Violation Rejection Rules integrated by SmartHalo

$$\frac{\square}{\pi \vdash c : \theta} \qquad (\mathit{Constant})$$

$$\frac{\pi \vdash e_1 : \theta_1 \;\; \pi \vdash e_2 : \theta_2 \quad \tilde{\theta} = \{\boldsymbol{bool},\ \boldsymbol{int}\}}{\pi \vdash e_1\ \mathit{bitop}\ e_2 : \theta \wedge \tilde{\theta} \quad \pi \vdash e_1 : \theta_1 \wedge \tilde{\theta} \quad \pi \vdash e_2 : \theta_2 \wedge \tilde{\theta}} \qquad (\mathit{LShift}, \mathit{Rshift}\ )$$

$$\frac{\pi \vdash e_1 : \theta_1 \;\; \tilde{\theta} = \{\boldsymbol{bool},\ \boldsymbol{int}\} \;\; \pi \vdash e_2 : \theta_2 \quad \theta' = \mathit{getMorePreciseType}(\theta_1 \wedge \tilde{\theta}, \theta_2 \wedge \tilde{\theta})}{\pi \vdash e_1\ \mathit{numop}\ e_2 : \theta' \quad \pi \vdash \theta_1 \wedge \tilde{\theta} \quad \pi \vdash \theta_2 \wedge \tilde{\theta}} \qquad (\mathit{Numeric\ Operations}\ )$$

$$\frac{\pi \vdash e_1 : \theta_1 \quad \pi \vdash e_2 : \theta_2 \quad \theta' = \{\Gamma,\ \mathit{Array},\ \mathit{Tuple}\}}{\pi \vdash e_1\ \mathit{cmpop}\ e_2 : \boldsymbol{bool} \quad \pi \vdash e_1 : \theta_1 \wedge \theta_2 \wedge \tilde{\theta} \quad \pi \vdash e_2 : \theta_1 \wedge \theta_2 \wedge \tilde{\theta}} \qquad (\mathit{Lt}, \mathit{LtE}, \mathit{Gt}, \mathit{GtE})$$

$$\frac{\pi \vdash e_1 : \theta_1 \;\; \ldots \;\; \pi \vdash e_n : \theta_n}{\pi \vdash (e_1, \ldots, e_n) : \mathit{Tuple}\ [\theta_1, \ldots, \theta_n] \;\; \pi \vdash (e_1, \ldots, e_n) : \mathit{Array}\ [\theta_1, \ldots, \theta_n]} \qquad (\mathit{Tuple}, \mathit{Array}\ )$$

$$\frac{\pi \vdash e : \theta \quad \tilde{\theta} = \{\boldsymbol{str}, \boldsymbol{bytes}\} \quad \theta' = \mathit{getElementType}(\theta_1 \wedge \tilde{\theta})}{\pi \vdash \boldsymbol{for}\ v\ \boldsymbol{in}\ e : \theta' \quad \pi \vdash e : \theta \wedge \tilde{\theta}} \qquad (\mathit{Comprehension}\ )$$

$$\frac{\pi \vdash e_1 : \theta_1 \qquad \pi \vdash e_2 : \theta_2}{\pi \vdash e_1\ \boldsymbol{blop}\ e_2 : \boldsymbol{Union}[\ \theta_1,\ \theta_2]} \qquad (\mathit{Boolean\ Operations})$$

$$\frac{\pi \vdash e_1 : \theta_1 \quad \pi \vdash e_2 : \theta_2 \quad \tilde{\theta} = \{\boldsymbol{bool},\ \boldsymbol{int}, \boldsymbol{byte}\}}{\pi \vdash e_1\ \mathit{bitop}\ e_2 : \theta \wedge \tilde{\theta} \quad \pi \vdash e_1 : \theta_1 \wedge \tilde{\theta} \quad \pi \vdash e_2 : \theta_2 \wedge \tilde{\theta}} \qquad (\mathit{Bitor}, \mathit{BitAnd}, \mathit{BitXor})$$

$$\frac{\pi \vdash e_1 : \theta_1 \quad \pi \vdash e_2 : \theta_2}{\pi \vdash e_1\ \mathit{cmpop}\ e_2 : \boldsymbol{bool}} \qquad (\mathit{Eq}, \mathit{NotEq}, \mathit{Is}, \mathit{IsNot})$$

$$\frac{\pi \vdash e_1 : \theta_1 \quad \pi \vdash e_2 : \theta_2 \;\; \ldots \;\; \pi \vdash e_n : \theta_n \quad \tilde{\theta} = \{\mathit{Callable}[[\theta_1, \theta_2, \ldots, \theta_n], \theta]\} \quad \theta' = \mathit{getReturnType}(\theta \wedge \tilde{\theta})}{\pi \vdash e(e_1, \ldots, e_n) : \theta} \qquad (\mathit{Call})$$

$$\frac{\pi \vdash e_1 : \theta_1 \qquad \pi \vdash e_2 : \theta_2 \quad \widetilde{\theta_1} = \{\boldsymbol{str}, \boldsymbol{bytes}\} \quad \widetilde{\theta_2} = \{\boldsymbol{int}, \boldsymbol{bool}\} \quad \theta' = \mathit{getElementType}(\theta_1 \wedge \theta_2)}{\pi \vdash e_1[e_2] : \theta' \quad \pi \vdash e_1 : \theta_1 \wedge \widetilde{\theta_1} \quad \pi \vdash e_2 : \theta_2 \wedge \tilde{\theta}_2} \qquad (\mathit{Slice})$$