SU(5)

$$SU(3)_C = \begin{pmatrix} 0 & \\ & -i\Lambda_k \end{pmatrix} \qquad SU(2)_L = \begin{pmatrix} -iT_i & \\ & 0 \end{pmatrix}$$

$$6Y = \begin{pmatrix} 3 & & & & \\ & 3 & & & \\ & & -2 & & \\ & & & -2 & \\ & & & & -2 \end{pmatrix} \qquad -3T_3 = \begin{pmatrix} -3 & & & & \\ & 3 & & & \\ & & 0 & & \\ & & & 0 & \\ & & & & 0 \end{pmatrix}$$

$$6Q = 6Y - 3T_3 = \begin{pmatrix} 0 & & & & \\ & 6 & & & \\ & & -2 & & \\ & & & -2 & \\ & & & & -2 \end{pmatrix} \qquad f = \begin{pmatrix} d \\ u \\ r \\ g \\ b \end{pmatrix} \cong \begin{pmatrix} \varphi_0 \\ \varphi_+ \\ H_r \\ H_g \\ H_b \end{pmatrix}$$

Bits					Particle	$6Q$	$-3T_3$	$6Y$
					$\bar{\nu}_L$	0	0	0
				d	$\bar{\nu}_R$	0	3	3
			u		$\bar{e}_R$	6	−3	3
			u	d	$\bar{e}_L$	6	0	6
		b			d_R^b	−2	0	−2
		b		d	d_L^b	−2	3	1
		b	u		u_L^b	4	−3	1
		b	u	d	u_R^b	4	0	4
	g				d_R^g	−2	0	−2
	g			d	d_L^g	−2	3	1
	g		u		u_L^g	4	−3	1
	g		u	d	u_R^g	4	0	4
	g	b			$\bar{u}_L^r$	−4	0	−4
	g	b		d	$\bar{u}_R^r$	−4	3	−1
	g	b	u		$\bar{d}_R^r$	2	−3	−1
	g	b	u	d	$\bar{d}_L^r$	2	0	2
r					d_R^r	−2	0	−2
r				d	d_L^r	−2	3	1
r			u		u_L^r	4	−3	1
r			u	d	u_R^r	4	0	4
r		b			$\bar{u}_L^g$	−4	0	−4
r		b		d	$\bar{u}_R^g$	−4	3	−1
r		b	u		$\bar{d}_R^g$	2	−3	−1
r		b	u	d	$\bar{d}_L^g$	2	0	2
r	g				$\bar{u}_L^b$	−4	0	−4
r	g			d	$\bar{u}_R^b$	−4	3	−1
r	g		u		$\bar{d}_R^b$	2	−3	−1
r	g		u	d	$\bar{d}_L^b$	2	0	2
r	g	b			e_R	−6	0	−6
r	g	b		d	e_L	−6	3	−3
r	g	b	u		ν_L	0	−3	−3
r	g	b	u	d	ν_R	0	0	0