



The Moorings Condominiums  
Building 11

341-355 Moorings Cove Drive  
Tarpon Springs, FL 34689  
B.A.S.I.C. File No.: B2020-018

February 23rd, 2021



## FINAL REPORT



**Bay Area Sinkhole Investigation & Civil Engineering**  
2601 E. 7th Avenue, Tampa, FL 33605  
Ph: (813) 885-4144 | Fx: (813) 885-4166  
[www.basic-engineering.com](http://www.basic-engineering.com)

To: The Moorings Condominiums Association      Date: 02/23/2021  
Attn: Karen Cleary, President      Project # B2020-018  
450 Moorings Cove Drive  
Tarpon Springs, FL 34689

Subject: Injection Pin Pile, Compaction and Chemical Grouting  
The Moorings Condominiums | Building 11  
341-355 Moorings Cove Drive, Tarpon Springs, FL 34689

Dear Ms. Cleary,

We have reviewed a Subsidence Investigation report by SDII Global, (SDII), dated March 8<sup>th</sup>, 2018, a Structural Damage Evaluation (Partial Structural Only) by SDII Global, (SDII), dated June 19<sup>th</sup>, 2018, a Geologic/Geotechnical Testing and Evaluation report by Applied Engineering & Geosciences (AEG), dated September 24<sup>th</sup>, 2018, a Sinkhole Loss Determination report by Structural Engineering and Inspections, Inc, (SEI), dated November 28<sup>th</sup>, 2018, a Peer Review report by SDII Global, (SDII), dated January 11<sup>th</sup>, 2019, a Neutral Evaluation report by Andreyev Engineering, Inc., (AEI), dated March 16<sup>th</sup>, 2020 and field work and engineering design performed by B.A.S.I.C. Engineering.

Based on the aforementioned reports, you have asked us to recommend and monitor a remediation program. B.A.S.I.C. Engineering recommended utilizing a combination of injection pin piles, compaction grouting and chemical grouting points. We have provided you with a Site Plan indicating the location of the injection pin piles, compaction grout and chemical grouting points and their estimated depths of installation. However, we were unable to accurately predict the amount of grout that would be required prior to actual field installation.

Injection Pin Piles are recommended in similar situations whereby the property requires lifting or other foundation support in addition to sealing off the limestone interface to prevent future sinkhole activity from occurring. The installation of the Injection Pin Piles is a process whereby high carbon steel pilings are hydraulically driven into the ground until a predetermined pressure reading is attained or refusal occurs where lifting of the structure takes place. The Injection Pin Piles are then grouted through a patented process allowing grout to be pumped directly at the limestone interface (Figure 11a).

In addition to the installation of the Injection Pin Piles, a high slump pressure grouting program is recommended as a means of sealing deep openings into underlying cavernous zones, fill in void zones, consolidate/densify the loose soils, prevent downward migration of soil particles and also to provide greater lateral stability to the steel pilings. A 4-6 inch slump grout is recommended by B.A.S.I.C. Engineering so that it may be accurately pumped below the structure and it may flow through the grout holes and densify soil voids with greatest efficiency.

Compaction grouting is the injection of grout into the soil to improve bearing capacity. This is accomplished by using a very viscous (low-mobility), aggregate under high pressure to form grout bulbs, which displace and densify the surrounding soils in a controlled manner through an injection pipe. The upward component of force causing heaving at the surface during compaction grouting usually limits the degree which soil can be compacted, making compaction grouting ineffective for stabilizing upper level soils (approximately the top 15 feet). Therefore, in order to stabilize the uppermost subsurface soils, chemical grouting has also been recommended.

Chemical grouting is a process whereupon a polyurethane grout is injected to fill void spaces and improve the strength of granular soils. Chemical grout behaves like a fluid but reacts with an agent and water and within sixty seconds forms a solid, expanding to compact the soils similarly to standard compaction grouting but in a more controlled manner.

## **MONITORING**

As requested, we have completed the monitoring of the subsurface injection pin piles, compaction grouting and chemical grouting operations as conducted by Helicon Foundation Repair Systems, Inc., (Helicon). This work was completed utilizing the TMG Injection Pier System, Compaction Grouting and Chemical Grouting. The remediation was started on November 5<sup>th</sup>, 2020 and completed on January 5<sup>th</sup>, 2021. A technician from our firm was present during the remediation operations to monitor operations and perform applicable grout slump tests.

