	5.8	41	27416		
				(Dry Density from Raw Sheets*)										
Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
345+00	3.5 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.16	414					First 5 blows discounted as "seating" blows.
						10	5	0.28	451	7.4	31	23023	37	
						15	5	0.39	485	6.8	34	24462	34	
						20	5	0.50	516	6.2	38	26137	31	
						25	5	0.58	541	5.0	48	30494	25	
				Test Averages					124.6*	6.4	37	25693		
				(Dry Density from Raw Sheets*)										

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
340+00	4.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.13	404					First 5 blows discounted as "seating" blows.
						10	5	0.21	430	5.2	46	29649	26	
						15	5	0.29	453	4.6	53	32372	23	
						20	5	0.37	478	5.0	48	30494	25	
						25	5	0.46	505	5.4	44	28857	27	
<b>Test Averages</b>									129.9*	5.1	48	30277		
(Dry Density from Raw Sheets*)														
355+00	6.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	360					
						5	5	0.12	396					First 5 blows discounted as "seating" blows.
						10	5	0.20	421	5.0	48	30494	25	
						15	5	0.27	442	4.2	59	34553	21	
						20	5	0.35	466	4.8	50	31399	24	
						25	5	0.43	490	4.8	50	31399	24	
<b>Test Averages</b>									134.1*	4.7	52	31877		
(Dry Density from Raw Sheets*)														
330+00	7.0 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	365					
						5	5	0.12	401					First 5 blows discounted as "seating" blows.
						10	5	0.22	432	6.2	38	26137	31	
						15	5	0.31	460	5.6	42	28115	28	
						20	5	0.41	491	6.2	38	26137	31	
						25	5	0.51	521	6.0	39	26758	30	
<b>Test Averages</b>									132*	6.0	39	26758		
(Dry Density from Raw Sheets*)														
326+00	3.5 LT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	369					
						5	5	0.13	408					First 5 blows discounted as "seating" blows.
						10	5	0.24	442	6.8	34	24462	34	
						15	5	0.32	468	5.2	46	29649	26	
						20	5	0.41	494	5.2	46	29649	26	
						25	5	0.49	518	4.8	50	31399	24	
<b>Test Averages</b>									129.9*	5.5	43	28480		
(Dry Density from Raw Sheets*)														

## Appendix J – Resilient Modulus Data Reduction for Essex-Richmond STP 2931(1)

Station	Offset	Northing	Easting	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
361+00	3.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	369					
						5	5	0.08	394					First 5 blows discounted as "seating" blows.
						10	5	0.16	417	4.6	53	32372	23	
						10 to 20	10	0.28	455	3.8	65	37123	38	Combined 10 blows to achieve > 25mm pen.
						25	5	0.35	477	4.4	56	33420	22	
						Test Averages			126.5*	4.3	58	34166		
						(Dry Density from Raw Sheets*)								
355+00	4.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	361					
						5	5	0.11	394					First 5 blows discounted as "seating" blows.
						10	5	0.20	423	5.8	41	27416	29	
						15	5	0.29	448	5.0	48	30494	25	
						20	5	0.36	470	4.4	56	33420	22	
						25	5	0.44	496	5.2	46	29649	26	
						Test Averages			126.7*	5.1	47	30064		
						(Dry Density from Raw Sheets*)								
350+00	3.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	366					
						5	5	0.14	408					First 5 blows discounted as "seating" blows.
						10	5	0.23	437	5.8	41	27416	29	
						15	5	0.32	463	5.2	46	29649	26	
						20	5	0.41	490	5.4	44	28857	27	
						25	5	0.49	516	5.2	46	29649	26	
						Test Averages			124.9*	5.4	44	28857		
						(Dry Density from Raw Sheets*)								
345+00	8.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	370					
						5	5	0.10	402					First 5 blows discounted as "seating" blows.
						10	5	0.17	422	4.0	62	35783	20	
						15	5	0.24	444	4.4	56	33420	22	
						15 to 25	10	0.35	478	3.4	74	40204	34	Combined 10 blows to achieve > 25mm pen.
						Test Averages			124.6*	3.9	63	36217		
						(Dry Density from Raw Sheets*)								
340+00	4.0 RT			8/15/2018	8kg	(#)	(#)	(ft)	(mm)	mm/blow	(%)	(psi)	(mm)	
						0	0	0	362					
						5	5	0.12	400					First 5 blows discounted as "seating" blows.
						10	5	0.21	425	5.0	48	30494	25	
						15	5	0.30	452	5.4	44	28857	27	
						20	5	0.39	480	5.6	42	28115	28	
						25	5	0.46	501	4.2	59	34553	21	
						Test Averages			127.7*	5.1	48	30277		
						(Dry Density from Raw Sheets*)								



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX K – RESILIENT MODULUS DATA REDUCTION FOR JOHNSON-MORRISTOWN STP 2919(1)



GEODesign, Inc.  
85 Granite Shed Lane, Unit 1  
Montpelier, VT 05602  
(802) 674-2033

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
M346+00	4 L	9/16/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				5	5	0.19	57						First 5 blows discounted as "seating" blows.	
				10	5	0.32	98	2	16.4	13	13015	41		
				15	5	0.45	138	2	16.0	13	13247	40		
				20	5	0.61	186	2	19.2	11	11624	48		
				Test Averages							17.2	12	12578	
M346+00	4 R	9/16/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				5	5	0.17	51						First 5 blows discounted as "seating" blows.	
				10	5	0.28	84	2	13.2	16	15206	33		
				15	5	0.41	124	2	16.0	13	13247	40		
				20	5	0.54	166	2	16.8	12	12792	42		
				Test Averages							15.3	14	13658	
M346+00	10 L	9/16/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				5	5	0.08	23						First 5 blows discounted as "seating" blows.	
				10	5	0.16	48	2	10.0	22	18554	25		
				20	10	0.28	85	2	7.4	31	23023	37		
				25	5	0.35	106	2	8.4	27	21024	21		
				30	5	0.48	147	2	16.4	13	13015	41		
				35	5	0.64	194	2	18.8	11	11801	47		
				Test Averages							12.2	18	16089	
M346+00	10 R	9/16/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				5	5	0.11	33						First 5 blows discounted as "seating" blows.	
				10	5	0.20	60	2	10.8	20	17558	27		
				20	10	0.33	100	2	8.0	28	21772	40		
				30	10	0.46	140	2	8.0	28	21772	40		
				35	5	0.54	166	2	10.4	21	18040	26		
				Test Averages							9.3	24	19545	

