

Foundation Failure Caused by Incomplete Compaction of Fill Soil

Telluride, Colorado

Installed By:

Mays Construction Specialties, Inc.
Grand Junction, Colorado



Description of the Building: This two story, four family condominium was built on a steel reinforced, concrete foundation consisting of a perimeter footing, stem wall and a floor slab. The structure is of wood frame construction with an exterior covering of wood siding.

Distress Observed: Differential settlement of the perimeter walls as the structure was being built caused distress. Cracks appeared in the slab and foundation stem walls. The movements were causing problems with finishing the interior of the building.

Cause of the Problem: The engineers determined that the settlement was the result of consolidation of inadequately compacted fill soil. Of equal or greater significance was the determination that the plumbing trench located at the southwestern side of the structure had not been compacted. This area suffered the greatest settlement with movements of four inches!

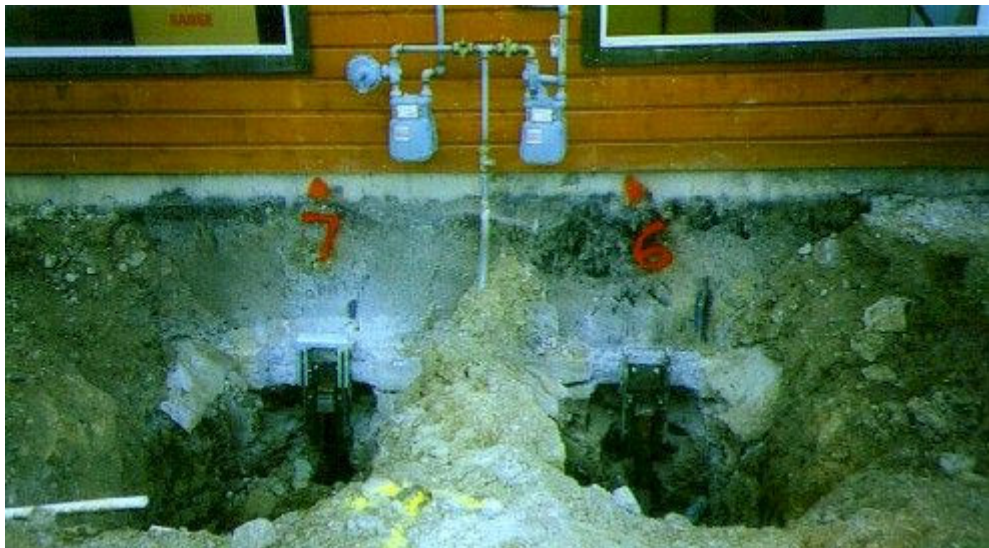
<u>Repaired By:</u>	Mays Construction Specialties, Inc. Grand Junction, Colorado				
<u>Average Drive Force:</u>	50,250 pounds				
<u>Average Lift Force:</u>	37,780 pounds				
<u>Average Factor of Safety:</u>	33% Above Lift Force, 125% Above Lift to Ultimate Capacity				
<u>Number of Piers:</u>	16	<u>Amount of Lift:</u>	Up to 4 in.	<u>Average Depth:</u>	9 ft.



RAPID INSTALLATION!

Small excavations permit the installation of the Atlas Resistance Piers. This means no heavy equipment and minimal disruption to soil near the structure. The piers are driven to a suitable load bearing stratum using quiet and smooth hydraulics.

