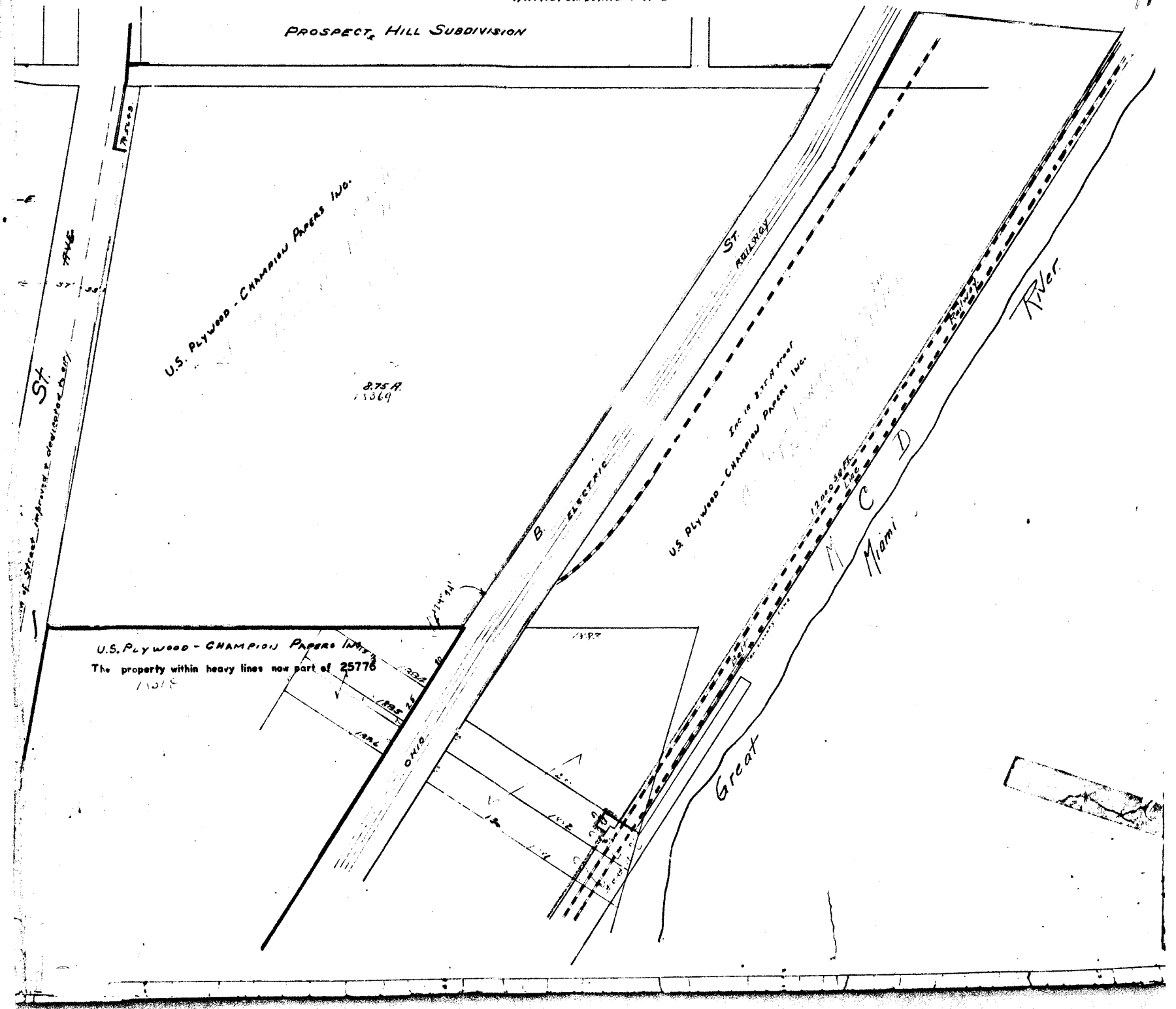HAMILTON WARD-1 N-S