Helicon installed a total of 67 injection pin piles around the property as per our site plan recommendations, as shown in figure 11a. Due to the site conditions, two (2) points were omitted from our original recommendations. (Injection Pin Pile Numbers 5 and 57). The depths of installation ranged from a low of 15 feet to a high of 74 feet below grade. Each pin pile was hydraulically driven into the soil until enough pressure was reached for refusal. The hydraulic gauge reading (psi) was recorded for each injection pin pile along with the installed depth (Figure 11b). The contractor then accepted delivery of a 1500-psi pressure grout from Preferred Materials, Inc. The grout was a high slump 4-6 inch pressure grout. A grout gun was connected to each of the 67 injection pin piles pumped by Helicon, utilizing a TK-40 pump. The grout was pumped until a pressure gauge reading of up to 400-psi was reached on the in-line gauge. The amount of grout pumped for each injection pin pile was recorded (Figure 11b). A total of 142.3 cubic yards of grout was pumped in various quantities through 67 injection pin piles points.

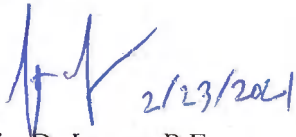
Helicon then staked the compaction grout point locations as shown in Figure 11d in accordance with B.A.S.I.C. Engineering's recommendations. Angled compaction grout points were installed to refusal (hard limestone bedrock) at depths ranging from 30 to 70 feet below existing grade. A total of 298 feet of grout casing was installed at the 6 compaction grout points. After the grout casing was installed, a TK-40 pump was used to inject a mixture of cement, fly ash, sand, water, and other admixtures into the loose soils and voids in the limestone and overlying sand strata. Pumping continued until a grout pressure of 200 to 400 psi was achieved (over that required to initiate grout take) or lifting of the structure was observed (via a surveyor's level). The grout casing was then extracted upward four to five feet and pumping resumed. A total of 51.8 cubic yards of grout was pumped in various quantities through 6 compaction grout points on the subject property, ranging from a minimum of 2.26 cubic yards on point #2 to a maximum of 11.48 cubic yards on point #1.

Lastly, a total of 4,543.7 lbs. of chemical grout was injected through 104 chemical grout points by Helicon as shown in Figure 11e. Vertical points were pumped at depth ranges between 8', 6', 4' and 2 feet below ground surface until lift of the slab/ground refusal was achieved. Angled points were pumped at depth ranges between 12', 10', 8', 6', 4' and 2 feet below ground surface until lift of the slab/ground refusal was achieved.

It is our opinion that the injection pin piles, compaction grout and chemical grout were installed in accordance with industry standards and are an effective method to fill voids, cracks, fractures and cavities and to stabilize granular material, thus improving the physical properties of soil and rock at The Moorings Condominiums | Building #11. The proven technology utilized by the pier manufacturer and the ability to solve foundation settlement problems using a combination of injection pin piles, compaction grout and chemical grout, has demonstrated success without additional settlement. This report is not a guarantee that sinkhole activity will not continue to exist at the subject property but rather a summary and certification of the work completed by Helicon Foundation Repair Systems, Inc.

We thank you for the opportunity to provide the services to you on this project. We trust that the information provided in this letter is satisfactory. Should you have any questions, or require additional assistance, please do not hesitate to call.

Sincerely,



Justin D. James, P.E.  
Florida P.E. # 60886  
C.O.A. # 25869  
Attachments

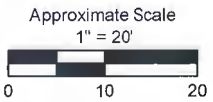
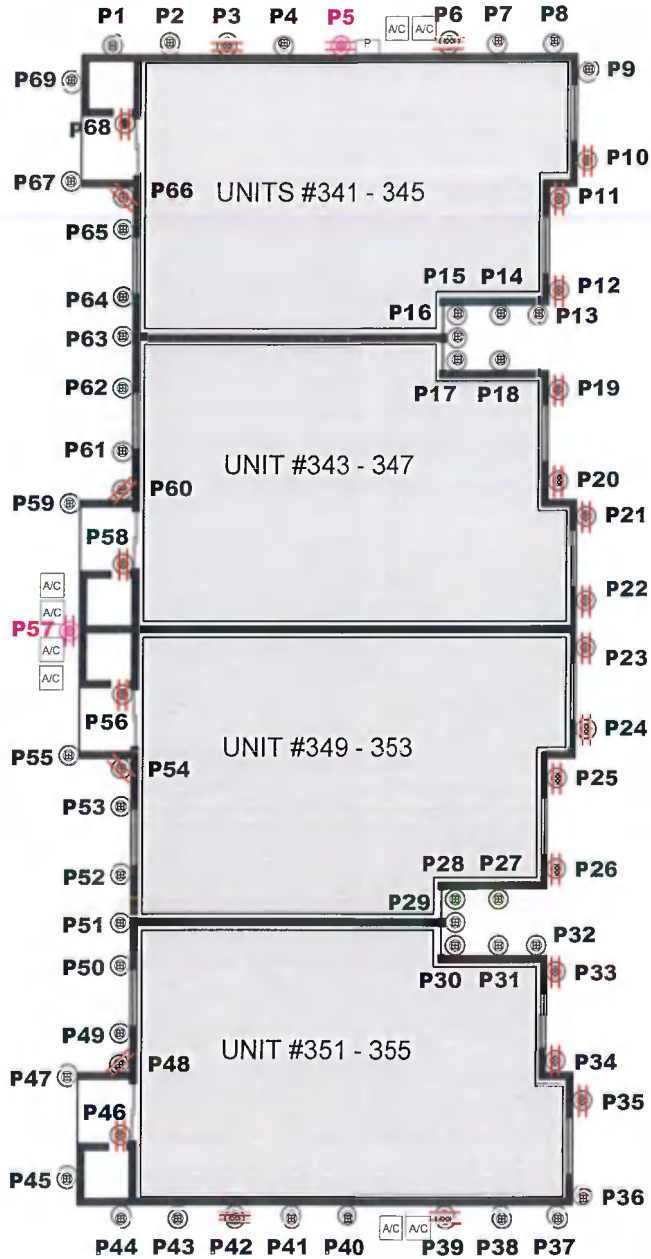


