Abstract. Elliptic curves with small embedding degree and large prime-order subgroup are key ingredients for implementing pairing-based cryptographic systems. Such "pairing-friendly" curves are rare and thus require specific constructions. In this paper we give a single coherent framework that encompasses all of the constructions currently existing in the literature. We also include new constructions of pairing-friendly elliptic curves that improve on the previously known constructions for certain embedding degrees. Finally, for all embedding degrees up to 50, we provide recommendations as to which pairing-friendly curves to choose to best satisfy a variety of performance and security requirements.