CLAIMS:

1. A method of completing a subterranean well having an open wellbore extending through a subterranean formation having a target zone, the method comprising the steps of:

placing a tubing assembly in the open wellbore, the tubing assembly extending through the target zone, the tubing assembly having an outer surface and defining an interior passageway extending through the target zone, an annular space defined between the outer surface of the tubing assembly and the wellbore wall;

positioning at least one annular flow restrictor in the annular space adjacent the target zone;

placing a gravel pack in the annular space along at least a length of the target zone and adjacent at least one annular flow restrictor;

then flowing an annular barrier forming material from the interior passageway into the annular space occupied at least in part by the gravel pack and adjacent at least one annular flow restrictor, the annular flow restrictor at least partially restricting flow of the annular barrier forming material along the annular space; and

then setting the annular barrier forming material in the annular space and adjacent at least one annular flow restrictor, and creating an annular barrier in the annular space and leaving the interior passageway open; and then

flowing a fluid through the interior passageway.

2. A method as in claim 1 wherein the tubing assembly further comprises perforated tubing assembly extending along the target zone.

3. A method as in claim 2 wherein the perforated tubing assembly includes at least one screen assembly.

4. A method as in claim 1 further comprising a step of storing the annular barrier forming material in a compartment in the tubing assembly.

5. A method as in claim 1 further comprising a step of pumping the annular barrier forming material into the annular space.

6. A method as in claim 5 further comprising a step of pumping the annular barrier forming material from the surface to downhole adjacent the target zone and into the annular space.

7. A method as in claim 1 wherein the annular flow restrictor is a packer.

8. A method as in claim 1 wherein the annular flow restrictor restricts flow of the annular barrier forming material until the annular barrier forming material sets.

9. A method as in claim 1, further comprising performing the step of positioning at least one annular flow restrictor after the step of placing a gravel pack in the wellbore.

10. A method as in claim 1 wherein the annular barrier forming material is at least partially comprised of a material selected from the group consisting of polymers, silicones, and resins.

11. A method as in claim 1 wherein the annular barrier forming material sets in the presence of at least one chemical catalyst.

12. A method as in claim 1 wherein the annular barrier forming material includes at least two chemical compounds which, when mixed together, create the annular barrier.

13. A method as in claim 1, further comprising flowing an annular barrier forming material into the annular space at a plurality of locations along the wellbore; and

then setting the annular barrier forming material at the plurality of locations and creating annular barriers at the locations.

14. A method as in claim 1, wherein the gravel pack comprises gravel pack media, the step of flowing an annular barrier forming material further comprises a step of flowing the annular barrier forming material through the gravel pack media, surrounding individual media of the gravel pack with annular barrier forming material; and wherein the step of creating an annular barrier further comprises creating an annular barrier having gravel pack media positioned within the annular barrier.

15. A method as in claim 14, further comprising a step of utilizing the gravel pack media positioned in the annular barrier as a structural component of the annular barrier.

16. A method as in claim 1 further comprising the step of flowing annular barrier forming material into the annular space along a length of the wellbore free of gravel pack.

17. A method as in claim 1, wherein the step of flowing annular barrier forming material further comprises a step of flowing the annular barrier forming material into the annular space on a side of at least one flow restrictor wherein the annular space is substantially free of gravel pack media.

18. A method as in claim 1, wherein the tubing assembly further comprises at least one alternate path conduit extending axially along the tubing assembly, and

further comprising the step of flowing annular barrier forming material into the at least one alternate path conduit, and

further comprising the step of creating an annular barrier in the at least one alternate path conduit with the annular barrier forming material.

What is claimed is:

1. A method of completing a subterranean well having an open wellbore extending through a subterranean formation having a target zone, the method comprising the steps of:

placing a tubing assembly in the wellbore, the tubing assembly extending through the target zone, the tubing assembly having an outer surface, an annular space defined between the outer surface of the tubing assembly and the wellbore wall;

placing a gravel pack in the annular space along at least a length of the target zone;

then flowing an annular barrier forming material into the annular space along at least a length of the target zone;

then setting the annular barrier forming material and creating an annular barrier in the annular space.

2. A method as in claim 1 wherein the tubing assembly further comprises perforated tubing assembly extending along the target zone.

