

# ***Atlas-Helical* & ATLAS RESISTANCE PIERS**

## **CASE STUDY 110-9**

### ***Atlas-Helical* Slab Piers and Atlas Resistance Piers are Used to Restore and Stabilize a New House**

**Atlanta, Georgia**

Installed by:  
Atlas Piers of Atlanta  
Alpharetta, Georgia

Designed by:  
Peach State Building Consultants, Inc.  
Lawrenceville, Georgia

## **LOOK OUT! New House Headed South!**



This is a view of the front elevation of the residence. The **ATLAS RESISTANCE PIERS** were installed on the rear of the structure and ***Atlas-Helical* Slab Piers** inside.

**Description of Site:** This house is situated on a sloping lot. The cut and fill lot slopes at approximately one foot in five feet. Behind the structure the grade drops to a swale 15 feet below the lot at a slope of 1 to 1. The rear of the structure is constructed upon graded fill. The engineers found evidence of active slope movement of the fill. Standard Penetration Test values indicated values of 2 or less over vertical expanses of 5 feet or more in the area of fill.

**Description of Structure:** This new two story house has a full basement that is below grade at the front of the house and above grade at the rear. The upper levels of the structure and the rear wall of the basement are of wood frame construction. The front of the house is brick veneer while the rear and sides have siding. The house showed settlement of up to 5 inches with respect to the front of the house. The basement slab and the rear porch footing both show fractured concrete.

**Description of Findings:** The engineers recommended permanent stabilization and restoration of the foundation and slab. Soils with minimum safe bearing pressures of 5,000 psf were found at depths ranging from 5 to more than 15 feet. **ATLAS RESISTANCE PIERS** and **Atlas-Helical Slab Piers** were chosen to support and restore the structure. The recommendation to stabilize the soil mass was the construction of a 6 foot high crib wall and slope modification of the back yard.





The photograph above shows the rear of the structure where settlement occurred. **ATLAS RESISTANCE PIERS** were installed from the air conditioning units to the rear and across the back of the house.

The technician is shown in both photos installing the pier pipe. The system uses a quiet hydraulic pump for a smooth installation that is without vibration.

Each pier is carefully driven to a suitable load bearing stratum. Before the structure is restored, each pier is individually tested to a load greater than the working load required. This verifies a factor of safety against future settlement.



After the **ATLAS RESISTANCE PIERS** are installed to the load bearing stratum, hydraulic lifting rams are installed on each Pier. The rams are gently actuated together through a manifold arrangement. The photograph below shows a lift of over 5 inches.



The photograph above show an **ATLAS RESISTANCE PIER** installed on the side of the structure. The **ATLAS RESISTANCE PIER** is ideal for installation in tight locations; only a small, hand dug excavation is required. This is Pier location number 14.

### **Atlas Piers Installation Summary**

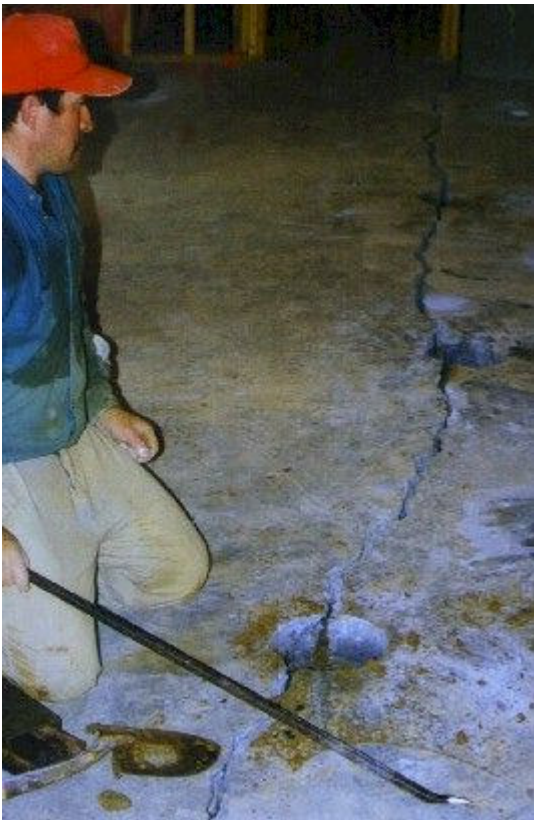
<b><u>Design Engineer:</u></b>	<b>Peach State Building Consultants, Inc., Lawrenceville, Georgia</b>
<b><u>Installed By:</u></b>	<b>Atlas Resistance Piers of Atlanta -- Alpharetta, Georgia</b>
<b><u>Atlas Resistance Pier Product:</u></b>	<b>AP2S-3500 Two Piece ATLAS RESISTANCE PIER</b>
<b><u>Number of Resistance Piers:</u></b>	<b>18</b>
<b><u>Average Drive Force:</u></b>	<b>32,700 pounds</b>
<b><u>Average Lift Force:</u></b>	<b>14,160 pounds</b>
<b><u>Average Factor of Safety:</u></b>	<b>2.30:1 [130% above actual lift force]</b>
<b><u>Amount of Lift:</u></b>	<b>up to 5 inches</b>
<b><u>Average Depth:</u></b>	<b>14' - 5"</b>