# TECHNICAL NOTES:

- ⊗ - INJECTION PIN PILE
- ⊗ - SPREADER BEAM
- ⊗ - DELETED POINTS
- SEE FIGURE 11c FOR PIN PILE DETAIL
- NOT FOR PERMITTING



TWO STORY  
WOOD FRAME  
BUILDING #11



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**THE MOORINGS CONDO ASSOC. | BLDG #11**

341-355 MOORINGS COVE DRIVE, TARPON SPRINGS, FL 34689  
PINELLAS COUNTY

CONSTRUCTION INJECTION PLAN

FIGURE NO.: 11a

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ

# TECHNICAL NOTES:

## - INJECTION PIN PILE SUMMARY POINTS

Points #	PSI	Depth (ft)	Strokes	Actual Grout (cy)
1	1600	26.0	34	0.67
2	1800	31.0	109	2.16
3	2200	32.0	369	7.39
4	2800	38.0	142	2.95
5	-	-	-	-
6	2800	30.0	266	5.53
7	2800	70.0	211	4.18
8	2800	29.0	4	0.08
9	2200	30.0	293	5.80
10	2800	33.0	2	0.04
11	2200	26.0	187	3.62
12	2800	31.0	2	0.04
13	2000	39.0	227	4.39
14	2500	29.0	40	0.77
15	2600	36.0	2	0.04
16	2600	36.0	3	0.06
17	2800	33.0	31	0.60
18	2800	35.0	25	0.48
19	2800	53.0	403	7.95
20	2800	53.0	104	2.05
21	2800	53.0	470	10.0
22	2800	54.0	273	5.58
23	2800	53.0	7	0.14
24	2400	29.0	199	4.07
25	2400	74.0	10	0.20
26	2000	43.0	205	3.80
27	1900	53.0	3	0.06
28	2000	43.0	3	0.06
29	2000	53.0	3	0.06
30	1800	48.0	6	0.11
31	1900	43.0	3	0.06
32	1900	33.0	103	1.91
33	1800	48.0	213	3.95
34	1800	40.0	36	0.72
35	1800	35.0	246	4.93

Points #	PSI	Depth (ft)	Strokes	Actual Grout (cy)
36	2000	41.0	4	0.08
37	1800	44.0	159	3.19
38	1800	35.0	44	0.88
39	2000	43.0	126	2.40
40	1800	35.0	10	0.20
41	1800	43.0	122	2.52
42	2000	52.0	243	5.02
43	1800	47.0	4	0.08
44	1000	18.0	9	0.19
45	1900	19.0	23	0.46
46	2100	42.0	164	3.28
47	11000	5.0	7	0.14
48	2800	55.0	2	0.04
49	2800	52.0	337	6.67
50	2800	55.0	166	3.29
51	2800	53.0	476	10.04
52	2800	57.0	147	2.74
53	2800	40.0	180	3.36
54	2600	35.0	15	0.28
55	1500	24.0	15	0.28
56	2400	39.0	127	2.37
57	-	-	-	-
58	2300	27.0	14	0.26
59	1500	25.0	19	0.35
60	2800	53.0	14	0.26
61	2800	54.0	5	0.09
62	2800	41.0	215	4.27
63	2800	35.0	80	1.59
64	2800	35.0	38	0.75
65	2600	25.0	5	0.10
66	2800	30.0	41	0.81
67	1500	30.0	34	0.67
68	2200	37.0	46	0.91
69	1600	25.0	14	0.28
<b>TOTALS:</b>		<b>2643.0</b>	<b>7139</b>	<b>142.3</b>



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### INJECTION PIN PILE SUMMARY POINTS

