

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (t\ \text{const}\ c_1)\ (t\ \text{const}\ c_2)\ (t\ \text{binop})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ \text{eval-binop}[\![\text{binop}, c_1, c_2, t]\!] e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (t\ \text{const}\ c)\ (t\ \text{testop})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ \text{eval-testop}[\![\text{testop}, c, t]\!] e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (t\ \text{const}\ c_1)\ (t\ \text{const}\ c_2)\ (t\ \text{relop})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ \text{eval-relop}[\![\text{relop}, c_1, c_2, t]\!] e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{nop})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{unreachable})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{trap})\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ v_3\ (\text{i32 const 0})\ (\text{select})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_3\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ v_3\ (\text{i32 const } c)\ (\text{select})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ e\ \dots)])$$

where  $(> c\ 0)$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ (\text{drop})\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const 0})\ (\text{if } tf(e_1\ \dots)\ \text{else } (e_2\ \dots))\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{block } tf(e_1\ \dots))\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const } c)\ (\text{if } tf(e_1\ \dots)\ \text{else } (e_2\ \dots))\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{block } tf(e_1\ \dots))\ e\ \dots)])$$

where  $(> c\ 0)$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{block } tf(e_1\ \dots))\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{label } ()\ (e_1\ \dots))\ e_2\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{label } ()\ (v_2\ \dots\ (\text{trap})\ e\ \dots))\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(\text{trap})])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{trap})\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(\text{trap})])$$

where  $(= 0\ \text{context-depth}[\![L]\!])$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{br } j_1)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ \text{decompose}[\![L, j_1, (v_1\ \dots)]\!])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const 0})\ (\text{br-if } j_1)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const } c)\ (\text{br-if } j_1)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{br } j_1)\ e\ \dots)])$$

where  $(> c\ 0)$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const } c)\ (\text{br-table } (j_1\ \dots))\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{br do-get}[\![j_1\ \dots], (\text{term } c)]\!] e\ \dots)])$$

where  $(\leq c\ (\text{length } (j_1\ \dots)))$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{i32 const } c)\ (\text{br-table } (j_1\ \dots\ j_2))\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ (\text{br } j_2)\ e\ \dots)])$$

where  $(> c\ (\text{length } (j_1\ \dots)))$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{label } ()\ (v_2\ \dots))\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ (v_1\ \dots\ v_2\ \dots\ e\ \dots))$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{get-local } j_1)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ \text{do-get}[\![v\ \dots], j_1]\!] e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ (\text{set-local } j)\ e\ \dots)]) \longrightarrow (s\ j\ \text{do-set}[\![v\ \dots], j, v_2]\!] L[(v_1\ \dots\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ (\text{tee-local } j)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ v_2\ (\text{set-local } j)\ e\ \dots)])$$

$$(((inst\ \dots)\ (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{get-global } j_1)\ e\ \dots)]) \longrightarrow (((inst\ \dots)\ (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ \text{do-get}[\![inst\ \dots], j_1]\!] e\ \dots)])$$

$$(((inst\ \dots)\ (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ (\text{set-global } j_1)\ e\ \dots)]) \longrightarrow ((\text{do-global-set}[\![inst\ \dots], j, j_1, v_2]\!] (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_2\ e\ \dots)])$$

$$(((inst\ \dots)\ (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{call } j_1)\ e\ \dots)]) \longrightarrow (((inst\ \dots)\ (tabinst\ \dots)\ (meminst\ \dots))\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{call } j_1)\ e\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{call } cl)\ e\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[\text{setup-call}[\![v_1\ \dots], cl, (e\ \dots)]\!])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{local } (j_1\ (v_2\ \dots))\ L_2[(v_3\ \dots\ (\text{return})\ e\ \dots)]\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_3\ \dots\ e_2\ \dots)])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{local } (j_1\ (v_2\ \dots))\ (v_3\ \dots\ (\text{trap})\ e\ \dots))\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(\text{trap})])$$

$$(s\ j\ (v\ \dots)\ L[(v_1\ \dots\ (\text{local } (j_1\ (v_2\ \dots))\ (v_3\ \dots))\ e_2\ \dots)]) \longrightarrow (s\ j\ (v\ \dots)\ L[(v_1\ \dots\ v_3\ \dots\ e_2\ \dots)])$$