### **Atlas-Helical Installation Summary**

<b><u>Installed By:</u></b>	<b>Atlas Resistance Piers of Atlanta -- Alpharetta, Georgia</b>
<b><u>Atlas-Helical Foundation Pier Product:</u></b>	<b>AHS-SPSP-SQ150 /8/ x [5'-0"] Screw Activated Slab Pier AHE-SQ150 x [5'-0"] Extension Assembly</b>
<b><u>Number of Atlas-Helical Slab Piers:</u></b>	<b>17</b>
<b><u>Installation Torque:</u></b>	<b>3,000 ft-lbs</b>
<b><u>Depth to Design Torque:</u></b>	<b>10 to 15 feet</b>
<b><u>Amount of Lift:</u></b>	<b>up to 2 inches</b>



The photograph above shows the technicians installing an **ATLAS-Helical Slab Pier** at location "P" inside the structure. The pier is installed until the design torque is achieved.



The photograph at left shows the preparation required **ATLAS-Helical Slab Piers** installations. Eight inch diameter holes are drilled through the concrete slab. A technician then excavates and prepares the lower side of the slab to receive the Sub-slab Support Assembly. Following this careful preparation, the **ATLAS-Helical Slab Pier** is installed using a quiet hydraulic torque motor. This is a view of Pier locations "H", "G", "F" & "E".

Once the **ATLAS-Helical Slab Pier** is installed to design torque, the Sub-slab support Assembly is installed. The floor is then restored to as close to original elevation as construction permits by applying torque to the Lifting Bolts evenly across the floor. In the photograph at right show **ATLAS-Helical Slab Pier** locations "F", "G", "H", & "J" after restoration.

