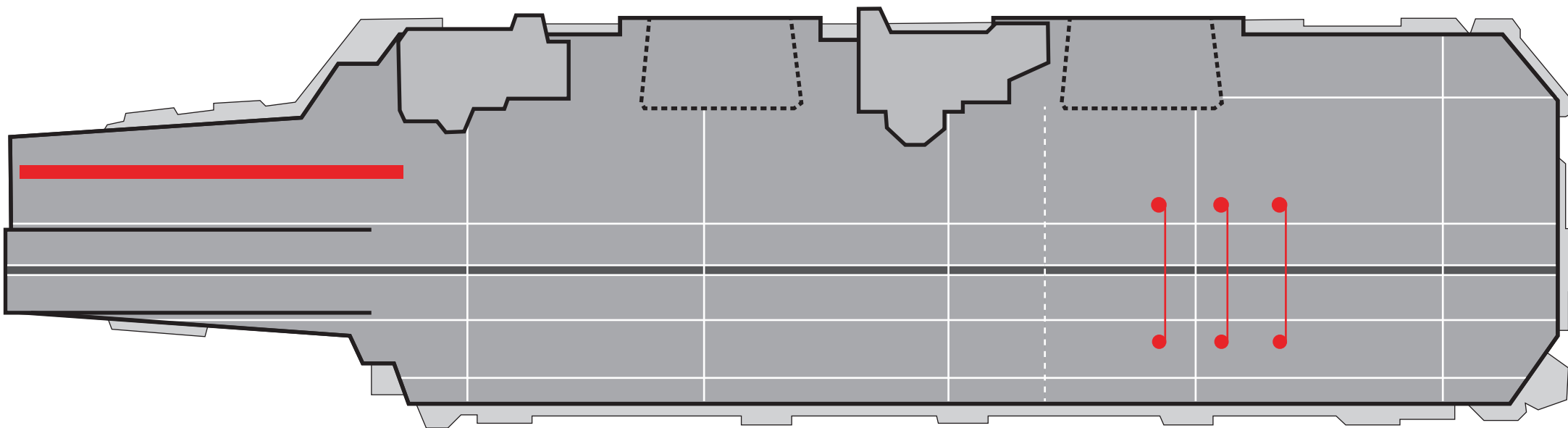


## Option 1 - Catapult parallel to ski ramp

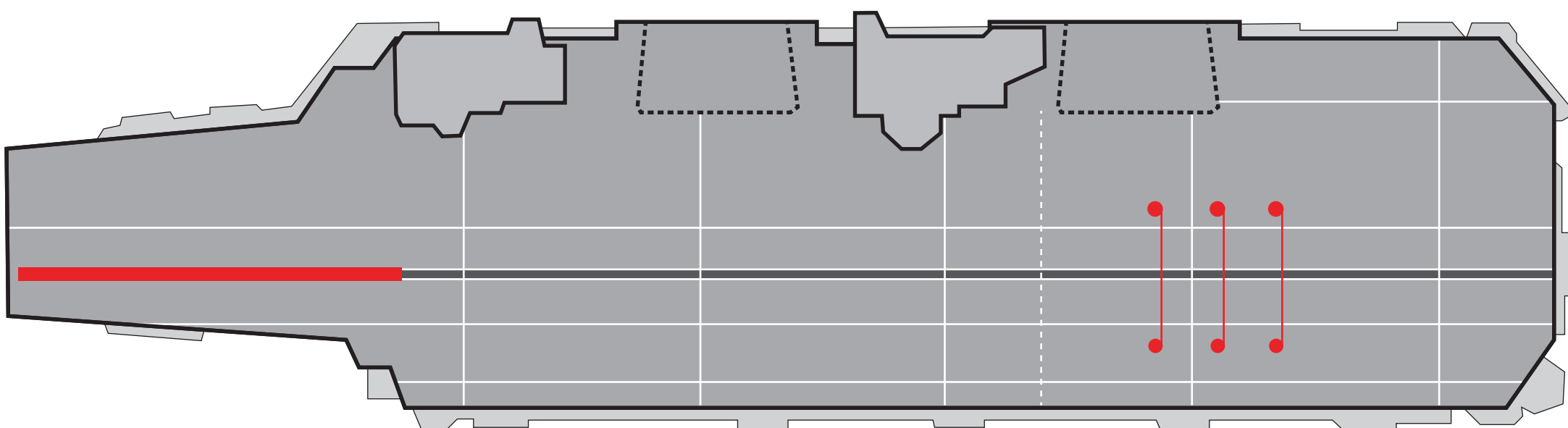
\*Assumes catapult length approx 60-70m



**Pros:** Requires minimal flight deck reconfiguration work and minimises interference with VSTOL flying and allows almost simultaneous launches.

