4a BSP

Geg.: Firsthöhe Hauptdach $h_{F,H}$ = 3,20m; Grundmaße g_H = 5,70m; g_A = 3,40m; Sparren 10/14; Kehlsparren 16/20; Pfetten 16/20; Sparrenabschnitt HD 10° zurück; First Hauptdach liegt 90cm unter dem HD-First. Grundmaße Saum Fußpfetten 75cm; Saum Mittelpfette HD 3,75m

Ges.: Pfettenhöhen; Länge und Winkel des Kehlsparrens; die Kehlgrundwinkel γ_H und γ_A; Senkellängen, Verstichmaße, Auskehlungstiefen, Winkel der angepassten Saumabschnitte und beschriftete Zeichnung Kehlsparrenquerschnittes.

Hauptdach

$$\alpha_H = \tan^{-1}\frac{320}{570} = 29{,}31°$$

$$g_A = \frac{230}{\tan \alpha_H} = 409{,}69cm$$

$O = 11{,}5cm \quad O_{V,H} = \frac{11{,}5}{\cos \alpha_H} = 13{,}2cm$

$$h_{Pf1} = 75 * \tan \alpha_H - O_{V,H} = 28{,}9cm$$

$$h_{Pf2} = 375 * \tan \alpha_H - O_{V,H} = 197{,}3cm$$

Anbau

$$h_{F,A} = 320 - 90 = 230cm$$

$$\alpha_A = \tan^{-1}\frac{230}{340} = 34{,}077°$$

$O_{V,A} = \frac{11{,}5}{\cos \alpha_A} = 13{,}9cm$

$$h_{Pf3} = 75 * \tan \alpha_A - O_{V,A} = 36{,}8cm$$

$$h_{Pf4} = 375 * \tan \alpha_A - O_{V,A} = 210{,}7cm$$

Kehlgrund

$$\gamma_H = \tan^{-1}\frac{409{,}69}{340} = 50{,}311°$$

$$\gamma_A = \tan^{-1}\frac{340}{409{,}69} = 39{,}689°$$

$$g_K = \frac{340}{\cos \gamma_H} = 532{,}39cm$$

Kehlprofil

$$\alpha_K = \tan^{-1}\frac{230}{532{,}39} = 23{,}365°$$

$$l_K = \frac{230}{\sin \alpha_K} = 579{,}95cm$$

Verstichmaße , Auskehlung

$$V_H = 8 * \tan \gamma_A = 6{,}64cm$$

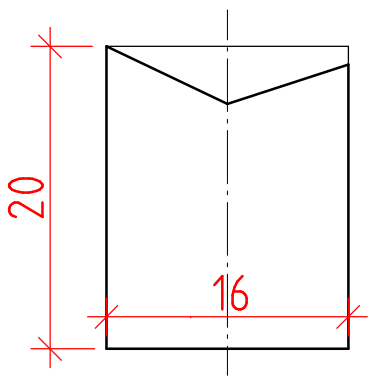
$$V_A = 8 * \tan \gamma_H = 9{,}64cm$$

$$ah_H = 6{,}64 * \sin \alpha_K = 2{,}6cm$$

$$ah_A = 9{,}64 * \sin \alpha_K = 3{,}8cm$$

$$V_{H,sch} = \frac{6{,}64}{\cos \alpha_K} = 7{,}23cm$$

$$V_{A,sch} = \frac{9{,}64}{\cos \alpha_K} = 10{,}5cm$$



Senkellängen

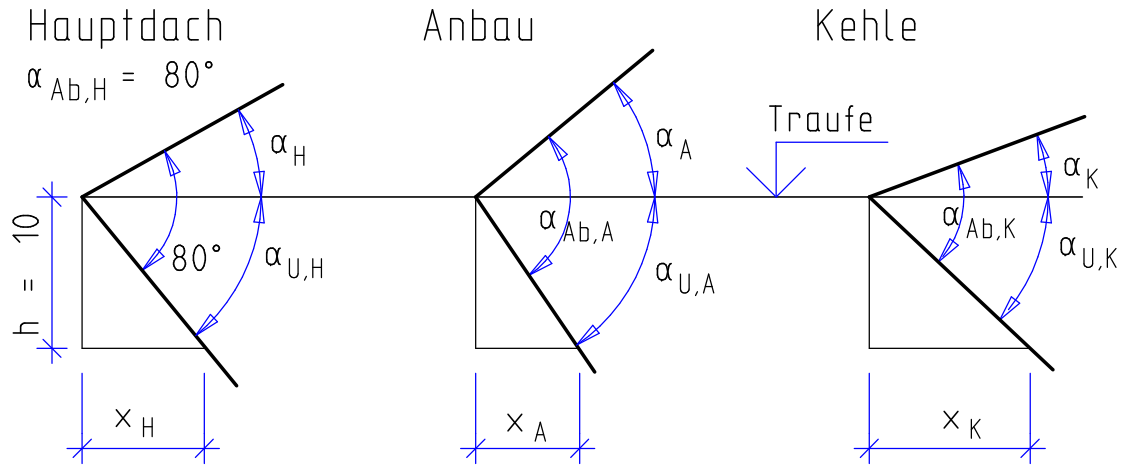
$$g_{S1} = \frac{75}{\cos \gamma_A} = 97{,}46cm \qquad l_{S1} = \frac{97{,}46}{\cos \alpha_K} = 106{,}2cm$$

$$g_{S2} = \frac{375}{\cos \gamma_A} = 487{,}32cm \qquad l_{S2} = \frac{487{,}32}{\cos \alpha_K} = 530{,}85cm$$

$$g_{S3} = \frac{75}{\cos \gamma_H} = 117{,}44cm \qquad l_{S3} = \frac{117{,}44}{\cos \alpha_K} = 127{,}93cm$$

$$g_{S4} = \frac{332}{\cos \gamma_H} = 519{,}87cm \qquad l_{S4} = \frac{519{,}87}{\cos \alpha_K} = 566{,}3cm$$

Saumabschnitte



h = 10cm frei angenommen

$$\alpha_{U,H} = 80° - 29{,}31° = 50{,}69°$$

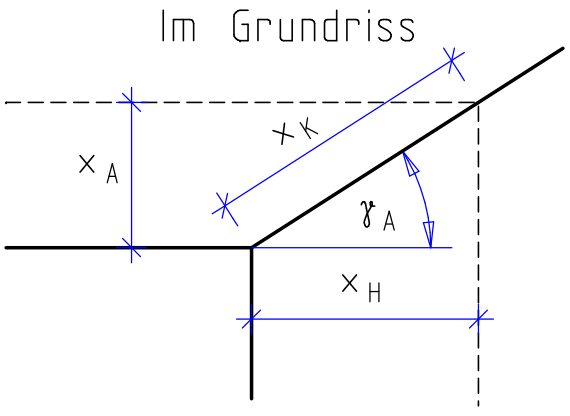
$$x_H = \frac{10}{\tan 50{,}69°} = 8{,}19cm$$

$$x_A = 8{,}19 \text{ x } \tan 39{,}689° = 6{,}8cm$$

$$\alpha_{U,A} = \tan^{-1}\frac{10}{6{,}9} = 55{,}80°$$

$$\alpha_{Ab,A} = 55{,}80 + 34{,}08 = 89{,}88°$$

Im Grundriss



$$x_K = \frac{8{,}19}{\sin 50{,}311°} = 10{,}64cm$$

$$\alpha_{U,K} = \tan^{-1}\frac{10}{10{,}64} = 43{,}223°$$

$$\alpha_{Ab,K} = 43{,}223 + 23{,}365 = 66{,}59°$$