Coach McGraw's Problem

With four tennis courts, we wish to generating a complete ranking of eight players in *five* hours. We divide the players into groups A and B, with four in each.

Hour 1.
The four players in each group play one another in pairs.

Hour 2.
The stronger players in each group from the first hour play each other, and the weaker players in each group from the first hour play each other.

Hour 3.
The top player in group A plays the top player in group B, and the bottom player in group A plays the bottom player in group B. The middle two players in group A play each other if necessary, and the middle two players in group B play each other if necessary.

At this point, we have a complete ranking of groups A and B: (A_1,A_2,A_3,A_4) and (B_1,B_2,B_3,B_4). Moreover, we know who is the strongest player overall and who is the weakest player overall. There are two scenarios.

Scenario X. The strongest and the weakest players overall are from the same group. Without loss of generality, we may assume that they are A_1 and A_4.

Hour 4.
A_2 players B_2 and A_3 players B_3.

Hour 5.
Case 1. A_2 is stronger than B_2 and A_3 is stronger than B_3.
Then A_2 plays B_1 for second and third places. A_3 plays B_2 for fourth and fifth places. B_3 is in sixth place and B_4 is in seventh place.
Case 2. A_2 is stronger than B_2 and A_3 is weaker than B_3.
Then A_2 plays B_1 for second and third places. B_2 is in fourth place and B_3 is in fifth place. A_3 plays B_4 for sixth and seventh places.
Case 3. A_2 is weaker than B_2 and A_3 is stronger than B_3.
Then B_1 is in second place, B_2 is in third place, A_2 is in fourth place, A_3 is in fifth place, B_3 is in sixth place and B_4 is in seventh place.
Case 4. A_2 is weaker than B_2 and A_3 is weaker than B_3.
Then B_1 is in second place and B_2 is in third place. A_2 plays B_3 for fourth and fifth places. A_3 plays B_4 for sixth and seventh places.

Scenario Y. The strongest and the weakest players overall are from different groups. Without loss of generality, we may assume that they are A_1 and B_4.

Hour 4.
A_2 players B_2 and A_3 players B_3.

Hour 5.
Case 1. A_2 is stronger than B_2 and A_3 is stronger than B_3.
Then A_2 plays B_1 for second and third places. A_3 plays B_2 for fourth and fifth places. A_4 plays B_3 for sixth and seventh places.
Case 2. A_2 is stronger than B_2 and A_3 is weaker than B_3.
Then A_2 plays B_1 for second and third places. B_2 is in fourth place, B_3 is in fifth place, A_3 is in sixth place and A_4 is in seventh place.
Case 3. A_2 is weaker than B_2 and A_3 is stronger than B_3.
Then B_1 is in second place, B_2 is in third place, A_2 is in fourth place and A_3 is in fifth place. A_4 plays B_3 for sixth and seventh places.
Case 4. A_2 is weaker than B_2 and A_3 is weaker than B_3.
Then B_1 is in second place and B_2 is in third place. A_2 plays B_3 for fourth and fifth places. A_3 is in sixth place and A_4 is in seventh place.