```
mapfilter_before  THM

⊢  ∀T:Type, P:(T→𝔹), T':Type, f:({x:T| P(x) }→T'), L:T List
   , x,y:{x:T| P(x) }.
   x before y ∈ L ⇒ f(x) before f(y) ∈ mapfilter(f;P;L)
  by let tac ≡ Try (ExtWith [‘z’] [T→𝔹]) in
     ((((Auto
         THEN
         (All
          (RWO
           Thm* ∀L:T List, x,y:T.
                x before y ∈ L
                ⟺
                (∃L1,L2,L3:T List. L = (L1 @ [x] @ L2 @ [y] @ L3))
           {l_before_DASH_iff}))
         THEN
         ExRepD
         THEN
         (HypSubst -1 0)
         THEN
         (RWW
          Thm* ∀P:(T→𝔹), T':Type, f:({x:T| P(x) }→T'), L1,L2:T List.
               mapfilter(f;P;L1 @ L2)
               =
               (mapfilter(f;P;L1) @ mapfilter(f;P;L2))
          {mapfilter_append}
          0))
        THENA
        (Auto THEN tac))
       THEN
       (InstConcl
        [mapfilter(f;P;L1);mapfilter(f;P;L2);mapfilter(f;P;L3)]))
      THENA
      (Auto THEN tac))
     THEN
     (Repeat Analyze)
     THEN
     (Unfold ‘mapfilter‘ 0)
     THEN
     (Reduce 0)
     THEN
     SplitOnConclITE
     THEN
     (Reduce 0)
     THEN
     (Analyze -1)
     THEN
     (AllHyps (λh.(Analyze h) THEN Unhide THEN (Complete Auto)))
END
```