3. A method as in claim 1 further comprising the step of storing the annular barrier forming material in a compartment in the tubing assembly.

4. A method as in claim 1 further comprising the step of pumping the annular barrier forming material into the annular space.

5. A method as in claim 4 further comprising the step of pumping the annular barrier forming material from the surface to downhole adjacent the target zone and into the annular space.

6. A method as in claim 1 further comprising the step of positioning at least one flow restrictor in the target zone.

7. A method as in claim 6 wherein the flow restrictor is a packer.

8. A method as in claim 6 wherein the step of positioning at least one flow restrictor is performed before the step of flowing the annular barrier forming material.

9. A method as in claim 8 wherein the flow restrictor seals against the wellbore wall.

10. A method as in claim 9 wherein the annular barrier forming material is flowed into the annular space uphole from the flow restrictor.

11. A method as in claim 6 wherein the flow restrictor restricts flow of the annular barrier forming material until the annular barrier forming material sets.

12. A method as in claim 6 wherein the step of positioning at least one flow restrictor includes setting at least one flow restrictor before the step of flowing the annular barrier forming material and after the step of placing a gravel pack in the wellbore.

13. A method as in claim 1 further comprising the step of restricting flow of the annular barrier forming material in the annular space.

14. A method as in claim 13 wherein the gravel pack restricts the flow of the annular barrier forming material.

15. A method as in claim 1 wherein the annular barrier forming material is at least partially comprised of a material selected from the group consisting of polymers, silicones, and resins.

16. A method as in claim 1 wherein the annular barrier forming material sets in response to a change of temperature.

17. A method as in claim 1 wherein the annular barrier forming material sets in the presence of at least one chemical catalyst.

18. A method as in claim 1 wherein the annular barrier forming material includes at least two chemical compounds which, when mixed together, create the annular barrier.

19. A method as in claim 17 further comprising the step of flowing the chemical catalyst into the annular space.

20. A method as in claim 1, further comprising flowing an annular barrier forming material into the annular space along at a plurality of locations along the wellbore; and

then setting the annular barrier forming material at the plurality of locations and creating annular barriers at the locations.

21. A method as in claim 2 wherein the perforated tubing assembly includes at least one screen assembly.

22. A method as in claim 1, wherein the gravel pack comprises gravel pack media,

the step of flowing an annular barrier forming material further comprises the step of flowing the annular barrier forming material through the gravel pack media, and

the step of creating an annular barrier further comprises creating an annular barrier having gravel pcak media positioned in the annular barrier.

23. A method as in claim 22, wherein the gravel pack media positioned in the annular barrier is a structural component of the annular barrier.

24. A method as in claim 1 wherein *in situ* zonal media is present in the wellbore annular space.

25. A method as in claim 1 further comprising the step of flowing annular barrier forming material into the annular space along a length of the wellbore free of gravel pack.

26. A method as in claim 6, wherein the step of flowing annular barrier forming material further comprises the step of flowing the annular barrier forming material into the annular space on one side of the flow restrictor wherein a gravel pack is positioned in the annular space.

27. A method as in claim 6, wherein the step of flowing annular barrier forming material further comprises the step of flowing the annular barrier forming material into the annular space on a side of the flow restrictor wherein the annular space is substantially free of gravel pack media.

28. A method as in claim 1, wherein the tubing assembly further comprises at least one alternate path conduit extending axially along the tubing assembly, and

further comprising the step of flowing annular barrier forming material into the at least one alternate path conduit, and

further comprising the step of creating an annular barrier in the at least one alternate path conduit with the annular barrier forming material.

29. A method as in claim 28, wherein the at least one alternate path conduits comprise a plurality of shunt tubes, and

wherein the step of placing a gravel pack in the annular space further comprises flowing gravel slurry through the plurality of shunt tubes.

30. A method of completing a subterranean well having an open wellbore extending through a subterranean formation having a target zone, the method comprising the steps of:

placing a tubing assembly in the wellbore, the tubing assembly extending through the target zone, the tubing assembly having an outer surface, an annular space defined between the outer surface of the tubing assembly and the wellbore wall, the tubing assembly not expanded within the wellbore;

then flowing an annular barrier forming material into the annular space along at least a length of the target zone; and

then setting the annular barrier forming material and creating an annular barrier in the annular space.