

COMMERCIAL RETAINING WALL REPAIR & STRENGTHENING WITH CARBON FIBER AND TIEBACKS

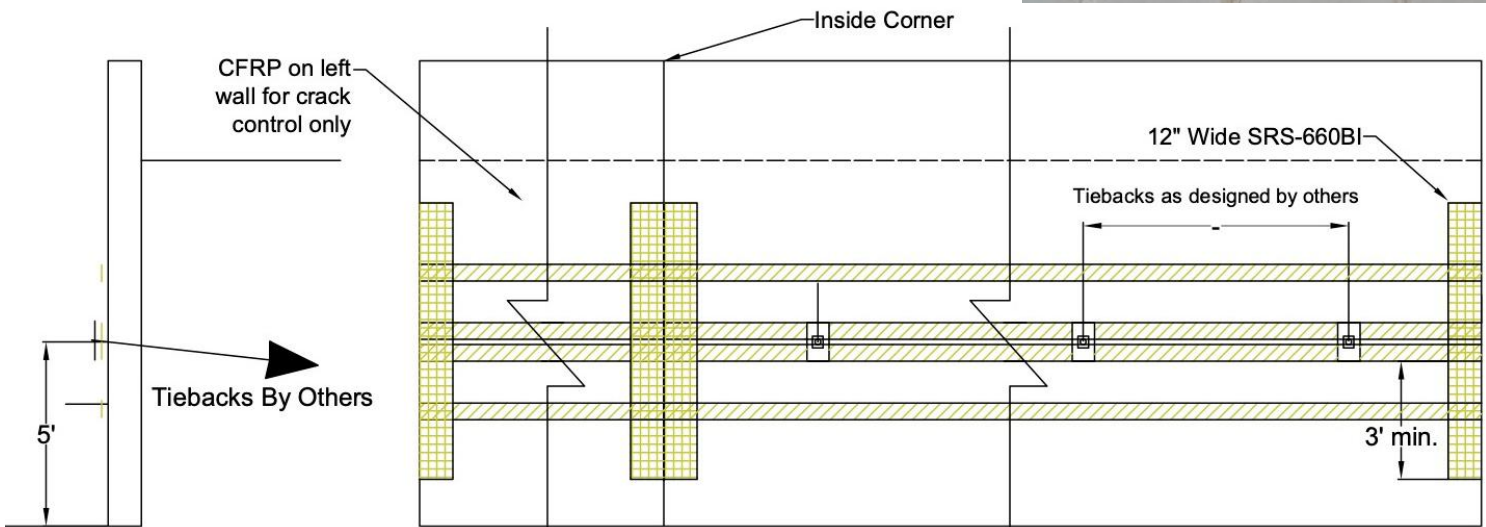
NCSD SPRING MOUNTAIN ELEMENTARY SCHOOL
HAPPY VALLEY, OR, USA



This retaining wall, adjacent to the covered play area and playground located at NCSD Spring Mountain Elementary School in Happy Valley, OR was constructed in approximately 2000. A horizontal outward bow of the wall was observed and additionally, cracking was observed on the high side of the wall between the asphalt paving and the back surface of the retaining wall. Vertical cracks were also present throughout the wall length.