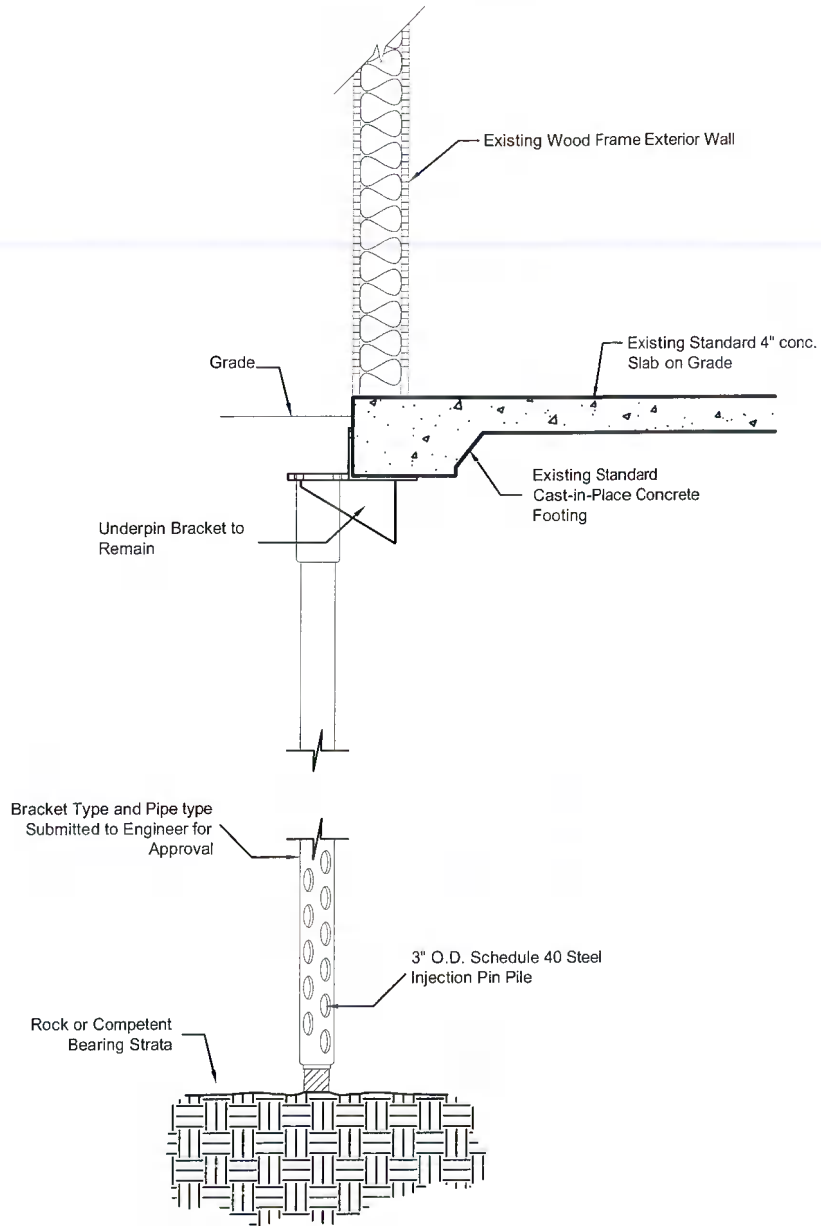
FIGURE NO.: 11b

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ

**Wood Frame on Spread Footer:**  
Injection Pin Pile Detail  
(NOT FOR PERMITTING)



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INJECTION PIN PILE DETAIL PLAN

FIGURE NO.: 11c

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ

## TECHNICAL NOTES:

- INSTALLED POINTS DEPTH: 30' - 70'

