Claim

What is claimed is:

1. A connection system configured for connection between hollow structural steel columns and post-tensioned concrete slabs, the connection system, when installed, comprising:

a male connection at a top of a lower hollow structural steel column and a female connection at a base of an upper hollow structural steel column,

the male connection comprising

a steel cap plate at the top of the lower hollow structural steel column,

a group of guide plates at a top center of the steel cap plate, and

a group of threaded shear studs or bolts and leveling nuts located around all sides of the group of guide plates, one set on each side,

the female connection comprising

triangular brackets connected to each side of the upper hollow structural steel column, each of the triangular brackets provided with a drilled hole,

a diaphragm plate located inside an open end and attached to inner walls of the upper hollow structural steel column, and

openings provided above the triangular brackets, one on each side of the upper hollow structural steel column,

wherein the open end of the female connection of the upper hollow structural steel column is placed over the group of guide plates of the male connection of the lower hollow structural steel column, each threaded shear stud or bolt is inserted through the drilled hole on a top of the leveling nut, a tightening nut is tightened onto the threaded shear stud or bolt protruding from the drilled hole, and additional steel reinforcements are inserted through the openings and spliced to steel reinforcements of the post-tensioned concrete slabs.

2. The connection system according to Claim 1, wherein the openings are provided in directions of the steel reinforcements of the post-tensioned concrete slabs.

3. The connection system according to Claim 2, wherein the additional steel reinforcements are inserted through the openings in x and y directions.

4. The connection system according to Claim 1, wherein the steel cap plate is wider than a width of the hollow structural steel column.

5. The connection system according to Claim 1, further comprises a circular hole at a center of the diaphragm plate, configured to facilitate a concrete fill during the concrete slab pouring.

6. The connection system according to Claim 1, wherein the triangular bracket is made of two triangular reinforcing steel plates and one rectangular steel plate, assembled together by welding.