The above method can also be applied to biquadratic B-splines.

The subdivision net is generated by creating a new face for each face, edge and vertex of the original net (this is done by creating a new vertex for each old vertex).

See the figure on the right for the new control points:
5.4 Bi-quadratic Surfaces

For instance,

$$P_{00} = \frac{9P_{00} + 3P_{01} + 3P_{10} + P_{11}}{16}$$

$$= \frac{1}{4} \left[ \frac{P_{00} + P_{01} + P_{10} + P_{11}}{4} \right] + \frac{P_{00}}{4}$$

$$+ \frac{1}{2} \left[ \frac{P_{00} + P_{01}}{2} + \frac{P_{00} + P_{10}}{2} \right]$$
5.4 Bi-quadratic Surfaces

Hence, we have the following rule.

**Rule:** for each vertex $P$ of each old face, generate a new vertex $Q$ as follows:

$$Q = \frac{F}{n} + \frac{2E}{n} + \frac{P(n-3)}{n}$$

where

$n = $ number of vertices in the face

$F = $ average of the vertices in the face

$E = $ average of the midpoints of the two edges incident on $P$
Then connect each new vertex to the two adjacent new vertices in the same face and to the corresponding new vertices in adjacent faces.
5.4 Bi-quadratic Surfaces
5.4 Bi-quadratic Surfaces

Another example:
5.4 Bi-quadratic Surfaces

Another example:

**Question:** how many extraordinary points the limit surface would have in this case?
End of 5.4