Variable description	$2\ell SS + 0\tau_h$	$2\ell SS + 1\tau_h$	$3\ell + 0\tau_h$
p_T of jet 1	—	—	✓
p_T of jet 2	—	—	✓
p_T of lepton 1	✓	✓	✓
p_T of lepton 2	✓	✓	✓
p_T of lepton 3	—	—	✓
p_T of τ lepton	—	✓	—
η of lepton 1	✓	✓	—
η of lepton 2	✓	✓	—
η of τ lepton	—	✓	—
ϕ of lepton 1	✓	✓	—
ϕ of lepton 2	✓	✓	—
ϕ of τ lepton	—	✓	—
$m_T(l_1, p_T^{miss}) + p_T^{miss}$	✓	—	—
$m_T(l_2, p_T^{miss}) + p_T^{miss}$ system	✓	—	—
ΔR of lepton 1 to its closest jet	✓	✓	✓
ΔR of lepton 2 to its closest jet	✓	✓	✓
Invariant mass of the reconstructed t$\bar{\text{t}}$H system ($M_{\text{t}\bar{\text{t}}H} = \sum_i p^{\text{lep}_i} + \vec{p}_T^{\text{ miss}} + \sum_{i \leq k} p^{\text{jet}_i*}$)	✓	✓	✓
$\Delta\eta$ of two jets with highest b score in the laboratory frame ($\Delta\eta_{BB}$)	✓	✓	✓
$\Delta\eta$ of the two leptons in frame of two most-likely b jets	✓	✓	—
$\Delta\eta$ of two jets with highest b score in the dilepton system frame	✓	✓	—
$\Delta\eta$ of two jets with highest b score in the ℓ_1-ℓ_2 system frame	—	—	✓
$\Delta\eta$ of two jets with highest b score in the ℓ_1-ℓ_3 system frame	—	—	✓
$\Delta\phi$ of the two leptons in frame of two most-likely b jets	—	✓	—
$\Delta\phi$ of two jets with highest b score in the dilepton system frame	—	✓	—
Average ΔR among all jets	✓	✓	—
Jet multiplicity	✓	✓	—
p_T^{miss}	✓	✓	—
Azimuthal angle of $\vec{p}_T^{miss}$	✓	✓	—
Highest BDT score of jet triplet from t	✓	✓	—
Higgs jet tagger	—	✓	—
Angle of t$\bar{\text{t}}$ and H boson in t$\bar{\text{t}}$H-system	—	✓	—
Angle between two t in t$\bar{\text{t}}$-frame	—	✓	—
$\Delta R_{l_3 - l_1} = \sqrt{(\eta_{\ell_3} - \eta_{\ell_1})^2 + (\phi_{\ell_3} - \phi_{\ell_1})^2}$	—	—	✓
$\Delta R_{l_1 - l_2} = \sqrt{(\eta_{\ell_1} - \eta_{\ell_2})^2 + (\phi_{\ell_1} - \phi_{\ell_2})^2}$	—	—	✓
$\Delta R_{l_2 - l_3} = \sqrt{(\eta_{\ell_2} - \eta_{\ell_3})^2 + (\phi_{\ell_2} - \phi_{\ell_3})^2}$	—	—	✓
$\eta_{\text{jet1}} - \eta_{\text{jet2}}$	—	—	✓
$p_T^{\text{jet1}} + p_T^{\text{jet2}} + p_T^{\text{jet3}} + p^{miss}_T$	—	—	✓
Total number of variables	19	25	16

* k = 6 (4) in the $2\ell SS + 0\tau_h$ ($2\ell SS + 1\tau_h$ and $3\ell + 0\tau_h$) final state