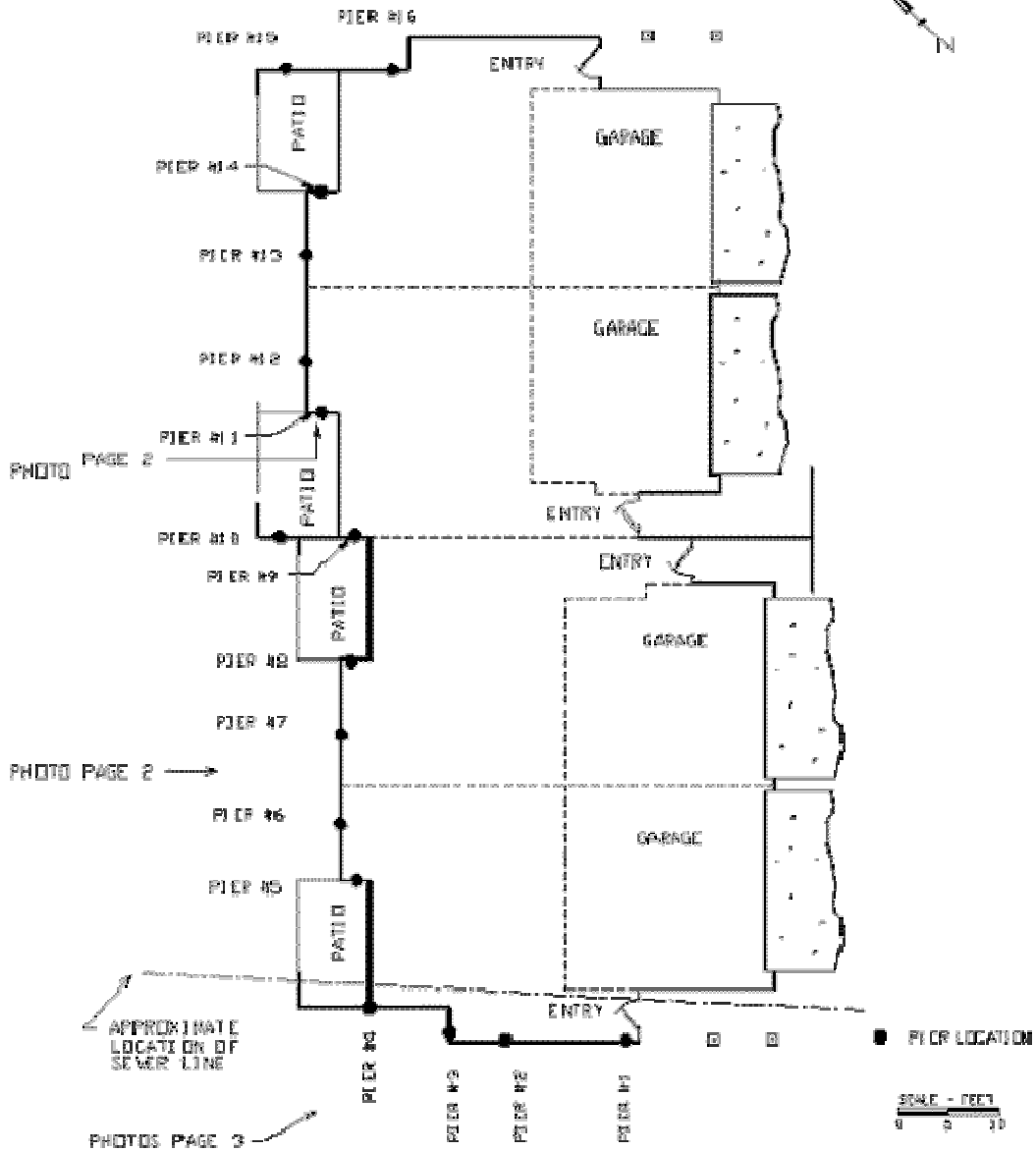
These photographs show the Atlas Resistance Piers installed along the northwest side of the structure. Notice that the footing has been carefully notched to place the load over the pier.





SUCCESS! These photographs show the southwest side of the structure before and after restoration. The structure is gently returned to as close as possible to original elevations using a series of hydraulic rams connected together for a uniform lift.