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H103+00	4 L	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.06	17						First 5 blows discounted as "seating" blows.
				25	20	0.18	55	2	3.8	65	37123	38	
				35	10	0.25	75	2	4.0	62	35783	20	
				45	10	0.32	99	2	4.8	50	31399	24	
				55	10	0.40	122	2	4.6	53	32372	23	
				65	10	0.52	157	2	7.0	33	23959	35	
			Test Averages						4.8	50	31213		
H103+00	4 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				7	7	0.09	28						First 7 blows discounted as "seating" blows.
				14	7	0.16	50	2	6.3	37	25881	22	
				28	14	0.26	78	2	4.0	62	35783	28	
				42	14	0.36	111	2	4.7	51	31808	33	
				56	14	0.47	143	2	4.6	53	32517	32	
				63	7	0.51	156	2	3.7	67	37735	13	Discount, < 20mm travel.
			Test Averages						4.9	49	30971		
H103+00	10 L	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	33						First 10 blows discounted as "seating" blows.
				30	20	0.22	68	2	3.5	72	39377	35	
				40	10	0.32	97	2	5.8	41	27416	29	
				50	10	0.40	121	2	4.8	50	31399	24	
				60	10	0.48	147	2	5.2	46	29649	26	
				70	10	0.58	177	2	6.0	39	26758	30	
			Test Averages						5.1	48	30234		
H103+00	10 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	41						First 10 blows discounted as "seating" blows.
				20	10	0.26	78	2	7.4	31	23023	37	
				30	10	0.39	120	2	8.4	27	21024	42	
				40	10	0.52	160	2	8.0	28	21772	40	
			Test Averages						7.9	29	21903		
H113+00	4 L	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	34						First 10 blows discounted as "seating" blows.
				20	10	0.21	63	2	5.8	41	27416	29	
				30	10	0.32	98	2	7.0	33	23959	35	
				40	10	0.52	159	2	12.2	18	16089	61	Inferred to have punched through stabilized base. Point not included.
			Test Averages						6.4	37	25549		



## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H113+00	4 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				7	7	0.08	23						First 7 blows discounted as "seating" blows.
				21	14	0.19	59	2	5.1	47	29884	36	
				35	14	0.27	82	2	3.3	77	41202	23	
				49	14	0.36	109	2	3.9	64	36728	27	
				63	14	0.44	134	2	3.6	70	38811	25	
				70	7	0.46	139	2	1.4	196	74852	5	Discount < 20mm per reading.
			Test Averages						4.0	62	36014		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H113+00	10 L	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	41						First 10 blows discounted as "seating" blows.
				20	10	0.26	78	2	7.4	31	23023	37	
				30	10	0.39	120	2	8.4	27	21024	42	
				40	10	0.52	160	2	8.0	28	21772	40	
			Test Averages						7.9	29	21903		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H113+00	10 R	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	26						First 10 blows discounted as "seating" blows.
				20	10	0.15	45	2	3.8	65	37123	19	
				30	10	0.22	66	2	4.2	59	34553	21	
				40	10	0.28	86	2	4.0	62	35783	20	
				50	10	0.43	130	2	8.8	26	20334	44	
				60	10	0.52	158	2	5.6	42	28115	28	
			Test Averages						5.3	45	29326		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H132+00	4 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				7	7	0.09	27						First 7 blows discounted as "seating" blows.
				21	14	0.18	56	2	4.1	59	34894	29	
				28	7	0.26	78	2	6.3	37	25881	22	
				35	7	0.33	101	2	6.6	35	25069	23	
				42	7	0.42	127	2	7.4	31	22960	26	
				56	14	0.51	154	2	3.9	64	36728	27	
			Test Averages						5.7	42	27911		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H132+00	4 R	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	20						First 10 blows discounted as "seating" blows.
				20	10	0.15	45	2	5.0	48	30494	25	
				40	20	0.27	83	2	3.8	65	37123	38	
				50	10	0.36	109	2	5.2	46	29649	26	
				60	10	0.45	136	2	5.4	44	28857	27	
				70	10	0.56	172	2	7.2	32	23480	36	
			Test Averages						5.3	45	29168		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H132+00	10 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				7	7	0.14	44						First 7 blows discounted as "seating" blows.
				14	7	0.25	76	2	9.1	24	19785	32	
				21	7	0.34	103	2	7.7	30	22347	27	
				28	7	0.42	128	2	7.1	32	23615	25	
				42	14	0.52	160	2	4.6	53	32517	32	
			Test Averages						7.1	32	23615		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H132+00	10 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.05	16						First 10 blows discounted as "seating" blows.
				20	10	0.12	37	2	4.2	59	34553	21	
				40	20	0.23	71	2	3.4	74	40204	34	
				60	20	0.36	110	2	3.9	64	36439	39	
				70	10	0.44	133	2	4.6	53	32372	23	
				80	10	0.51	155	2	4.4	56	33420	22	
			Test Averages						4.1	60	35155		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H142+00	4 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	18						First 10 blows discounted as "seating" blows.
				30	20	0.19	58	2	4.0	62	35783	40	
				40	10	0.27	83	2	5.0	48	30494	25	
				50	10	0.36	109	2	5.2	46	29649	26	
				60	10	0.44	134	2	5.0	48	30494	25	
				70	10	0.52	160	2	5.2	46	29649	26	
			Test Averages						4.9	49	31030		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
H142+00	4 R	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				10	10	0.15	46						First 10 blows discounted as "seating" blows.	
				20	10	0.25	75	2	5.8	41	27416	29		
				30	10	0.32	97	2	4.4	56	33420	22		
				40	10	0.38	117	2	4.0	62	35783	20		
				50	10	0.46	141	2	4.8	50	31399	24		
				60	10	0.54	166	2	5.0	48	30494	25		
			Test Averages							4.8	50	31399	Pen. / Reading	
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	Depth	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
H142+00	10 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)			
				10	10	0.05	16							
				20	10	0.12	37	2	4.2	59	34553	21		
				40	20	0.23	71	2	3.4	74	40204	34	H142+00 10L & 10R have identical data. This is believed to be a reporting error. It is unclear which location these readings are actually from.	
				50	10	0.32	98	2	5.4	44	28857	27		
				70	20	0.44	133	2	3.5	72	39377	35		
				80	10	0.51	155	2	4.4	56	33420	22		
			Test Averages							4.2	59	34672		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	Depth	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
H142+00	10 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)			
				10	10	0.05	16							
				20	10	0.12	37	2	4.2	59	34553	21		
				40	20	0.23	71	2	3.4	74	40204	34	H142+00 10L & 10R have identical data. This is believed to be a reporting error. It is unclear which location these readings are actually from.	
				50	10	0.32	98	2	5.4	44	28857	27		
				70	20	0.43	133	2	3.5	72	39377	35		
				80	10	0.51	155	2	4.4	56	33420	22		
			Test Averages							4.2	59	34672		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes	
H152+00	4 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)		
				0	0	0	0							
				10	10	0.09	27						First 10 blows discounted as "seating" blows.	
				20	10	0.15	47	2	4.0	62	35783	20		
				30	10	0.23	70	2	4.6	53	32372	23		
				50	20	0.35	106	2	3.6	70	38590	36		
				60	10	0.42	129	2	4.6	53	32372	23		
				70	10	0.51	156	2	5.4	44	28857	27		
			Test Averages							4.4	55	33204		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H152+00	4 R	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	34						First 10 blows discounted as "seating" blows.
				20	10	0.21	63	2	5.8	41	27416	29	
				30	10	0.30	91	2	5.6	42	28115	28	
				40	10	0.40	123	2	6.4	37	25549	32	
				50	10	0.52	157	2	6.8	34	24462	34	
			Test Averages						6.2	38	26289		
H152+00	10 L	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				7	7	0.08	23						First 7 blows discounted as "seating" blows.
				21	14	0.19	58	2	5.0	48	30494	35	
				35	14	0.29	89	2	4.4	55	33266	31	
				49	14	0.42	129	2	5.7	41	27711	40	
				56	7	0.48	147	2	5.1	47	29884	18	
			Test Averages						5.0	48	30288		
H152+00	10 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	33						First 10 blows discounted as "seating" blows.
				30	20	0.27	81	2	4.8	50	31399	48	
				40	10	0.35	107	2	5.2	46	29649	26	
				50	10	0.44	134	2	5.4	44	28857	27	
				60	10	0.53	162	2	5.6	42	28115	28	
			Test Averages						5.3	46	29446		
H122+00	4 L	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	17						First 10 blows discounted as "seating" blows.
				40	30	0.16	50	2	2.2	121	54927	33	
				70	30	0.25	75	2	1.7	165	67022	25	
				90	20	0.34	103	2	2.8	92	46208	28	
				110	20	0.41	125	2	2.2	121	54927	22	
				130	20	0.49	148	2	2.3	115	53205	23	
				140	10	0.52	160	2	2.4	110	51606	12	
			Test Averages						2.2	119	54338		
H122+00	4 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	46						First 10 blows discounted as "seating" blows.
				20	10	0.25	75	2	5.8	41	27416	29	
				30	10	0.32	97	2	4.4	56	33420	22	
				40	10	0.38	117	2	4.0	62	35783	20	
				50	10	0.46	141	2	4.8	50	31399	24	
				60	10	0.54	166	2	5.0	48	30494	25	
			Test Averages						4.8	50	31399		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	10 L	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	20						First 10 blows discounted as "seating" blows.
				30	20	0.16	49	2	2.9	89	45060	29	
				50	20	0.23	70	2	2.1	127	56790	21	
				70	20	0.31	94	2	2.4	110	51606	24	
				90	20	0.40	123	2	2.9	89	45060	29	
				110	20	0.51	155	2	3.2	79	41990	32	
			Test Averages						2.7	96	47428		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	10 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	46						First 10 blows discounted as "seating" blows.
				20	10	0.27	81	2	7.0	33	23959	35	
				30	10	0.37	114	2	6.6	35	24991	33	
				40	10	0.48	147	2	6.6	35	24991	33	
				50	10	0.55	168	2	4.2	59	34553	21	
			Test Averages						6.1	39	26443		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M10+00	4 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.08	24						First 10 blows discounted as "seating" blows.
				20	10	0.15	46	2	4.4	56	33420	22	
				40	20	0.27	83	2	3.7	67	37840	37	
				60	20	0.39	118	2	3.5	72	39377	35	
				80	20	0.50	152	2	3.4	74	40204	34	
			Test Averages						3.8	66	37477		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M10+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	19						First 10 blows discounted as "seating" blows.
				30	20	0.19	58	2	3.9	64	36439	39	
				40	10	0.26	79	2	4.2	59	34553	21	
				60	20	0.37	113	2	3.4	74	40204	34	
				70	10	0.44	133	2	4.0	62	35783	20	
				80	10	0.50	153	2	4.0	62	35783	20	
			Test Averages						3.9	64	36439		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M10+00	10 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	28						First 10 blows discounted as "seating" blows.
				30	20	0.19	59	2	3.1	82	42956	31	
				50	20	0.28	85	2	2.6	100	48728	26	
				70	20	0.37	114	2	2.9	89	45060	29	
				90	20	0.47	144	2	3.0	85	43978	30	
				100	10	0.52	159	2	3.0	85	43978	15	
			Test Averages						2.9	89	45060		
M10+00	10 R	8/27/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.05	16						First 10 blows discounted as "seating" blows.
				30	20	0.17	52	2	3.6	70	38590	36	
				50	20	0.31	93	2	4.1	60	35155	41	
				70	20	0.45	138	2	4.5	54	32886	45	
				80	10	0.53	163	2	5.0	48	30494	25	
			Test Averages						4.3	57	33975		
M20+00	4 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	31						First 10 blows discounted as "seating" blows.
				20	10	0.18	56	2	5.0	48	30494	25	
				40	20	0.29	87	2	3.1	82	42956	31	
				60	20	0.40	122	2	3.5	72	39377	35	
				80	20	0.52	159	2	3.7	67	37840	37	
			Test Averages						3.8	65	36949		
M20+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	26						First 10 blows discounted as "seating" blows.
				20	10	0.15	47	2	4.2	59	34553	21	
				40	20	0.27	81	2	3.4	74	40204	34	
				60	20	0.37	114	2	3.3	77	41074	33	
				80	20	0.50	151	2	3.7	67	37840	37	
				90	10	0.57	173	2	4.4	56	33420	22	
			Test Averages						3.8	65	37123		

Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M20+00	10 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	28						First 10 blows discounted as "seating" blows.
				30	20	0.16	50	2	2.2	121	54927	22	
				50	20	0.27	83	2	3.3	77	41074	33	
				70	20	0.37	114	2	3.1	82	42956	31	
				110	40	0.52	158	2	2.2	121	54927	44	
			Test Averages						2.7	96	47428		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M20+00	10 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	29						First 10 blows discounted as "seating" blows.
				30	20	0.20	61	2	3.2	79	41990	32	
				60	30	0.31	96	2	2.3	113	52659	35	
				80	20	0.41	125	2	2.9	89	45060	29	
				100	20	0.50	152	2	2.7	96	47428	27	
			Test Averages						2.8	93	46406		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M29+00	4 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	29						First 10 blows discounted as "seating" blows.
				20	10	0.19	59	2	6.0	39	26758	30	
				40	20	0.26	80	2	2.1	127	56790	21	
				60	20	0.34	105	2	2.5	105	50118	25	
				80	20	0.43	132	2	2.7	96	47428	27	
				100	20	0.52	159	2	2.7	96	47428	27	
			Test Averages						3.2	79	41990		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M29+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	19						First 10 blows discounted as "seating" blows.
				30	20	0.16	48	2	2.9	89	45060	29	
				50	20	0.24	73	2	2.5	105	50118	25	
				70	20	0.33	101	2	2.8	92	46208	28	
				90	20	0.44	133	2	3.2	79	41990	32	
				110	20	0.55	167	2	3.4	74	40204	34	
			Test Averages						3.0	87	44403		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M29+00	10 L	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	18						First 10 blows discounted as "seating" blows.
				20	10	0.14	44	2	5.2	46	29649	26	
				40	20	0.24	73	2	2.9	89	45060	29	
				60	20	0.34	104	2	3.1	82	42956	31	
				80	20	0.47	142	2	3.8	65	37123	38	
				90	10	0.53	161	2	3.8	65	37123	19	
			Test Averages						3.8	66	37477		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M29+00	10 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	27						First 10 blows discounted as "seating" blows.
				30	20	0.20	61	2	3.4	74	40204	34	
				50	20	0.31	94	2	3.3	77	41074	33	
				70	20	0.45	136	2	4.2	59	34553	42	
				80	10	0.53	161	2	5.0	48	30494	25	
			Test Averages						4.0	62	35944		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M54+00	4 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	18						First 10 blows discounted as "seating" blows.
				30	20	0.16	50	2	3.2	79	41990	32	
				50	20	0.31	96	2	4.6	53	32372	46	
				70	20	0.40	122	2	2.6	100	48728	26	
				90	20	0.52	158	2	3.6	70	38590	36	
			Test Averages						3.5	72	39377		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M54+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	45						First 10 blows discounted as "seating" blows.
				20	10	0.25	75	2	6.0	39	26758	30	
				30	10	0.32	98	2	4.6	53	32372	23	
				40	10	0.39	119	2	4.2	59	34553	21	
				60	20	0.51	156	2	3.7	67	37840	37	
			Test Averages						4.6	53	32247		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M54+00	10 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	26						First 10 blows discounted as "seating" blows.
				20	10	0.15	47	2	4.2	59	34553	21	
				30	10	0.22	67	2	4.0	62	35783	20	
				50	20	0.35	107	2	4.0	62	35783	40	
				60	10	0.43	132	2	5.0	48	30494	25	
				70	10	0.50	153	2	4.2	59	34553	21	
			Test Averages						4.3	57	34089		



## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M54+00	10 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	27						First 10 blows discounted as "seating" blows.
				20	10	0.15	47	2	4.0	62	35783	20	
				40	20	0.28	84	2	3.7	67	37840	37	
				50	10	0.34	105	2	4.2	59	34553	21	
				70	20	0.48	145	2	4.0	62	35783	40	
				80	10	0.53	162	2	3.4	74	40204	17	
			Test Averages						4.0	62	35944		
M64+00	4 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	40						First 10 blows discounted as "seating" blows.
				20	10	0.23	71	2	6.2	38	26137	31	
				30	10	0.35	106	2	7.0	33	23959	35	
				40	10	0.45	138	2	6.4	37	25549	32	
				50	10	0.53	161	2	4.6	53	32372	23	
			Test Averages						6.1	39	26600		
M64+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	47						First 10 blows discounted as "seating" blows.
				20	10	0.24	74	2	5.4	44	28857	27	
				30	10	0.32	97	2	4.6	53	32372	23	
				40	10	0.42	127	2	6.0	39	26758	30	
				50	10	0.51	156	2	5.8	41	27416	29	
			Test Averages						5.5	44	28667		
M64+00	10 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.19	58						First 10 blows discounted as "seating" blows.
				20	10	0.44	134	2	15.2	14	13743	76	
				30	10	0.60	182	2	9.6	23	19105	48	
			Test Averages						12.4	17	15903		
M64+00	10 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.14	43						First 10 blows discounted as "seating" blows.
				20	10	0.23	71	2	5.6	42	28115	28	
				30	10	0.31	94	2	4.6	53	32372	23	
				40	10	0.38	115	2	4.2	59	34553	21	
				60	20	0.49	148	2	3.3	77	41074	33	
				70	10	0.54	165	2	3.4	74	40204	17	
			Test Averages						4.4	55	33285		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M74+00	4 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	33						First 10 blows discounted as "seating" blows.
				20	10	0.20	61	2	5.6	42	28115	28	
				30	10	0.29	87	2	5.2	46	29649	26	
				40	10	0.36	111	2	4.8	50	31399	24	
				50	10	0.45	138	2	5.4	44	28857	27	
				60	10	0.52	157	2	3.8	65	37123	19	
			Test Averages						5.3	46	29446		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M74+00	4 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	36						First 10 blows discounted as "seating" blows.
				20	10	0.19	58	2	4.4	56	33420	22	
				40	20	0.27	83	2	2.5	105	50118	25	
				50	10	0.35	107	2	4.8	50	31399	24	
				70	20	0.45	137	2	3.0	85	43978	30	
				90	20	0.53	163	2	2.6	100	48728	26	
			Test Averages						3.5	73	39703		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M74+00	10 L	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.05	15						First 5 blows discounted as "seating" blows.
				15	10	0.14	43	2	5.6	42	28115	28	
				25	10	0.24	73	2	6.0	39	26758	30	
				35	10	0.34	103	2	6.0	39	26758	30	
				40	5	0.41	126	2	9.2	24	19697	23	
				50	10	0.50	153	2	5.4	44	28857	27	
			Test Averages						6.4	36	25435		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M74+00	10 R	9/1/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	33						First 10 blows discounted as "seating" blows.
				20	10	0.20	62	2	5.8	41	27416	29	
				30	10	0.28	86	2	4.8	50	31399	24	
				40	10	0.39	118	2	6.4	37	25549	32	
				60	20	0.52	158	2	4.0	62	35783	40	
			Test Averages						5.3	46	29446		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M84+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	36						First 10 blows discounted as "seating" blows.
				30	20	0.25	77	2	4.1	60	35155	41	
				40	10	0.35	106	2	5.8	41	27416	29	
				50	10	0.43	131	2	5.0	48	30494	25	
				70	20	0.52	157	2	2.6	100	48728	26	
				Test Averages					4.4	56	33557		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M84+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.14	44						First 10 blows discounted as "seating" blows.
				20	10	0.25	77	2	6.6	35	24991	33	
				30	10	0.35	108	2	6.2	38	26137	31	
				40	10	0.44	135	2	5.4	44	28857	27	
				50	10	0.57	173	2	7.6	30	22588	38	
				Test Averages					6.5	36	25406		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M84+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.14	44						First 10 blows discounted as "seating" blows.
				20	10	0.23	70	2	5.2	46	29649	26	
				40	20	0.36	109	2	3.9	64	36439	39	
				50	10	0.42	129	2	4.0	62	35783	20	
				70	20	0.54	164	2	3.5	72	39377	35	
				Test Averages					4.2	59	34851		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M84+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.19	57						First 10 blows discounted as "seating" blows.
				20	10	0.34	105	2	9.6	23	19105	48	
				30	10	0.65	199	2	18.8	11	11801	94	
				Test Averages					14.2	15	14430		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M94+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.20	62						First 10 blows discounted as "seating" blows.
				20	10	0.35	107	2	9.0	25	20009	45	
				30	10	0.51	156	2	9.8	23	18825	49	
				40	10	0.57	174	2	3.6	70	38590	18	
			Test Averages						9.4	24	19395		
M94+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.08	24						First 10 blows discounted as "seating" blows.
				20	10	0.17	53	2	5.8	41	27416	29	
				40	20	0.31	94	2	4.1	60	35155	41	
				50	10	0.38	115	2	4.2	59	34553	21	
				70	20	0.49	148	2	3.3	77	41074	33	
				80	10	0.53	161	2	2.6	100	48728	13	
			Test Averages						4.4	56	33695		
M94+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.20	62						First 10 blows discounted as "seating" blows.
				20	10	0.35	107	2	9.0	25	20009	45	
				30	10	0.49	148	2	8.2	28	21390	41	
				40	10	0.58	178	2	6.0	39	26758	30	
			Test Averages						7.7	30	22308		
M94+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.08	23						First 10 blows discounted as "seating" blows.
				20	10	0.16	48	2	5.0	48	30494	25	
				30	10	0.23	69	2	4.2	59	34553	21	
				40	10	0.31	94	2	5.0	48	30494	25	
				60	20	0.39	120	2	2.6	100	48728	26	
				70	10	0.46	140	2	4.0	62	35783	20	
				80	10	0.54	166	2	5.2	46	29649	26	
			Test Averages						4.3	57	33788		
M104+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	36						First 10 blows discounted as "seating" blows.
				20	10	0.22	68	2	6.4	37	25549	32	
				30	10	0.31	93	2	5.0	48	30494	25	
				40	10	0.39	120	2	5.4	44	28857	27	
				60	20	0.52	160	2	4.0	62	35783	40	
			Test Averages						5.2	46	29649		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M104+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	32						First 10 blows discounted as "seating" blows.
				30	20	0.22	66	2	3.4	74	40204	34	
				50	20	0.32	99	2	3.3	77	41074	33	
				70	20	0.43	132	2	3.3	77	41074	33	
			Test Averages						3.3	76	40779		
M104+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	31						First 10 blows discounted as "seating" blows.
				30	20	0.24	72	2	4.1	60	35155	41	
				40	10	0.33	100	2	5.6	42	28115	28	
				60	20	0.44	133	2	3.3	77	41074	33	
				70	10	0.52	157	2	4.8	50	31399	24	
				80	10	0.56	171	2	2.8	92	46208	14	
			Test Averages						4.5	55	33151		
M104+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.09	26						First 5 blows discounted as "seating" blows.
				15	10	0.20	62	2	7.2	32	23480	36	
				25	10	0.31	94	2	6.4	37	25549	32	
				35	10	0.42	129	2	7.0	33	23959	35	
				50	15	0.54	164	2	4.7	52	32040	35	
			Test Averages						6.3	37	25790		
M114+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	30						First 10 blows discounted as "seating" blows.
				20	10	0.18	55	2	5.0	48	30494	25	
				30	10	0.28	86	2	6.2	38	26137	31	
				50	20	0.41	124	2	3.8	65	37123	38	
				70	20	0.53	162	2	3.8	65	37123	38	
			Test Averages						4.7	52	31877		
M114+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.15	45						First 5 blows discounted as "seating" blows.
				10	5	0.23	69	2	9.6	23	19105	24	
				15	5	0.34	103	2	13.6	16	14884	34	
				20	5	0.43	131	2	11.2	20	17106	28	
				25	5	0.52	157	2	10.4	21	18040	26	
				30	5	0.59	179	2	8.8	26	20334	22	
			Test Averages						10.7	20	17652		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M114+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	32						First 10 blows discounted as "seating" blows.
				20	10	0.20	61	2	5.8	41	27416	29	
				30	10	0.28	84	2	4.6	53	32372	23	
				40	10	0.35	106	2	4.4	56	33420	22	
				50	10	0.44	133	2	5.4	44	28857	27	
				60	10	0.53	161	2	5.6	42	28115	28	
			Test Averages						5.2	46	29813		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M114+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.12	38						First 5 blows discounted as "seating" blows.
				10	5	0.24	72	2	13.6	16	14884	34	
				15	5	0.32	97	2	10.0	22	18554	25	
				20	5	0.41	125	2	11.2	20	17106	28	
				25	5	0.48	146	2	8.4	27	21024	21	
				30	5	0.55	169	2	9.2	24	19697	23	
			Test Averages						10.5	21	17941		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M124+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.08	25						First 10 blows discounted as "seating" blows.
				10	5	0.17	51	2	10.4	21	18040	26	
				20	10	0.28	85	2	6.8	34	24462	34	
				30	10	0.39	118	2	6.6	35	24991	33	
				40	10	0.49	150	2	6.4	37	25549	32	
				45	5	0.52	159	2	3.6	70	38590	9	
			Test Averages						7.6	30	22695		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M124+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.09	26						First 5 blows discounted as "seating" blows.
				10	5	0.15	46	2	8.0	28	21772	20	
				15	5	0.23	69	2	9.2	24	19697	23	
				20	5	0.41	124	2	22.0	9	10544	55	
				30	10	0.53	162	2	7.6	30	22588	38	
			Test Averages						11.7	19	16579		

Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M124+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	19						First 10 blows discounted as "seating" blows.
				30	20	0.20	60	2	4.1	60	35155	41	
				50	20	0.29	89	2	2.9	89	45060	29	
				70	20	0.37	114	2	2.5	105	50118	25	
				90	20	0.46	140	2	2.6	100	48728	26	
				100	10	0.54	164	2	4.8	50	31399	24	
			Test Averages						3.4	75	40375		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M124+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.11	33						First 10 blows discounted as "seating" blows.
				30	20	0.18	54	2	2.1	127	56790	21	
				40	10	0.24	74	2	4.0	62	35783	20	
				60	20	0.34	104	2	3.0	85	43978	30	
				80	20	0.44	134	2	3.0	85	43978	30	
				100	20	0.53	163	2	2.9	89	45060	29	
			Test Averages						3.0	85	43978		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M140+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	36						First 10 blows discounted as "seating" blows.
				20	10	0.23	69	2	6.6	35	24991	33	
				30	10	0.35	108	2	7.8	29	22171	39	
				40	10	0.50	151	2	8.6	26	20672	43	
				50	10	0.54	164	2	2.6	100	48728	13	
			Test Averages						7.7	30	22447		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M140+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.09	26						First 5 blows discounted as "seating" blows.
				15	10	0.21	65	2	7.8	29	22171	39	
				20	5	0.30	91	2	10.4	21	18040	26	
				30	10	0.43	130	2	7.8	29	22171	39	
				35	5	0.51	154	2	9.6	23	19105	24	
			Test Averages						8.9	25	20170		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M140+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	39						First 10 blows discounted as "seating" blows.
				20	10	0.21	64	2	5.0	48	30494	25	
				30	10	0.29	87	2	4.6	53	32372	23	
				50	20	0.37	114	2	2.7	96	47428	27	
				70	20	0.46	141	2	2.7	96	47428	27	
				80	10	0.54	165	2	4.8	50	31399	24	
			Test Averages						4.0	63	36042		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M140+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	36						First 10 blows discounted as "seating" blows.
				20	10	0.22	67	2	6.2	38	26137	31	
				30	10	0.31	94	2	5.4	44	28857	27	
				40	10	0.40	121	2	5.4	44	28857	27	
				50	10	0.49	148	2	5.4	44	28857	27	
				60	10	0.56	172	2	4.8	50	31399	24	
			Test Averages						5.4	44	28705		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M150+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.11	33						First 5 blows discounted as "seating" blows.
				10	5	0.23	70	2	14.8	14	14009	37	
				15	5	0.32	97	2	10.8	20	17558	27	
				35	20	0.41	124	2	2.7	96	47428	27	
				50	15	0.51	156	2	4.3	58	34166	32	
			Test Averages						8.1	28	21500		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M150+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.06	17						First 5 blows discounted as "seating" blows.
				10	5	0.13	39	2	8.8	26	20334	22	
				15	5	0.21	64	2	10.0	22	18554	25	
				20	5	0.30	92	2	11.2	20	17106	28	
				25	5	0.41	124	2	12.8	17	15545	32	
				35	10	0.52	159	2	7.0	33	23959	35	
			Test Averages						10.0	22	18607		



## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M150+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	40						First 10 blows discounted as "seating" blows.
				20	10	0.20	60	2	4.0	62	35783	20	
				40	20	0.32	98	2	3.8	65	37123	38	
				60	20	0.43	130	2	3.2	79	41990	32	
				80	20	0.55	169	2	3.9	64	36439	39	
			Test Averages						3.7	67	37658		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M150+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	28						First 10 blows discounted as "seating" blows.
				20	10	0.18	55	2	5.4	44	28857	27	
				40	20	0.30	92	2	3.7	67	37840	37	
				50	10	0.37	114	2	4.4	56	33420	22	
				70	20	0.46	139	2	2.5	105	50118	25	
				90	20	0.56	170	2	3.1	82	42956	31	
			Test Averages						3.8	65	36984		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M160+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.11	35						First 5 blows discounted as "seating" blows.
				15	10	0.21	65	2	6.0	39	26758	30	
				20	5	0.28	85	2	8.0	28	21772	20	
				25	5	0.34	105	2	8.0	28	21772	20	
				30	5	0.42	128	2	9.2	24	19697	23	
				40	10	0.53	162	2	6.8	34	24462	34	
			Test Averages						7.6	30	22588		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M160+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.17	52						First 5 blows discounted as "seating" blows.
				10	5	0.26	79	2	10.8	20	17558	27	
				15	5	0.34	103	2	9.6	23	19105	24	
				20	5	0.42	128	2	10.0	22	18554	25	
				25	5	0.50	153	2	10.0	22	18554	25	
				30	5	0.57	174	2	8.4	27	21024	21	
			Test Averages						9.8	23	18880		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M160+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	19						First 10 blows discounted as "seating" blows.
				30	20	0.21	63	2	4.4	56	33420	44	
				40	10	0.29	89	2	5.2	46	29649	26	
				60	20	0.40	121	2	3.2	79	41990	32	
				80	20	0.52	159	2	3.8	65	37123	38	
			Test Averages						4.2	59	34851		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M160+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	20						First 10 blows discounted as "seating" blows.
				20	10	0.15	46	2	5.2	46	29649	26	
				30	10	0.22	66	2	4.0	62	35783	20	
				40	10	0.29	88	2	4.4	56	33420	22	
				50	10	0.36	111	2	4.6	53	32372	23	
				70	20	0.49	149	2	3.8	65	37123	38	
			Test Averages						4.4	56	33420		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M170+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	21						First 10 blows discounted as "seating" blows.
				30	20	0.16	50	2	2.9	89	45060	29	
				50	20	0.28	85	2	3.5	72	39377	35	
				70	20	0.40	121	2	3.6	70	38590	36	
				90	20	0.51	156	2	3.5	72	39377	35	
			Test Averages						3.4	75	40417		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M170+00	4 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.11	35						First 5 blows discounted as "seating" blows.
				10	5	0.19	57	2	8.8	26	20334	22	
				15	5	0.26	79	2	8.8	26	20334	22	
				25	10	0.38	116	2	7.4	31	23023	37	
				30	5	0.45	136	2	8.0	28	21772	20	
				35	5	0.52	159	2	9.2	24	19697	23	
			Test Averages						8.4	27	20952		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M170+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.08	24						First 10 blows discounted as "seating" blows.
				30	20	0.21	64	2	4.0	62	35783	40	
				40	10	0.30	91	2	5.4	44	28857	27	
				50	10	0.36	111	2	4.0	62	35783	20	
				60	10	0.44	134	2	4.6	53	32372	23	
				70	10	0.51	156	2	4.4	56	33420	22	
			Test Averages						4.5	54	32991		
M170+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.12	38						First 5 blows discounted as "seating" blows.
				10	5	0.21	64	2	10.4	21	18040	26	
				15	5	0.29	87	2	9.2	24	19697	23	
				20	5	0.37	113	2	10.4	21	18040	26	
				25	5	0.45	138	2	10.0	22	18554	25	
				30	5	0.52	158	2	8.0	28	21772	20	
			Test Averages						9.6	23	19105		
M180+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.12	37						First 10 blows discounted as "seating" blows.
				20	10	0.21	65	2	5.6	42	28115	28	
				40	20	0.35	108	2	4.3	57	33975	43	
				50	10	0.44	133	2	5.0	48	30494	25	
				60	10	0.51	155	2	4.4	56	33420	22	
			Test Averages						4.8	50	31283		
M180+00	4 R	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	28						First 10 blows discounted as "seating" blows.
				30	20	0.25	77	2	4.9	49	30939	49	
				40	10	0.35	107	2	6.0	39	26758	30	
				50	10	0.42	129	2	4.4	56	33420	22	
				70	20	0.52	160	2	3.1	82	42956	31	
			Test Averages						4.6	53	32372		
M180+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	39						First 10 blows discounted as "seating" blows.
				20	10	0.28	84	2	9.0	25	20009	45	
				40	20	0.41	124	2	4.0	62	35783	40	
				60	20	0.54	165	2	4.1	60	35155	41	
			Test Averages						5.7	42	27760		

Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M180+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.13	41						First 5 blows discounted as "seating" blows.
				10	5	0.22	66	2	10.0	22	18554	25	
				15	5	0.30	90	2	9.6	23	19105	24	
				25	10	0.43	130	2	8.0	28	21772	40	
				30	5	0.51	156	2	10.4	21	18040	26	
			Test Averages						9.5	23	19249		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M190+00	4 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.13	39						First 10 blows discounted as "seating" blows.
				20	10	0.22	67	2	5.6	42	28115	28	
				30	10	0.31	95	2	5.6	42	28115	28	
				40	10	0.39	120	2	5.0	48	30494	25	
				50	10	0.46	140	2	4.0	62	35783	20	
				60	10	0.53	161	2	4.2	59	34553	21	
			Test Averages						4.9	49	31030		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M190+00	10 L	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	29						First 10 blows discounted as "seating" blows.
				20	10	0.18	56	2	5.4	44	28857	27	
				30	10	0.27	83	2	5.4	44	28857	27	
				40	10	0.35	106	2	4.6	53	32372	23	
				60	20	0.47	142	2	3.6	70	38590	36	
				70	10	0.52	158	2	3.2	79	41990	16	
			Test Averages						4.8	51	31636		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M190+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.07	22						First 5 blows discounted as "seating" blows.
				10	5	0.21	63	2	16.4	13	13015	41	
				15	5	0.28	84	2	8.4	27	21024	21	
				20	5	0.36	110	2	10.4	21	18040	26	
				25	5	0.43	130	2	8.0	28	21772	20	
				30	5	0.50	153	2	9.2	24	19697	23	
				35	5	0.58	177	2	9.6	23	19105	24	
			Test Averages						10.3	21	18123		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M190+00	4 R	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	21						First 10 blows discounted as "seating" blows.
				30	20	0.19	59	2	3.8	65	37123	38	
				40	10	0.28	84	2	5.0	48	30494	25	
				50	10	0.36	110	2	5.2	46	29649	26	
				60	10	0.43	131	2	4.2	59	34553	21	
				70	10	0.52	159	2	5.6	42	28115	28	
			Test Averages						4.8	51	31588		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M200+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				5	5	0.10	29						First 5 blows discounted as "seating" blows.
				15	10	0.22	67	2	7.6	30	22588	38	
				25	10	0.34	103	2	7.2	32	23480	36	
				35	10	0.45	138	2	7.0	33	23959	35	
				45	10	0.53	163	2	5.0	48	30494	25	
			Test Averages						6.7	35	24723		
M200+00	4 L	9/14/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	28						First 10 blows discounted as "seating" blows.
				20	10	0.19	57	2	5.8	41	27416	29	
				30	10	0.29	89	2	6.4	37	25549	32	
				50	20	0.43	131	2	4.2	59	34553	42	
				70	20	0.52	159	2	2.8	92	46208	28	
			Test Averages						4.8	50	31399		
M200+00	4 R	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.08	24						First 10 blows discounted as "seating" blows.
				30	20	0.19	58	2	3.4	74	40204	34	
				40	10	0.26	79	2	4.2	59	34553	21	
				50	10	0.33	101	2	4.4	56	33420	22	
				60	10	0.43	130	2	5.8	41	27416	29	
				80	20	0.55	167	2	3.7	67	37840	37	
			Test Averages						4.3	57	33975		
M200+00	10 L	9/14/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.16	48						First 10 blows discounted as "seating" blows.
				20	10	0.24	74	2	5.2	46	29649	26	
				30	10	0.31	95	2	4.2	59	34553	21	
				50	20	0.43	130	2	3.5	72	39377	35	
				60	10	0.50	151	2	4.2	59	34553	21	
				70	10	0.57	173	2	4.4	56	33420	22	
			Test Averages						4.3	57	33975		
M210+00	4 L	9/14/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	26						First 10 blows discounted as "seating" blows.
				20	10	0.17	53	2	5.4	44	28857	27	
				30	10	0.26	80	2	5.4	44	28857	27	
				50	20	0.37	114	2	3.4	74	40204	34	
				70	20	0.47	142	2	2.8	92	46208	28	
				90	20	0.53	163	2	2.1	127	56790	21	
			Test Averages						3.8	65	36984		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M210+00	10 L	9/14/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.09	27						First 10 blows discounted as "seating" blows.
				20	10	0.15	47	2	4.0	62	35783	20	
				30	10	0.26	78	2	6.2	38	26137	31	
				40	10	0.35	108	2	6.0	39	26758	30	
				50	10	0.42	129	2	4.2	59	34553	21	
				60	10	0.52	160	2	6.2	38	26137	31	
			Test Averages						5.3	45	29168		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M210+00	10 R	9/10/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.20	60						First 10 blows discounted as "seating" blows.
				20	10	0.30	92	2	6.4	37	25549	32	
				30	10	0.41	125	2	6.6	35	24991	33	
				40	10	0.49	148	2	4.6	53	32372	23	
				50	10	0.56	170	2	4.4	56	33420	22	
			Test Averages						5.5	43	28480		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
M210+00	4 R	9/13/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.10	32						First 10 blows discounted as "seating" blows.
				20	10	0.22	67	2	7.0	33	23959	35	
				30	10	0.33	100	2	6.6	35	24991	33	
				40	10	0.42	127	2	5.4	44	28857	27	
				50	10	0.49	149	2	4.4	56	33420	22	
				60	10	0.57	174	2	5.0	48	30494	25	
			Test Averages						5.7	42	27830		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	4 L	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.06	17						First 10 blows discounted as "seating" blows.
				40	30	0.16	50	2	2.2	121	54927	33	
				70	30	0.25	75	2	1.7	165	67022	25	
				90	20	0.34	103	2	2.8	92	46208	28	
				110	20	0.41	125	2	2.2	121	54927	22	
				140	30	0.52	160	2	2.3	113	52659	35	
			Test Averages						2.2	118	54222		

