

Constructive Guidelines for Ergonomics

Tip Sheets

Trade: Concrete Work
Job Task: Finishing – Hand Troweling

<p>General Tasks</p> <ul style="list-style-type: none"> ➤ Use various concrete finishing trowels to apply finer finish to concrete. Hand troweling is generally done in stages and is repeated as the concrete cures over time. 	<p>Common Tools</p> <ul style="list-style-type: none"> ➤ Hand Trowels ➤ Sliders
<p>Potential Risk Factors <i>Risk Factors can lead to increased risk for Work Related Musculoskeletal Disorders (WMSD's)</i></p> <p>Continuous Extreme Forward Back Bending</p> <ul style="list-style-type: none"> • Moderate Risk primarily when finishing concretes slab edges around the perimeter of a large mat/deck pour or finishing footings for extended periods of time. <p>Continuous Kneeling with Knee Contact</p> <ul style="list-style-type: none"> • Higher Risk with extensive kneeling for extended periods when using sliders to move across concrete while hand troweling. <p>High Hand Force Grip with Awkward Wrist Postures</p> <ul style="list-style-type: none"> • Higher Risk with high hand force when gripping trowels coupled with awkward wrist postures for extended periods. Awkward wrist postures are often coupled with contact stress along the palm of the hand when holding a common Marshall Town trowel the opposite direction in the hand from the way it is was designed. <p>Highly Repetitive Motion with High Forceful Hand Exertions</p> <ul style="list-style-type: none"> • Higher Risk with high hand force when gripping trowels coupled with repetitive hand/wrist and arm motion for extended periods. 	<p>Possible Solutions Awkward Posture, Kneeling, High Hand Force & Repetitive Motion Solutions:</p> <ul style="list-style-type: none"> ➤ Use one trowel in each hand and alternate hands frequently if manual troweling is performed for more than 2 hours a day. ➤ Rotate between hand troweling and other finishing tasks every 2-4 hours. ➤ Use power trowels whenever possible to reduce all physical demands of manual hand troweling. ➤ Provide knee pads or put pads inside of sliders to reduce knee contact stress, particularly if other solutions are not feasible. ➤ Evaluate the use of alternative trowel designs that promote improved hand/wrist postures, reduce hand grip forces and relieve contact stress along the palm of the hand when fanning and leaning on trowels. ➤ Consider using grip kit material to wrap handle of Marshall Town trowels and reduce grip forces and contact stress to the hand. Contact stress occurs when this trowel is held in a reverse position in the hand during daily use and the sharp medial edge of the trowel handle contacts the palm of the hand. <p>Potential Benefits</p> <ul style="list-style-type: none"> ✓ Increased productivity. ✓ Increases blood flow and reduces muscle tension. ✓ Reduces strain on hand and arm muscles. ✓ Reduces exertion of lower back. ✓ Reduces awkward wrist postures. ✓ Reduces knee stress.
<p>Feasibility</p> <ul style="list-style-type: none"> • Engineering Control Single Person Power Screed • Engineering Control • Engineering Control Anti-Vibration Gloves (Pair) • Work Practice Control • Administrative Control <p>Estimated Cost of Intervention</p> <ul style="list-style-type: none"> • \$919.97 for a Single person Power Screed • \$43.99 for Anti-Vibration Gloves (Pair) • Depends on manufacturer. 	 