WHAT IS CLAIMED IS:

1. A mechanical joint for joining a first pre-cast pile with a second pre-cast pile to form a continuous pre-cast pile, the mechanical joint comprising:

a first end plate comprising: four recesses extending substantially perpendicular to a plane of the first end plate; and

a collar plate comprising four sockets extending substantially parallel to a plane of the first end plate, wherein each socket defines a corresponding first passage that intersects and passes through a corresponding one of the four recesses, and each socket comprises a first section having socket surrounding walls extending from an opening in the collar plate to where the socket intersects with the recess, and a second section that passes through the recess via two recess openings on opposite sides; and

a second end plate comprising four projections extending substantially perpendicular to the plane of the second end plate, each projection comprising a second passage therethrough which extends substantially parallel to the plane of the second end plate;

wherein each recess is arranged to receive one complimentary projection,

wherein each pair of first and second passages are configured to removably receive a bolt that interconnects each recess and projection pair, such that each bolt locks each projection within the complimentary recess.

2. The mechanical joint of claim 1, wherein the first pre-cast pile is connected to the second pre-cast pile by locking and/or fastening of the first end plate with the second end plate without welding.

3. The mechanical joint of any of the preceding claims 1-2, wherein each of the first pre-cast pile and the second pre-cast pile pre-cast pile is a reinforced concrete pile.

4. The mechanical joint of any of the preceding claims 1-3, wherein the first end plate and the second end plate comprise a square base.

5. The mechanical joint of any of the preceding claims 1-4, wherein the first pre-cast pile is coupled to a side of the first end plate opposite to a side having openings of the recesses.

6. The mechanical joint of any of the preceding claims 1-5, wherein the second pre-cast pile is coupled to a side of the second end plate opposite to a side having the projections.

7. The mechanical joint of any of the preceding claims 1-6, wherein the bolt is threaded and the first passage of the socket is correspondingly threaded so as to complimentarily receive the bolt.

8. A method of connecting a first pre-cast pile with a second pre-cast pile to form a continuous pre-cast pile using a mechanical joint, the method comprising the steps of:

embedding a first end plate to an end portion of the first pre-cast pile, the first end plate comprising four recesses extending substantially perpendicular to the plane of the first end plate; and a collar plate comprising four sockets extending substantially parallel to the plane of the first end plate, wherein each socket defines a corresponding first passage that intersects and passes through a corresponding one of the four recesses, and each socket comprises a first section having socket surrounding walls extending from an opening in the collar plate to where the socket intersects with the recess and a second section that passes through the recess via two recess openings on opposite sides;

embedding a second end plate to an end portion of the second pre-cast pile, the second end plate comprising four projections extending substantially perpendicular to the plane of the second end plate, each projection comprising a second passage therethrough which extends substantially parallel to the plane of the second end plate,

inserting each of the projections into the respective recesses;

aligning the first passage and the second passage; and

connecting the first pre-cast pile with the second pre-cast pile to form the continuous pre-cast pile by inserting a bolt through each pair of the first passages and the second passages.