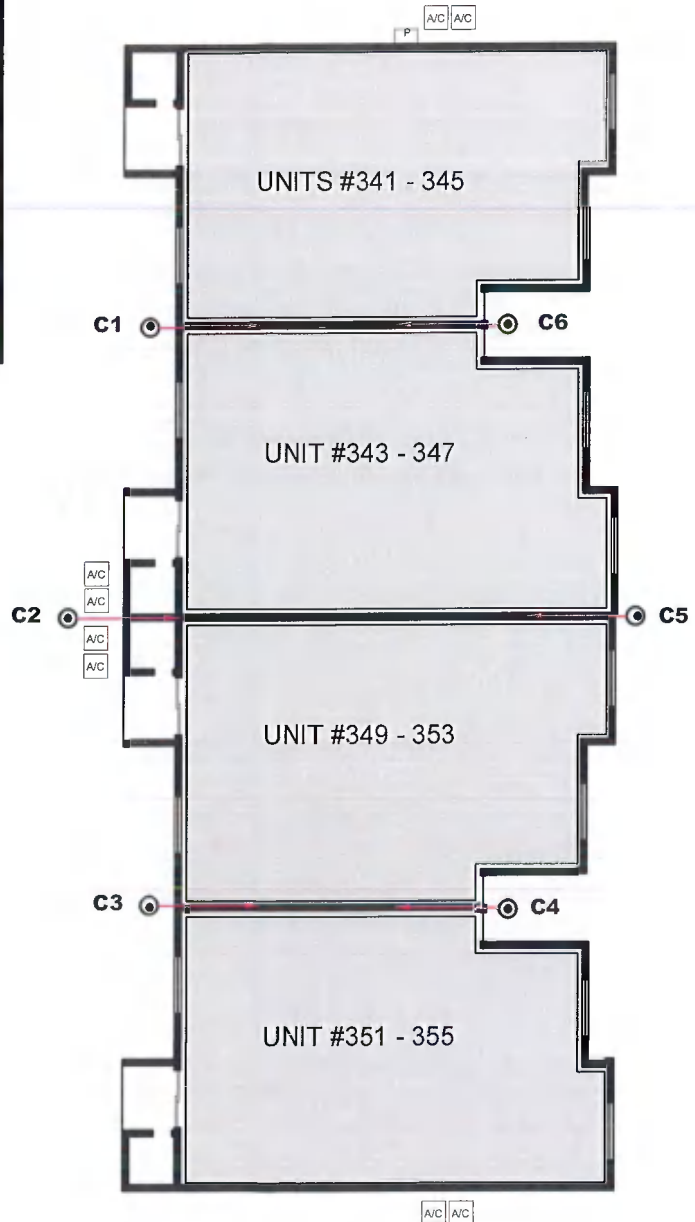
← ⊙ - ANGLED COMPACTION GROUT POINTS

- NOT FOR PERMITTING



Points #	Depth (ft)	Strokes	Actual Grout (cy)
1	57	538	11.48
2	30	104	2.26
3	70	379	8.07
4	47	548	10.87
5	61	473	9.13
6	33	491	10.00
<b>Total:</b>	<b>298</b>	<b>Total:</b>	<b>51.8</b>

TWO STORY  
WOOD FRAME  
BUILDING #11



Approximate Scale

1" = 20'



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COMPACTION GROUT PLAN

FIGURE NO.: 11d

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ



# TECHNICAL NOTES:

- INSTALLED DEPTH:

✗ - VERTICAL POINTS: 8', 6', 4' & 2' BGS

✗ - ANGLED POINTS: 12', 10', 8', 6' & 2' BGS

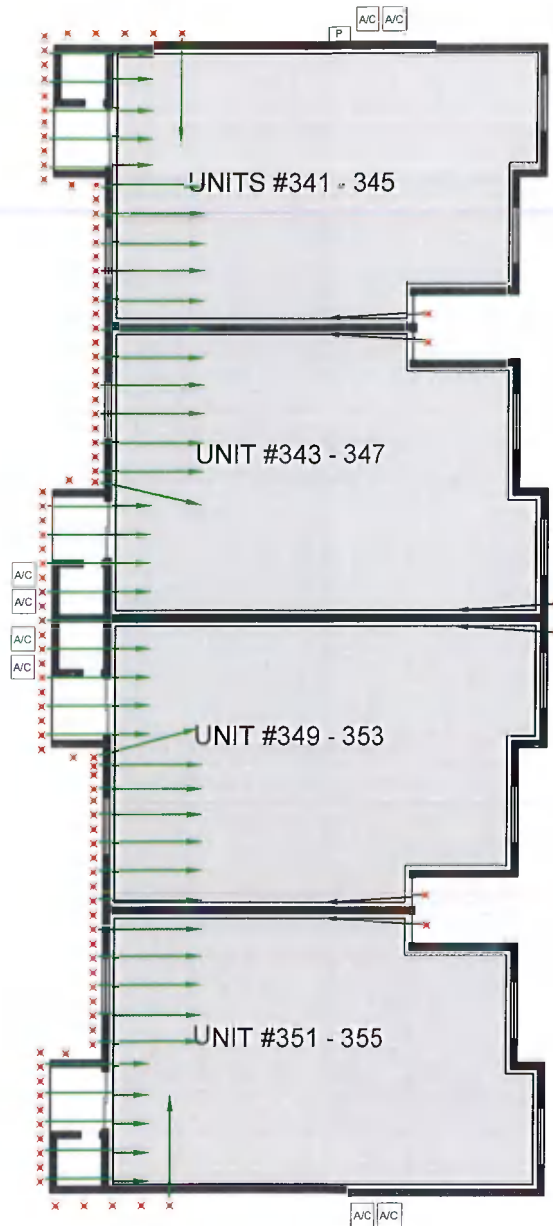
- INSTALLED EXTERIOR CHEMICAL GROUT POINTS = 104

- INSTALLED EXTERIOR CHEMICAL GROUT QUANTITY = 4,543.7

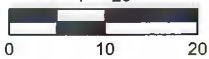
- NOT FOR PERMITTING



## TWO STORY WOOD FRAME BUILDING #11



Approximate Scale  
1" = 20'



