In Section 5, the Hamiltonian $\underline{G}$ and $\overline{G}$ in (5.1) should not involve the term $b\sigma(t,u,v)z$, and thus should be:

$$\begin{aligned}\underline{G}(t,\omega,y,z,\gamma) &:= \sup_{u\in\mathbb{U}}\inf_{v\in\mathbb{V}}\Big[\frac{1}{2}\sigma^2(t,u,v):\gamma+f(t,\omega,y,z\sigma(t,u,v),u,v)\Big];\\ \overline{G}(t,\omega,y,z,\gamma) &:= \inf_{v\in\mathbb{V}}\sup_{u\in\mathbb{U}}\Big[\frac{1}{2}\sigma^2(t,u,v):\gamma+f(t,\omega,y,z\sigma(t,u,v),u,v)\Big].\end{aligned} \tag{0.1}$$

The main reason is that we are using weak formulation in (3.8), namely the B^t in (3.8) is not a Brownian motion, but the state process corresponding to the $X^{t,u,v}$ in (3.3).

The proof is actually for the right Hamiltonian in above (0.1), except that we need the following changes:

1. The c in Theorem 5.1 Step 1 should be:

$$c := \partial_t\varphi_0 + \sup_{u\in\mathbb{U}}\inf_{v\in\mathbb{V}}\big\{\frac{1}{2}\sigma^2(0,u,v):\partial^2_{\omega\omega}\varphi_0 + f(0,\mathbf{0},\underline{Y}_0,\partial_\omega\varphi_0\sigma(0,u,v),u,v)\big\} > 0,$$

and (5.4) should be:

$$\partial_t\varphi_0 + \frac{1}{2}\sigma^2(t,\tilde{u},v):\partial^2_{\omega\omega}\varphi_0 + f(0,\mathbf{0},\underline{Y}_0,\partial_\omega\varphi_0\sigma(0,\tilde{u},v),\tilde{u},v) \ge \frac{c}{2}. \tag{0.2}$$

2. The $-c$ in Theorem 5.1 Step 2 should be:

$$-c := \partial_t\varphi_0 + \sup_{u\in\mathbb{U}}\inf_{v\in\mathbb{V}}\big\{\frac{1}{2}\sigma^2(0,u,v):\partial^2_{\omega\omega}\varphi_0 + f(0,\mathbf{0},\underline{Y}_0,\partial_\omega\varphi_0\sigma(0,u,v),u,v)\big\} < 0,$$

and (5.11) should be

$$\partial_t\varphi_0 + \frac{1}{2}\sigma^2(0,u,\psi(u)):\partial^2_{\omega\omega}\varphi_0 + f(0,\mathbf{0},\underline{Y}_0,\partial_\omega\varphi_0\sigma(0,u,v),u,\psi(u)) \le -\frac{c}{2}. \tag{0.3}$$