WHAT IS CLAIMED IS:

1. A rotary cone drill bit, comprising:

a body;

a leg depending from the body, wherein the leg includes a shirttail surface, a leading side surface, and a leading transitional surface disposed therebetween;

a bearing shaft extending from the leg;

a cone mounted to the bearing shaft;

a preformed hard material plate having a bottom surface; and

an adhesive material attaching the bottom surface of the hard material plate to a substantially conforming surface formed in or by the leading transitional surface.

2. The bit of claim 1 wherein the adhesive material attaching the bottom surface of the hard material plate to the substantially conforming surface comprises a flowable adhesive material interposed between the bottom surface of the hard material plate and the substantially conforming surface.

3. The bit of claim 2 wherein the flowable adhesive material is a brazing material.

4. The bit of claim 1wherein the substantially conforming surface is a floor surface of a slot formed in the leading transitional surface.

5. The bit of claim 1 wherein a transitional edge is defined by the intersection of the shirttail surface and the leading transitional surface, and the substantially conforming surface is a floor surface of a slot disposed to interrupt the transitional edge.

6. The bit of claim 1 wherein the hard material plate is one of: a solid tungsten carbide plate, a polycrystalline diamond compact, an impregnated diamond segment, a ceramic segment, or a polycrystalline cubic boron nitride compact.

7. The bit of claim 1 wherein the hard material plate is not formed of thermally stable polycrystalline diamond.

8. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio t/w<0.5.

9. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio t/w<0.2.

10. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio t/w<0.1.

11. The bit of claim 1 wherein a top surface of the hard material plate is substantially flush with the leading transitional surface.

12. The bit of claim 1 wherein the leading transitional surface is a flat surface.

13. The bit of claim 12 wherein the substantially conforming surface is part of the leading transitional surface.

14. The bit of claim 12 wherein the leading transitional surface is flat and disposed adjacent a second flat leading transitional surface.

15. The bit of claim 1 wherein at least part of the leading transitional surface is a contour milled surface disposed adjacent a shirttail edge of the leg.

16. The bit of claim 1 wherein the hard material plate includes a leading face.

17. The bit of claim 16 wherein the leading face includes a beveled surface.

18. The bit of claim 16 wherein the leading face is rounded.

19. A rotary cone drill bit, comprising:

a body;

a leg depending from the body, wherein the leg includes a shirttail surface, and a shoulder surface above the shirttail surface and includes a leading wear surface, the leading wear surface being curved and wherein the shirttail surface smoothly transitions into the leading wear surface;

a bearing shaft extending from the leg;

a cone mounted to the bearing shaft;

a preformed hard material plate having a bottom surface;

an adhesive material attaching the bottom surface of the hard material plate to a substantially conforming surface formed in or by the leading wear surface.

20. The bit of claim 19 wherein the adhesive material attaching the bottom surface of the hard material plate to the substantially conforming floor surface of the leg comprises a flowable adhesive material interposed between the bottom surface of the hard material plate and the substantially conforming floor surface of the leg.

21. The bit of claim 20 wherein the flowable adhesive material is a brazing material.

22. The bit of claim 21 wherein the hard material plate is one of: a solid tungsten carbide plate, a polycrystalline diamond compact, an impregnated diamond segment, a ceramic segment, or a polycrystalline cubic boron nitride compact.

WHAT IS CLAIMED IS:

1. A rotary cone drill bit, comprising:

a body;

a leg depending from the body, wherein the leg includes a shirttail surface, a leading side surface, and a leading transitional surface disposed therebetween;

a bearing shaft extending from the leg;

a cone mounted to the bearing shaft;

a preformed hard material plate having a bottom surface; and

an adhesive material attaching the bottom surface of the hard material plate to a substantially conforming surface formed in or by the leading transitional surface,

wherein the substantially conforming surface is a floor surface of a slot formed in the leading transitional surface.

2. The bit of claim 1 wherein the adhesive material attaching the bottom surface of the hard material plate to the substantially conforming surface comprises a flowable adhesive material interposed between the bottom surface of the hard material plate and the substantially conforming surface.

3. The bit of claim 2 wherein the flowable adhesive material is a brazing material.

4. The bit of claim 1 wherein the hard material plate is one of: a solid tungsten carbide plate, a polycrystalline diamond compact, an impregnated diamond segment, a ceramic segment, or a polycrystalline cubic boron nitride compact.

5. The bit of claim 1 wherein the hard material plate is not formed of thermally stable polycrystalline diamond.

6. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio $t/w<0.5$.

7. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio t/w<0.2.

8. The bit of claim 1 wherein the hard material plate has width w and a generally uniform thickness t, wherein a ratio t/w<0.1.

9. The bit of claim 1 wherein a top surface of the hard material plate is substantially flush with the leading transitional surface.

10. The bit of claim 1 wherein the leading transitional surface is a flat surface.

11. The bit of claim 10 wherein the leading transitional surface is flat and disposed adjacent a second flat leading transitional surface.

12. The bit of claim 1 wherein at least part of the leading transitional surface is a contour milled surface disposed adjacent a shirttail edge of the leg.

13. The bit of claim 1 wherein the hard material plate includes a leading face.

14. The bit of claim 13 wherein the leading face includes a beveled surface.

15. The bit of claim 13 wherein the leading face is rounded.

16. A rotary cone drill bit, comprising:

a body;

a leg depending from the body, wherein the leg includes a shirttail surface, a leading side surface, and a leading transitional surface disposed therebetween;

a bearing shaft extending from the leg;

a cone mounted to the bearing shaft;

a preformed hard material plate having a bottom surface; and

an adhesive material attaching the bottom surface of the hard material plate to a substantially conforming surface formed in or by the leading transitional surface,

wherein a transitional edge is defined by the intersection of the shirttail surface and the leading transitional surface, and the substantially conforming surface is a floor surface of a slot disposed to interrupt the transitional edge.