

$$\leq_s\text{-refl} : \forall \{sd : \text{SD}\} \rightarrow sd \leq_s sd$$

$$\leq_s\text{-refl} \{ \langle f, d \rangle \} = \leq\text{-d} \leq\text{-refl}$$

$$\leq_s\text{-trans} : \forall \{sd \ sd' \ sd'' : \text{SD}\} \rightarrow sd \leq_s sd' \rightarrow sd' \leq_s sd'' \rightarrow sd \leq_s sd''$$

$$\leq_s\text{-trans} (\langle\text{-f} \ f \langle f' \rangle) (\leq\text{-d} \ \_) = \langle\text{-f} \ f \langle f' \rangle$$

$$\leq_s\text{-trans} (\langle\text{-f} \ f \langle f' \rangle) (\langle\text{-f} \ f' \langle f'' \rangle) = \langle\text{-f} \ (\langle\text{-trans} \ f \langle f' \rangle \ f' \langle f'' \rangle)$$

$$\leq_s\text{-trans} (\leq\text{-d} \ \_) (\langle\text{-f} \ f' \langle f'' \rangle) = \langle\text{-f} \ f' \langle f'' \rangle$$

$$\leq_s\text{-trans} (\leq\text{-d} \ d \leq d') (\leq\text{-d} \ d' \leq d'') = \leq\text{-d} \ (\leq\text{-trans} \ d \leq d' \ d' \leq d'')$$