CQ-free optimality conditions for convex SIP problems with finitely representable compact index

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Abstract: We study optimality conditions for convex Semi-Infinite Programming problems with arbitrary index sets defined by finite numbers of nonlinear inequalities. The main result consists in formulation and proof of the implicit and explicit optimality conditions that do not use constraint qualifications (CQ-free). We show that these optimality conditions are more efficient than that known from the literature. We apply the results obtained to some special cases of the convex SIP problems and show how new optimality conditions for these problems can be formulated using the main results of the paper.