Atlas Piers

Foundation Products &

North Star Telluride,

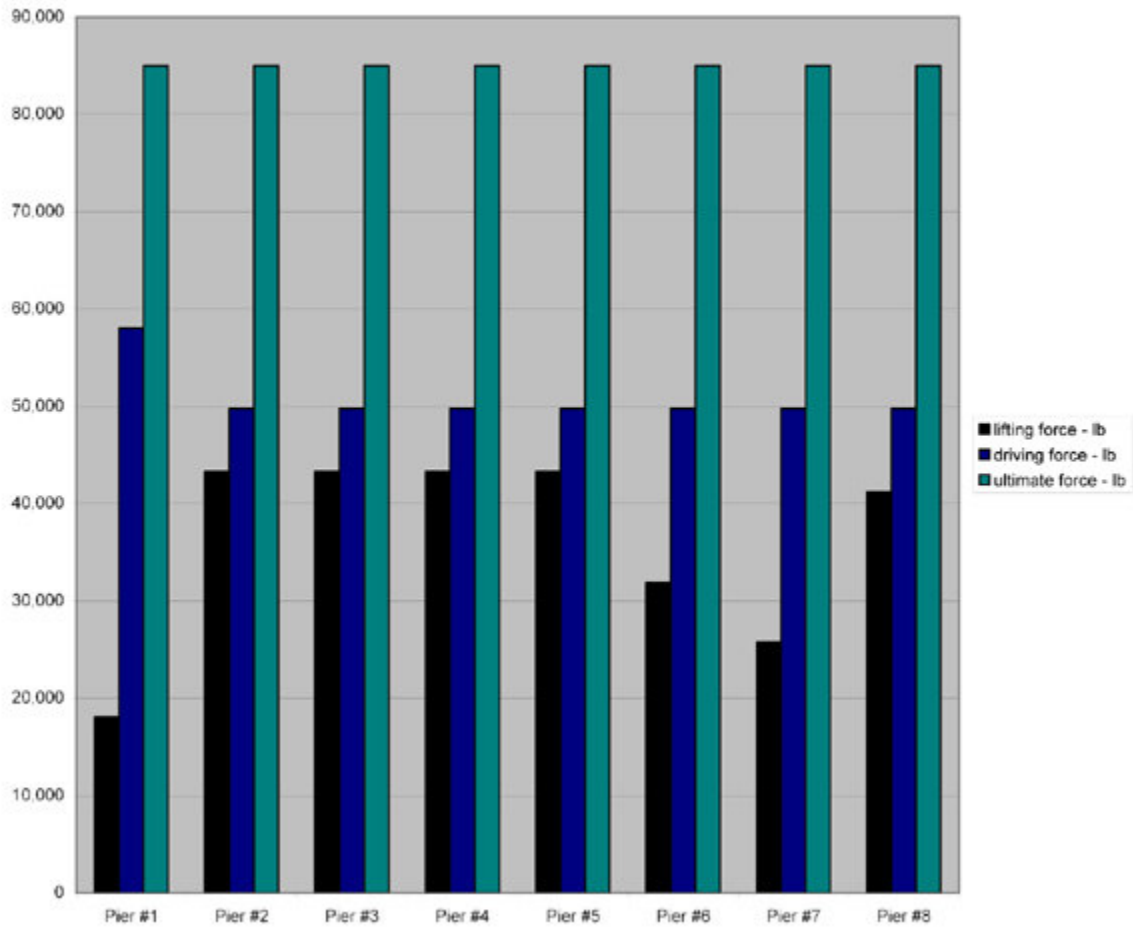
Dwg	D.J.C.	Date	10-25-06
Dwg	C6548-2	MAYS	

ATLAS RESISTANCE PIERS INSTALLATION SUMMARY

Pier Installation Log

<i>Pier Section</i>	<i>Location and Driving Force</i>							
	Pier #1	Pier #2	Pier #3	Pier #4	Pier #5	Pier #6	Pier #7	Pier #8
<i>Sect. #1</i>	6,632	0	0	0	4,148	0	4,145	0
<i>Sect. #2</i>	7,461	6,632	9,948	29,015	19,896	24,870	27,357	20,725
<i>Sect. #3</i>	58,030	49,740	49,740	49,740	49,740	49,740	49,740	49,740