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CHEMICAL GROUT PLAN

FIGURE NO.: 11e

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ

# TECHNICAL NOTES:

## - CHEMICAL GROUT SUMMARY POINTS

Point #s	Depth (ft)	PSI	Lbs.
1	12	1000	15.1
	10	1000	20.1
	8	1300	7.7
	6	1300	7.0
	4	1300	4.9
2	2	1000	3.2
	8	1300	29.9
	6	1300	15.1
	4	1300	5.3
3	2	-	-
	8	1300	29.9
	6	1300	15.1
	4	1300	4.6
4	2	-	-
	8	1300	29.9
	6	1200	15.1
	4	1000	10.2
5	2	9000	1.0
	8	1300	21.8
	6	-	-
	4	1000	6.0
6	2	-	-
	12	1300	20.1
	10	1000	15.1
	8	1300	7.7
	6	1000	5.6
7	4	-	-
	2	-	-
	8	900	29.9
	6	1300	0.7
	4	1300	7.4
8	2	-	-
	12	-	-
	10	1000	20.1
	8	900	4.9
	6	1000	7.0
	4	1000	4.9
9	2	1300	3.2
	8	1000	29.9
	6	1300	11.6
	4	1300	10.2
10	2	1000	2.8
	12	1000	20.1
	10	1300	15.1
	8	1300	6.3
	6	1300	7.0
10	4	1300	4.9
	2	1300	3.2

Point #s	Depth (ft)	PSI	Lbs.
11	8	1200	29.9
	6	1000	15.1
	4	1000	10.2
	2	900	2.1
12	2	1300	15.1
	10	1300	10.2
	8	1300	2.1
	6	1300	20.1
	4	1300	7.7
13	2	1300	7.0
	8	1300	4.9
	6	1300	3.2
	4	1300	7.7
14	2	1300	-
	12	1000	20.1
	10	1000	4.9
	8	900	-
15	6	1300	7.0
	4	1000	4.9
	2	900	3.2
	8	1000	29.9
16	6	1300	15.1
	4	1300	7.7
	2	1300	-
	8	1300	8.8
17	6	1100	-
	4	1300	10.2
	2	900	2.8
	12	1300	20.1
18	10	1000	8.4
	8	1300	-
	6	1000	7.0
	4	900	4.9
	2	1000	5.7
19	8	1300	29.9
	6	1000	15.1
	4	900	10.2
	2	1300	2.8
20	12	1300	20.1
	10	1300	15.1
	8	1300	1.0
	6	1300	7.0
	4	1000	4.9
20	2	900	3.2
	8	1000	29.9
	6	1300	1.0
	4	1300	10.2
20	2	1000	15.1

Point #s	Depth (ft)	PSI	Lbs.
21	12	1300	7.7
	10	900	7.0
	8	900	4.9
	6	1000	3.2
	4	1300	29.9
22	2	1300	4.9
	8	1300	29.9
	6	1000	4.9
	4	1000	10.2
23	2	900	0.3
	12	1000	17.2
	10	-	-
	8	-	-
	6	1300	7.0
24	4	1000	4.9
	2	1000	3.2
	8	1000	20.1
	6	-	-
25	4	1300	-
	2	-	5.6
	12	1300	-
	10	1000	20.1
26	8	1300	7.7
	6	1300	7.0
	4	1000	4.9
	2	1000	0.7
27	8	1300	16.2
	6	-	-
	4	1000	7.0
	2	1000	-
28	12	1000	20.1
	10	1300	19.1
	8	1300	7.7
	6	1000	7.0
	4	1100	4.9
29	2	1300	3.2
	8	1000	29.9
	6	900	15.1
	4	1000	10.2
30	2	1300	2.8
	12	1000	20.1
	10	1300	4.6
	8	1300	-
	6	1300	7.0
30	4	900	4.9
	2	1300	3.2
	8	1300	29.9
30	6	1300	15.1



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CHEMICAL GROUT SUMMARY POINTS

FIGURE NO.: 11f

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ

# TECHNICAL NOTES:

## - CHEMICAL GROUT SUMMARY POINTS

Point #s	Depth (ft)	PSI	Lbs.
30	4	1000	5.3
	2	1300	-
31	12	1300	7.0
	10	1000	4.9
	8	1000	3.2
	6	1300	7.0
	4	1300	4.9
	2	1000	3.2
	8	1300	7.0
32	6	1300	4.9
	4	1300	3.2
	2	1000	29.9
33	12	1000	15.1
	10	1000	5.3
	8	1300	-
	6	1000	1.0
	4	1000	4.9
	2	900	3.2
34	8	900	29.9
	6	1300	15.1
	4	1300	2.8
	2	1300	-
35	12	1300	20.1
	10	1000	15.1
	8	1300	7.7
	6	1000	7.0
	4	1300	4.9
	2	1300	3.2
36	8	1300	29.9
	6	1000	15.1
	4	1300	20.2
	2	1000	2.8
37	12	1300	20.1
	10	1000	9.8
	8	1300	-
	6	1000	7.0
	4	1300	1.8
	2	900	-
38	12	1000	14.1
	10	1300	-
	8	1300	-
	6	1300	7.0
	4	1300	4.9
	2	1300	3.2
39	8	1300	19.7
	6	1000	-
	4	900	2.5
	2	1300	-

