The first thoracic ventral nerve roots contain efferent somatic nerve fibers corresponding to the first thoracic segment, as well as preganglionic sympathetic fibers from the lateral horn of the first thoracic segment. They are larger than the other thoracic ventral nerve roots and emerge as two or three rows of rootlets from the antero-lateral sulci of the spinal cord. Between adjacent rootlets are inter-radicular spaces, which contain small blood vessels.

The roots pass obliquely infero-laterally through the intervertebral foramina between the pedicles of T1 and T2 and over the superior surfaces of the transverse processes of T2 to join with the first thoracic dorsal roots to form the first thoracic spinal nerves. The roots are covered by a sleeve of pia mater, which is continuous with that of the spinal cord, and loosely invested by a prolongation of dura and arachnoid mater (the dural sleeve) almost as far as the spinal nerves.