Analysis of Lifting, Driving, and Ultimate Force



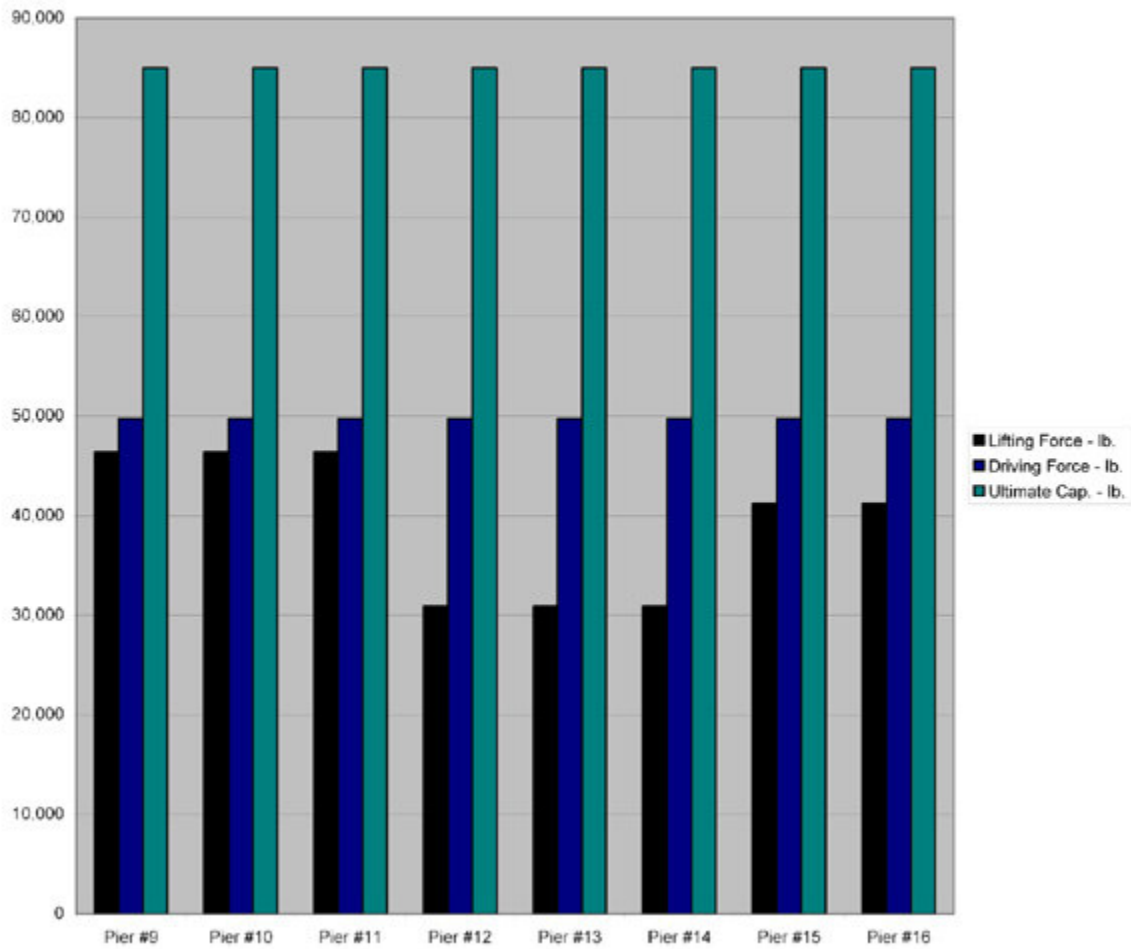
Factor Of Safety						Results	
Location	Lifting Force lb.	Driving Force lb.	Ultimate Cap. lb.	Working F. S.	Ultimate F. S.	Approx. Lift -in.	Depth to Bearing
Pier #1	18,100	58,030	85,000	3.20:1	4.70:1	1 / 2 "	10' - 6"
Pier #2	43,300	49,740	85,000	1.15:1	1.96:1	1-3/4"	8' - 6"
Pier #3	43,300	49,740	85,000	1.15:1	1.96:1	2-7/8"	9' - 8"
Pier #4	43,300	49,740	85,000	1.15:1	1.96:1	4"	10" - 6"
Pier #5	43,300	49,740	85,000	1.15:1	1.96:1	2-3/4"	8' - 0"
Pier #6	31,900	49,740	85,000	1.56:1	2.66:1	1-1/2"	9' - 0"
Pier #7	25,800	49,740	85,000	1.93:1	3.29:1	1-1/2"	9' - 0"
Pier #8	41,200	49,740	85,000	1.21:1	2.06:1	1"	10' - 0"

INSTALLATION SUMMARY-continued

Pier Installation Log

Pier Location	Location and Driving force – pounds							
	Pier #9	Pier #10	Pier #11	Pier #12	Pier #13	Pier #14	Pier #15	Pier #16
Sect. #1	33,160	0	23,212	24,041	24,870	25,699	16,580	8,290
Sect. #2	49,740	19,896	49,740	49,740	35,647	34,818	33,160	26,528
Sect. #3		49,740			49,740	49,740	49,740	49,740

Analysis of Lifting, Driving, and Ultimate Force



INSTALLATION SUMMARY-continued

<i>Location</i>	<i>Lifting Force – lb.</i>	<i>Driving Force – lb.</i>	<i>Ultimate Force – lb.</i>	<i>Working F.S.</i>	<i>Ultimate F. S.</i>	<i>Approx. Lift– in.</i>	<i>Depth to Bearing</i>
<i>Pier #9</i>	46,400	49,740	85,000	1.07:1	1.83:1	1"	6' – 6"
<i>Pier #10</i>	46,400	49,740	85,000	1.07:1	1.83:1	1"	10' – 0"
<i>Pier #11</i>	46,400	49,740	85,000	1.07:1	1.83:1	1"	7' – 0"
<i>Pier #12</i>	30,900	49,740	85,000	1.61:1	2.75:1	3 / 4"	7' – 0"
<i>Pier #13</i>	30,900	49,740	85,000	1.61:1	2.75:1	3 / 4"	10' – 0"
<i>Pier #14</i>	30,900	49,740	85,000	1.61:1	2.75:1	3 / 4"	8' – 6"
<i>Pier #15</i>	41,200	49,740	85,000	1.21:1	2.06:1	3 / 4"	8' – 6"
<i>Pier #16</i>	41,200	49,740	85,000	1.21:1	2.06:1	1 / 2"	9' – 0"