Point #s	Depth (ft)	PSI	Lbs.
40	8	1300	12.7
	6	1300	-
	4	1300	6.3
	2	1000	-
41	12	1300	20.1
	10	1300	15.1
	8	1000	7.7
	6	1300	7.0
	4	1300	4.9
	2	1000	3.1
42	8	1300	10.2
	6	-	-
	4	1000	9.5
43	12	1300	20.1
	10	1300	15.1
	8	1000	7.7
	6	1000	7.0
	4	1000	4.9
	2	1300	3.2
44	8	1000	16.2
	6	-	-
	4	1300	10.2
45	12	1300	20.1
	10	1000	2.1
	8	1300	-
	6	1000	7.0
	4	1000	4.9
	2	1000	3.2
46	8	900	29.9
	6	1000	15.1
	4	1300	10.2
	2	1300	1.0
47	12	1300	5.6
	10	1300	-
	8	1000	-
	6	900	7.0
	4	1300	4.9
	2	1300	3.2
48	8	1000	29.9
	6	1300	15.1
	4	1300	10.2
	2	1000	2.8
49	12	900	20.1
	10	1300	15.1
	8	1300	1.0
	6	1000	7.0

Point #s	Depth (ft)	PSI	Lbs.
49	4	900	3.5
	2	-	-
50	8	900	23.6
	6	-	-
	4	1000	10.2
	2	900	2.8
51	12	1000	20.1
	10	1000	15.1
	8	1000	7.7
	6	1000	7.0
	4	1300	4.9
	2	900	3.2
52	8	900	24.6
	6	-	-
	4	1300	10.2
	2	1300	2.8
53	12	1300	20.1
	10	1000	15.1
	8	1300	1.8
	6	1300	7.0
	4	1300	4.9
	2	1000	1.8
54	8	1300	29.9
	6	1000	11.3
	4	1000	10.2
	2	1300	2.8
55	12	1300	20.1
	10	1300	9.8
	8	1000	-
	6	1000	7.0
	4	1300	4.9
	2	1300	3.2
56	8	1000	19.7
	6	1300	15.1
	4	1300	8.8
	2	1000	-
57	12	1300	20.1
	10	1300	15.1
	8	1000	2.8
	6	1300	-
	4	1000	7.0
	2	900	1.4
58	8	1300	29.9
	6	1300	9.8
	4	1300	2.8
	2	1300	-
59	8	1000	16.9
	6	1300	-



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### THE MOORINGS CONDO ASSOC. | BLDG #11

341-355 MOORINGS COVE DRIVE, TARPON SPRINGS, FL 34689  
PINELLAS COUNTY

### CHEMICAL GROUT SUMMARY POINTS

FIGURE NO.: 11g

FILE NO.: B2020-018

DATE: 02/23/2021

CHECKED BY: JJ



# TECHNICAL NOTES:

## - CHEMICAL GROUT SUMMARY POINTS

Point #s	Depth (ft)	PSI	Lbs.
59	4	1300	4.9
	2	1000	-
60	12	1300	7.0
	10	-	-
	8	-	-
	6	1300	7.0
	4	1300	3.5
	2	-	-
	12	1100	20.1
61	10	900	1.0
	8	-	-
	6	1300	7.0
	4	1000	4.9
	2	1000	3.2
62	8	1300	24.3
	6	-	-
	4	1300	10.2
63	2	1000	2.8
	12	1000	20.1
	10	1300	15.1
	8	1000	3.2
	6	-	-
64	4	1000	4.9
	2	1000	3.2
	8	1000	29.9
	6	1000	15.1
65	4	1000	10.2
	2	1000	2.8
	12	1000	20.1
	10	1000	15.1
	8	1000	7.7
	6	1000	7.0
	4	1000	4.9
66	2	1000	3.9
	8	1000	29.9
	6	1000	15.1
	4	1000	10.2
67	2	1000	0.7
	12	1300	7.0
	10	-	-
	8	-	-
	6	1000	7.0
68	4	1300	4.9
	2	1000	3.2
	8	1300	16.2
	6	-	-
68	4	1300	2.8
	2	-	-