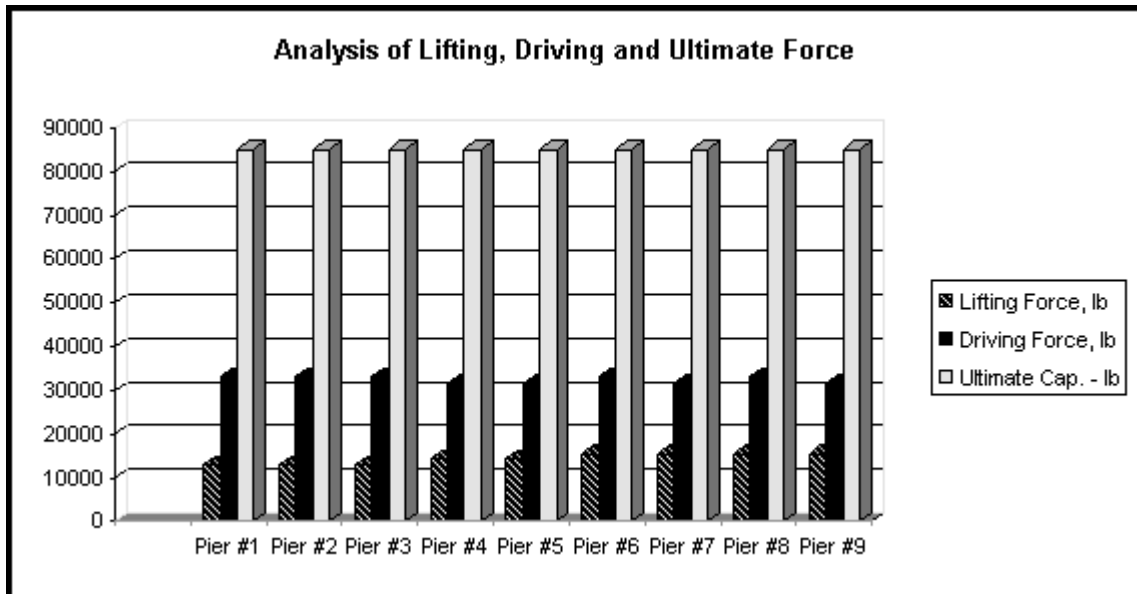


# Atlas Piers

## INSTALLATION SUMMARY

### Pier Installation Log

Pier Section	Location and Driving force -- pounds								
	Pier #1	Pier #2	Pier #3	Pier #4	Pier #5	Pier #6	Pier #7	Pier #8	Pier #9
Sect. #1	33,160	33,160	13,264	11,606	8,290	7,461	12,435	8,290	8,290
Sect. #2			23,212	16,580	16,580	13,264	14,922	14,922	8,290
Sect. #3			33,160	24,870	16,580	16,580	19,896	33,160	12,435
Sect. #4				31,502	31,502	33,160	18,238		13,264
Sect. #5							31,502		14,922
Sect. #6									14,922
Sect. #7									31,502



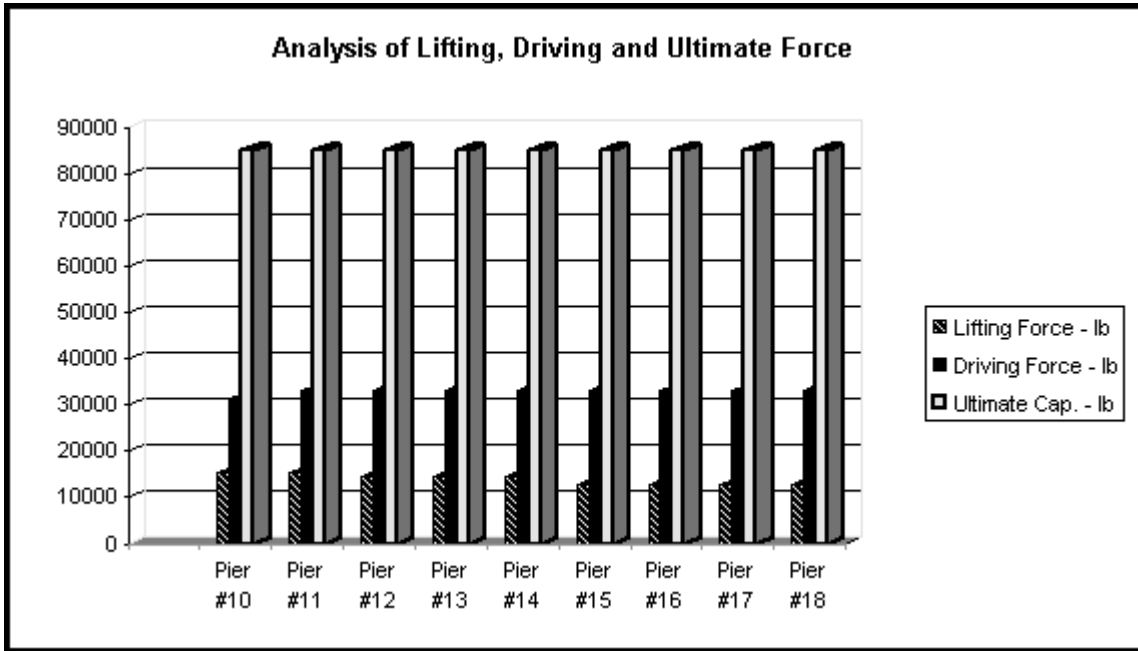
### Factor of Safety

### Results

Location	Lifting Force, lb	Driving Force, lb	Ultimate Cap. - lb	Working F.S.	Ultimate F.S.
Pier #1	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #2	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #3	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #4	14,420	31,502	85,000	2.18 : 1	5.89 : 1
Pier #5	14,420	31,501	85,000	2.18 : 1	5.89 : 1
Pier #6	15,450	33,160	85,000	2.15 : 1	5.50 : 1
Pier #7	15,450	31,502	85,000	2.04 : 1	5.50 : 1
Pier #8	15,450	33,160	85,000	2.15 : 1	5.50 : 1
Pier #9	15,450	31,502	85,000	2.04 : 1	5.50 : 1

Location	Approx. Lift - in.	Depth to Bearing
Pier #1	0"	3' - 6"
Pier #2	0"	3' - 6"
Pier #3	0"	10' - 6"
Pier #4	2"	14' - 0"
Pier #5	2"	14' - 0"
Pier #6	3"	14' - 0"
Pier #7	3"	17' - 0"
Pier #8	3"	10' - 6"
Pier #9	3-1/2"	24' - 6"