**Cons:** Cramped space between forward island and ramp may restrict aircraft movements, depending on VIXEN wingspan

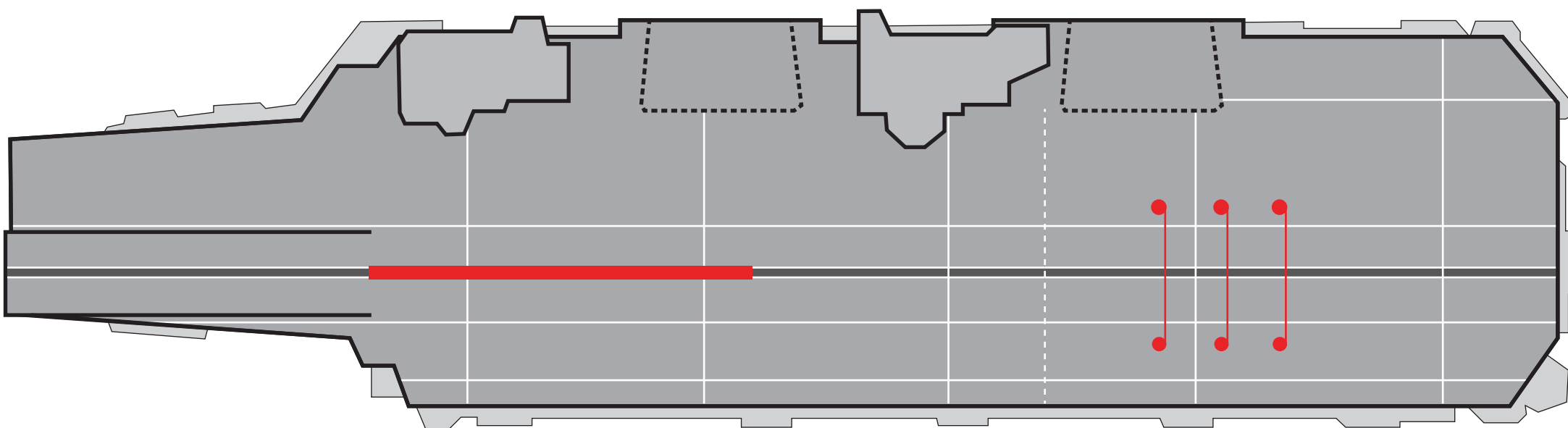
## Option 2 - Catapult replaces ski ramp



**Pros:** Only requires ramp removal and provides plenty of space for launch and retains plenty of space to park aircraft on deck.

**Cons:** F-35B loses safety and load benefits of ramp-launch. Only one aircraft/UAS can be launched at a time

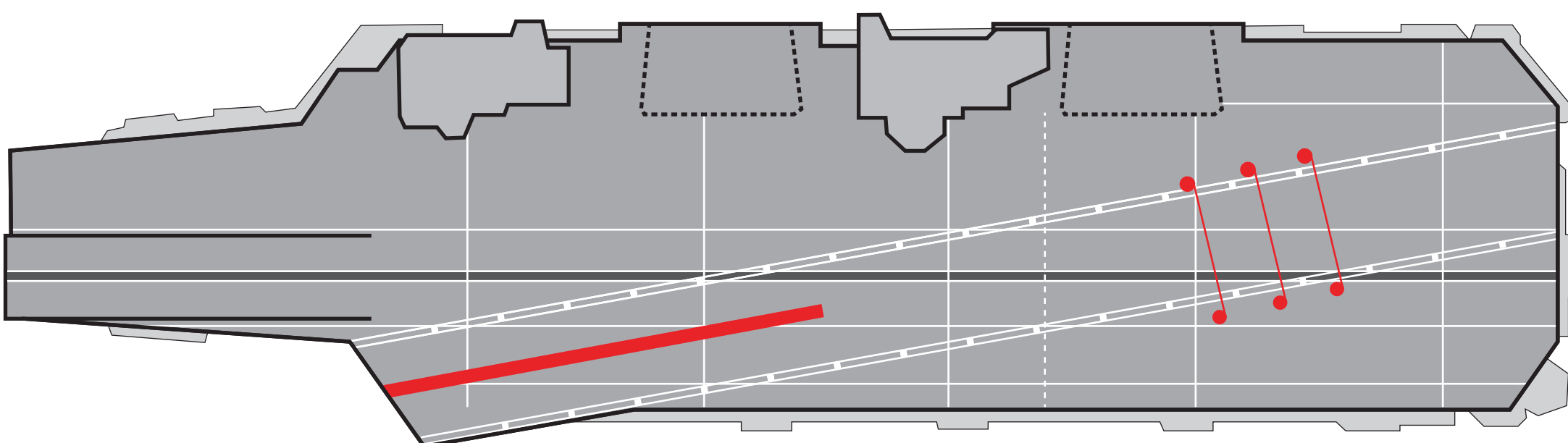
## Option 3 - Catapult before ski ramp



**Pros:** Requires least flight deck reconfiguration work and retains plenty of space to park aircraft on deck.

**Cons:** Only one aircraft/UAS can be launched at a time. UAS may need to be strengthened to withstand forces generated by cat and ramp launch.

## Option 4 - Angled deck



**Pros:** Safest recovery as allows bolters failing to catch arrestor wire to take off again (not a problem for autonomous aircraft?)

**Cons:** Requires substantial reconfiguration of flight deck and new steelwork. Ramp retained but layout may conflict with VSTOL/RW flying