Point #s	Depth (ft)	PSI	Lbs.
69	12	1300	20.1
	10	1300	15.1
	8	1300	7.7
	6	1300	7.0
	4	1300	4.9
	2	1300	-
	8	1300	29.9
70	6	1300	15.1
	4	1300	10.2
	2	1300	2.8
71	12	1300	20.1
	10	1300	0.3
	8	1300	-
	6	1300	7.0
	4	1300	4.9
72	2	1300	3.2
	8	1300	12.7
	6	1300	-
73	4	1300	10.2
	2	1300	2.8
	12	1300	20.1
	10	1300	15.1
74	8	1300	7.7
	6	1300	7.0
	4	1300	4.9
	2	1300	3.2
75	8	1300	29.9
	6	1300	6.0
	4	1300	10.2
	2	1300	2.8
	12	1300	20.1
76	10	1300	15.1
	8	1300	7.7
	6	1300	7.0
	4	1300	4.9
77	2	1300	3.2
	8	1300	29.9
	6	1300	3.5
	4	1300	10.2
	2	1300	2.8
78	12	1300	20.1
	10	1300	15.1
	8	1300	7.7
	6	1300	7.0
78	4	1300	4.9
	2	1300	3.2
	8	1300	19.4
78	6	-	-

Point #s	Depth (ft)	PSI	Lbs.
78	4	1300	10.2
	2	1300	2.8
79	12	1300	9.1
	10	1300	-
	8	1300	-
	6	1300	7.0
	4	1300	4.9
	2	1300	3.2
	8	1300	29.9
80	6	1300	15.1
	4	1300	10.2
	2	1300	-
81	12	1300	20.1
	10	1300	15.1
	8	1300	7.7
	6	1300	7.0
	4	1300	4.9
82	8	1300	29.9
	6	1300	7.4
	4	1300	10.2
83	2	1300	2.8
	8	1300	29.9
	6	1300	15.1
	4	1300	10.2
84	2	1300	-
	12	1300	15.8
	10	1300	-
	8	1300	-
	6	1300	7.0
85	4	1300	-
	2	1300	-
	8	1300	12.7
	6	1300	-
86	4	1300	4.9
	2	1300	-
	12	1300	20.1
	10	1300	1.0
	8	1300	-
87	6	1300	7.0
	4	1300	4.9
	2	1300	-
	8	1300	6.7
88	6	1300	-
	4	1300	10.2
	2	1300	2.8
88	12	1300	20.1
	10	1300	6.0
	8	1300	-

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 PINELLAS COUNTY  
**CHEMICAL GROUT SUMMARY POINTS**

FIGURE NO.: 11h  
 FILE NO.: B2020-018  
 DATE: 02/23/2021  
 CHECKED BY: JJ



# TECHNICAL NOTES:

## - CHEMICAL GROUT SUMMARY POINTS

Point #s	Depth (ft)	PSI	Lbs.
88	6	1300	7.0
	4	1300	4.9
	2	1300	3.2
89	8	1000	29.9
	6	1000	15.1
	4	1000	10.2
	2	1000	2.8
90	12	1000	20.1
	10	1000	7.7
	8	1000	-
	6	1000	7.0
	4	1000	4.9
	2	1000	3.2
91	8	1000	8.1
	6	1000	-
	4	1000	10.2
	2	1000	2.8
92	12	1000	20.1
	10	1000	15.1
	8	1000	2.8
	6	1000	7.0
	4	1000	4.9
93	2	1000	3.2
	8	1000	29.9
	6	1000	15.1
	4	1000	10.2
94	2	1000	-
	8	1000	27.8
	6	1000	-
	4	1000	10.2
	2	1000	2.8
95	8	1000	12.0
	6	1000	-
	4	1000	6.3
	2	1000	-
96	8	1300	25.3
	6	-	-
	4	900	10.2
	2	1300	2.8
97	8	1000	29.9
	6	1000	15.1
	4	1000	10.2
	2	1300	2.8
98	12	1300	20.1
	10	1300	15.1
	8	1000	1.0
	6	1000	7.0
	4	1000	4.9

Point #s	Depth (ft)	PSI	Lbs.
98	2	1000	3.2
99	12	1300	20.1
	10	1000	15.1
	8	1300	7.7
	6	1000	7.0
	4	1300	1.4
	2	-	-
100	12	1000	20.1
	10	900	15.1
	8	1300	-
	6	1000	7.0
	4	900	4.9
	2	1000	3.2
101	12	1000	20.1
	10	1000	15.1
	8	900	7.7
	6	900	7.0
	4	1000	4.9
	2	900	3.2
102	12	1300	20.1
	10	1300	15.1
	8	1300	7.7
	6	1000	7.0
	4	1300	4.9
103	2	1000	3.2
	12	1300	20.1
	10	1300	15.1
	8	-	-
	6	1000	7.0
	4	1000	4.9
104	2	900	3.2
	12	1000	20.1
	10	1300	15.1
	8	1300	7.7
	6	1300	7.0
	4	1000	1.4
<b>Total:</b>			<b>4543.7</b>

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CHEMICAL GROUT SUMMARY POINTS

FIGURE NO.: 11i

FILE NO.: B2020-018

DATE: 02/23/2021

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