Pier Section	Location and Driving force -- pounds								
	Pier #10	Pier #11	Pier #12	Pier #13	Pier #14	Pier #15	Pier #16	Pier #17	Pier #18
Sect. #1	8,290	11,606	11,606	9,948	11,606	9,948	11,606	12,435	12,435
Sect. #2	8,290	11,606	11,606	11,606	13,264	12,435	12,435	23,212	20,725
Sect. #3	11,606	16,580	13,264	12,435	13,264	27,357	16,580	<b>33,160</b>	<b>33,160</b>
Sect. #4	13,264	23,212	<b>33,160</b>	16,580	18,238	<b>33,160</b>	<b>33,160</b>		
Sect. #5	18,238	<b>33,160</b>		21,554	<b>33,160</b>				
Sect. #6	19,896			24,870					
Sect. #7	<b>31,502</b>			<b>33,160</b>					



### Factor of Safety

### Results

Location	Lifting Force, lb	Driving Force, lb	Ultimate Cap. - lb	Working F.S.	Ultimate F.S.
Pier #10	15,450	31,502	85,000	2.04 : 1	5.50 : 1
Pier #11	15,450	33,160	85,000	2.15 : 1	5.50 : 1
Pier #12	14,420	33,160	85,000	2.30 : 1	5.89 : 1
Pier #13	14,420	33,160	85,000	2.20 : 1	5.89 : 1
Pier #14	14,420	33,160	85,000	2.20 : 1	5.89 : 1
Pier #15	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #16	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #17	12,875	33,160	85,000	2.58 : 1	6.60 : 1
Pier #18	12,875	33,160	85,000	2.58 : 1	6.60 : 1

Location	Approx. Lift - in.	Depth to Bearing
Pier #10	3-1/2"	24' - 6"
Pier #11	3"	17' - 6"
Pier #12	2"	14' - 0"
Pier #13	1-1/2"	24' - 6"
Pier #14	1"	17' - 6"
Pier #15	1/2"	14' - 0"
Pier #16	0"	14' - 0"
Pier #17	0"	10' - 6"
Pier #18	0"	10' - 6"

## Slab Pier Installation Log

Slab Pier Depth	Location and Installation Torque - ft-lbs								
	Pier A	Pier B	Pier C	Pier D	Pier E	Pier F	Pier G	Pier H	Pier J
5'	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
10'	1,500	3,000	3,000	1,500	1,500	1,500	1,500	3,000	1,500
15'	3,000			3,000	3,000	3,000	3,000		3,000

Slab Pier Depth	Location and Installation Torque - ft-lbs							
	Pier K	Pier L	Pier M	Pier N	Pier P	Pier Q	Pier R	Pier S
5'	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
10'	3,000	1,500	1,500	1,500	3,000	1,500	1,500	1,500
15'		3,000	3,000	3,000		3,000	3,000	3,000

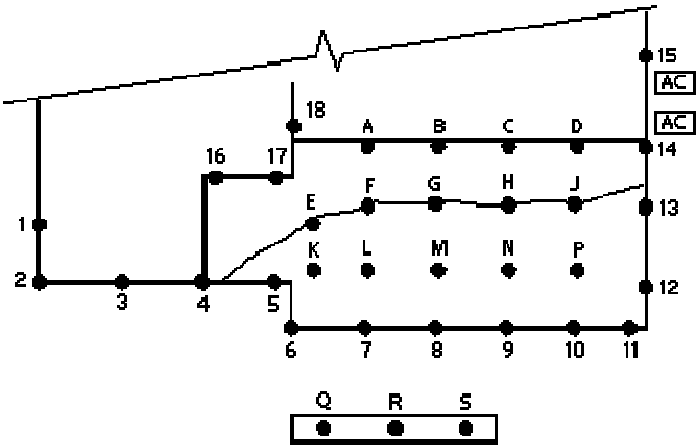
### Results

Location	Approx. Lift - in.	Depth to Torque
Pier A	0"	15'
Pier B	0"	10'
Pier C	0"	10'
Pier D	0"	15'
Pier E	0"	15'
Pier F	0"	15'
Pier G	0"	15'
Pier H	0"	10'
Pier J	0"	15'

### Results

Location	Approx. Lift - in.	Depth to Torque
Pier K	2"	10'
Pier L	2"	15'
Pier M	2"	15'
Pier N	2"	15'
Pier P	2"	10'
Pier Q	1"	15'
Pier R	0"	15'
Pier S	0"	15'

### PIER LOCATION PLAN



Force	Force	Capacity
Lifting	Driving	Ultimate
14	33	85

### PIER INSTALLATION SUMMARY