## Appendix K – Resilient Modulus Data Reduction for Johnson-Morristown STP 2919(1)

Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	4 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	46						First 10 blows discounted as "seating" blows.
				20	10	0.25	75	2	5.8	41	27416	29	
				30	10	0.32	97	2	4.4	56	33420	22	
				40	10	0.38	117	2	4.0	62	35783	20	
				50	10	0.46	141	2	4.8	50	31399	24	
				60	10	0.54	166	2	5.0	48	30494	25	
			Test Averages						4.8	50	31399		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	10 L	8/26/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.07	20						First 10 blows discounted as "seating" blows.
				30	20	0.16	49	2	2.9	89	45060	29	
				50	20	0.23	70	2	2.1	127	56790	21	
				70	20	0.31	94	2	2.4	110	51606	24	
				90	20	0.40	123	2	2.9	89	45060	29	
				110	20	0.51	155	2	3.2	79	41990	32	
			Test Averages						2.7	96	47428		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	10 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	46						First 10 blows discounted as "seating" blows.
				20	10	0.27	81	2	7.0	33	23959	35	
				30	10	0.37	114	2	6.6	35	24991	33	
				40	10	0.48	147	2	6.6	35	24991	33	
				50	10	0.55	168	2	4.2	59	34553	21	
			Test Averages						6.1	39	26443		
Station	Offset	Date	Hammer Type	Blow Count	Blows	Depth	DCP Reading	Hammer Factor	DCP Pen. Index	CBR	M <sub>R</sub>	Pen. / Reading	Notes
H122+00	10 R	8/24/2021	4.6kg	(#)	(#)	(ft)	(mm)		(mm/blow)	(%)	(psi)	(mm)	
				0	0	0	0						
				10	10	0.15	46						First 10 blows discounted as "seating" blows.
				20	10	0.27	81	2	7.0	33	23959	35	
				30	10	0.37	114	2	6.6	35	24991	33	
				40	10	0.48	147	2	6.6	35	24991	33	
				50	10	0.55	168	2	4.2	59	34553	21	
			Test Averages						6.1	39	26443		



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05620  
(802) 674-2033

## APPENDIX L – RECOMMENDED VTRANS DCP SPEC EDITS



DYNAMIC CONE PENETROMETER (DCP) TESTING

1. DESCRIPTION. Work under this item requires the Contractor to perform dynamic cone penetrometer testing of the reclaimed stabilized base layer and reporting results.
2. TESTING.
  - (a) Dynamic cone penetrometer testing shall be done in accordance with the provisions outlined in ASTM D6951, "Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications". Testing locations shall be conducted every 1,000 linear feet along the proposed highway alignment and within the limits of the reclaimed stabilized base layer. Testing locations will be determined by the Engineer.
  - (b) The hammer used during the test shall be the full 8-kg dual mass hammer.
  - (c) Each testing location will receive four individual tests. Tests shall be positioned such that each directional width of the roadway receives two separate tests. Tests shall be four feet and ten feet offset and perpendicular to the roadway centerline. *(Note – This may be different if combining with FWD Testing)*
  - (d) Testing shall be conducted XX Months following ~~the completion~~ placement and compaction of the reclaim stabilized base layer and prior to the installation of any subsequent surface courses.
  - (e) When performing a DCP test through a core hole, remaining standing water shall be removed and the test shall be completed within 10-minutes of coring to prevent excessive saturation from water used during the coring process.
  - (f) Prior to starting each test, seat the DCP with two blows from the hammer.
  - (g) Measurements consist of recording the number of blows between readings. The tip should be advanced a minimum of 25mm between readings. The target distance of tip movement between readings is 25mm to 50mm.
  - (h) The DCP testing shall be extended until at a minimum the reclaimed stabilized base layer has been fully penetrated, or refusal is encountered. Refusal shall be considered less than 2 mm of movement after 3 blows or if the handle has deflected more than 3-inches from vertical.
  - (i) Test reports shall be provided to the Engineer immediately following testing at each testing location. A complete test report summarizing every test within the project limits should also be provided to the Engineer. The reports shall include, but not be limited to, the following information: date; time; station and offset; mile marker; elapsed time since placement and compaction of the reclaimed stabilized base layer; depth change between blows measurements in graphical format; ~~total depth of penetration with each data point in~~

~~graphical format, and CBR (California Bearing Ratio)% versus depth in graphical format~~  
and number of blows vs. distance traveled in tabular format.

- 3. METHOD OF MEASUREMENT. The accepted quantity of Special Provision (Dynamic Cone Penetrometer Testing) will be paid for at the Contract unit lump sum price. Payment will be full compensation for all dynamic cone penetrometer equipment, labor, testing, test reports, and any incidentals necessary to complete, collect and report the data tested. All necessary traffic control needed to complete the work will be incidental to item 641.11 — Traffic Control, All-Inclusive.
- 4. BASIS OF PAYMENT. The quantity of Special Provision (Dynamic Cone Penetrometer Testing) will to be paid for at the Contract lump sum price. Partial payments will be made as follows:
  - (a) 80% of the Contract lump sum price will be paid upon the completion of the required testing.
  - (b) 20% of the Contract lump sum price will be paid upon receiving a complete report of the testing results.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Dynamic Cone Penetrometer Testing)	Lump Sum



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## APPENDIX M – LIMITATIONS



GEODesign, Inc.  
85 Granite Shed Lane  
Unit #1  
Montpelier, VT 05602  
(802) 674-2033

## **Geotechnical Limitations**

### Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the exploration logs.
3. Water level readings and moisture conditions have been made in the explorations, and from the samples at times and under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater and moisture condition may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

### Review

4. In the event that any changes in the nature, design or location of the proposed structures is planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by GEODesign, Inc. We recommend that we be provided the opportunity to review and comment on the finalized project design and relevant construction specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

### Use of Report

5. This report has been prepared for the exclusive use of **the Vermont Agency of Transportation**, for specific application to the **Statistical Analysis of DCP Data** research project as described in GEODesign's scope of services/ contract and related documents, in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.
6. This report has been prepared for this specific project by GEODesign, Inc. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only, unless otherwise specified in the report.
7. Unless otherwise noted, the scope of our services did not include environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, surface water, groundwater or air, on, below, or around this site.

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