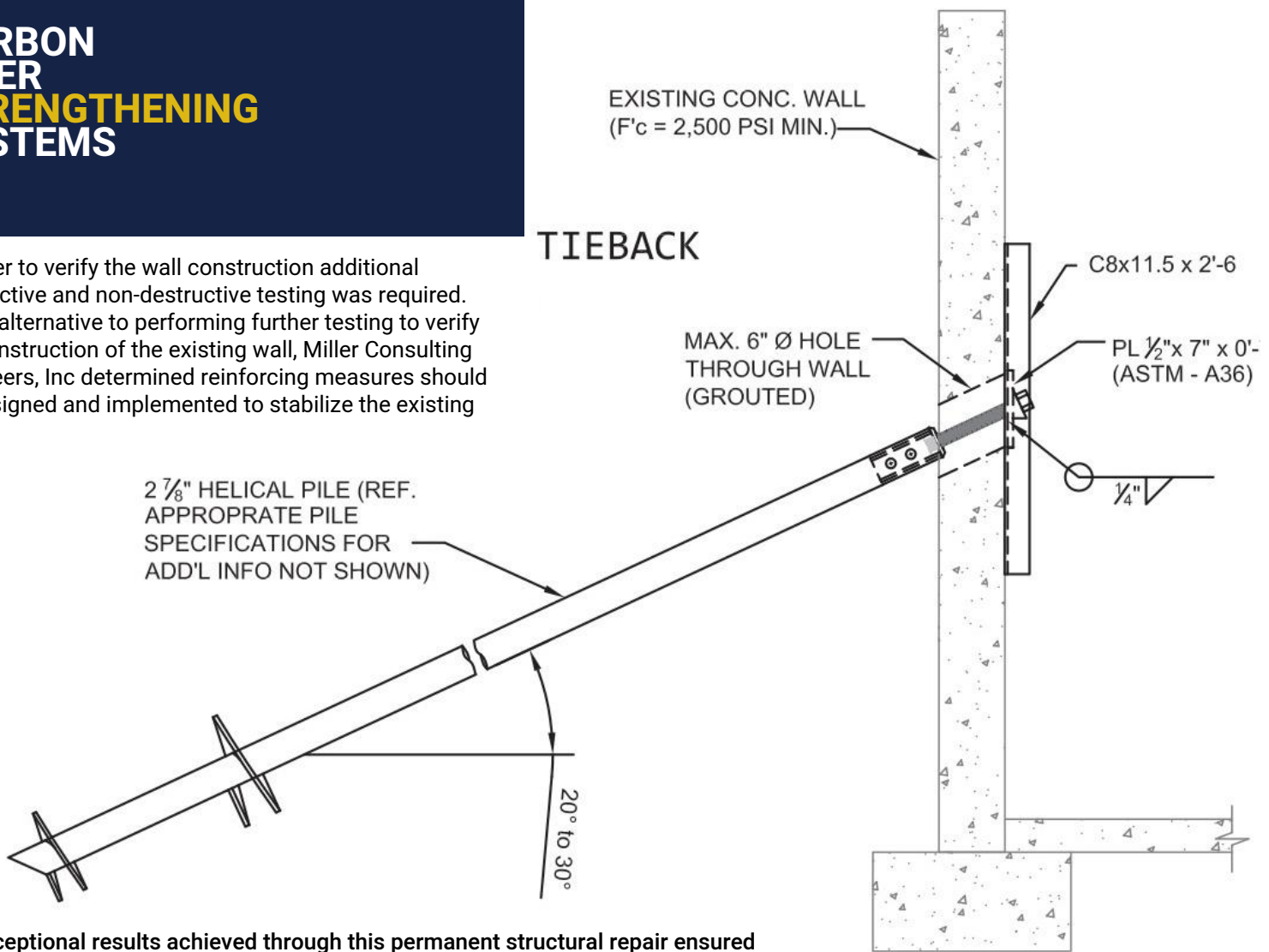
Based on the original construction drawings, the existing retaining wall was designed assuming the wall would be restrained at the top by a concrete slab. However, the asphalt paving that existed behind the wall would not allow for restraint of the wall. In addition, the placement of the vertical reinforcing steel shown in the original construction detail did not appear to be located correctly for the wall to act in a restrained condition. Without the rebar dowels into the slab, the wall was determined to be unstable under anticipated lateral earth pressures leading to the bow in the wall that was observed.



CARBON FIBER STRENGTHENING SYSTEMS

In order to verify the wall construction additional destructive and non-destructive testing was required. As an alternative to performing further testing to verify the construction of the existing wall, Miller Consulting Engineers, Inc determined reinforcing measures should be designed and implemented to stabilize the existing wall.

TIEBACK



The exceptional results achieved through this permanent structural repair ensured the safety of the students playground for generations to come.



Local foundation repair contractor Ram Jack West reached out to Structural Reinforcement Solutions for a carbon fiber strengthening solution to be used in conjunction with wall tie backs.

In a collaborative effort from Oregon based NORTHWEST STRUCTURAL ENGINEERING GROUP LLC, Fortified Engineering Solutions and Uzman Engineering, SRS-600 unidirectional and SRS-660 bidirectional carbon fiber were specified to restore strength and stability to the playground wall.

The exceptional results achieved through this permanent structural repair ensured the safety of not only the students but the playground itself for generations to come.

Learn more at Structuralrs.com

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