SVT

$$h_{00} = -2\phi$$

$$h_{0i} = w_i = \partial_i B + B_i$$

$$h_{ij} = -2\psi + S_{ij} = -2\psi + 2\partial_i\partial_j E + \partial_i E_j + \partial_j E_i + 2E_{ij}$$

where

$$\partial_i B^i = \partial_i E^i = 0$$

$$\partial_i E^{ij} = 0$$

$$\delta_{ij} E^{ij} = 0$$

No gauge, $\delta G_{\mu\nu}$ flat:

00	$\frac{1}{2}\partial_1\partial_1 h_{00} - \frac{1}{2}\partial_1\partial_1 h_{11} + \frac{\partial_1\partial_1 h}{2} - \partial_2\partial_1 h_{12} + \frac{1}{2}\partial_2\partial_2 h_{00} - \frac{1}{2}\partial_2\partial_2 h_{22} + \frac{\partial_2\partial_2 h}{2} - \partial_3\partial_1 h_{13} - \partial_3\partial_2 h_{23} + \frac{1}{2}\partial_3\partial_3 h_{00} - \frac{1}{2}\partial_3\partial_3 h_{33} + \frac{\partial_3\partial_3 h}{2}$
11	$\frac{1}{2}\partial_0\partial_0 h_{00} - \frac{1}{2}\partial_0\partial_0 h_{11} + \frac{\partial_0\partial_0 h}{2} - \partial_1\partial_0 h_{01} + h_{10}\ \partial_1\partial_0 h_{01} - \partial_2\partial_0 h_{02} + \frac{1}{2}\partial_2\partial_2 h_{11} + \frac{1}{2}\partial_2\partial_2 h_{22} - \frac{\partial_2\partial_2 h}{2} - \partial_3\partial_0 h_{03} + \partial_3\partial_2 h_{23} + \frac{1}{2}\partial_3\partial_3 h_{11} + \frac{1}{2}\partial_3\partial_3 h_{33} - \frac{\partial_3\partial_3 h}{2}$
22	$\frac{1}{2}\partial_0\partial_0 h_{00} - \frac{1}{2}\partial_0\partial_0 h_{22} + \frac{\partial_0\partial_0 h}{2} - \partial_1\partial_0 h_{01} + \frac{1}{2}\partial_1\partial_1 h_{11} + \frac{1}{2}\partial_1\partial_1 h_{22} - \frac{\partial_1\partial_1 h}{2} - \partial_2\partial_0 h_{02} + h_{20}\ \partial_2\partial_0 h_{02} - \partial_3\partial_0 h_{03} + \partial_3\partial_1 h_{13} + \frac{1}{2}\partial_3\partial_3 h_{22} + \frac{1}{2}\partial_3\partial_3 h_{33} - \frac{\partial_3\partial_3 h}{2}$
33	$\frac{1}{2}\partial_0\partial_0 h_{00} - \frac{1}{2}\partial_0\partial_0 h_{33} + \frac{\partial_0\partial_0 h}{2} - \partial_1\partial_0 h_{01} + \frac{1}{2}\partial_1\partial_1 h_{11} + \frac{1}{2}\partial_1\partial_1 h_{33} - \frac{\partial_1\partial_1 h}{2} - \partial_2\partial_0 h_{02} + \partial_2\partial_1 h_{12} + \frac{1}{2}\partial_2\partial_2 h_{22} + \frac{1}{2}\partial_2\partial_2 h_{33} - \frac{\partial_2\partial_2 h}{2} - \partial_3\partial_0 h_{03} + h_{30}\ \partial_3\partial_0 h_{03}$
01	$\frac{1}{2}\partial_1\partial_0 h_{00} - \frac{1}{2}\partial_1\partial_0 h_{11} + \frac{\partial_1\partial_0 h}{2} - \frac{1}{2}\partial_2\partial_0 h_{12} - \frac{1}{2}\partial_2\partial_1 h_{02} + \frac{1}{2}\partial_2\partial_2 h_{01} - \frac{1}{2}\partial_3\partial_0 h_{13} - \frac{1}{2}\partial_3\partial_1 h_{03} + \frac{1}{2}\partial_3\partial_3 h_{01}$
02	$-\frac{1}{2}\partial_1\partial_0 h_{12} + \frac{1}{2}\partial_1\partial_1 h_{02} + \frac{1}{2}\partial_2\partial_0 h_{00} - \frac{1}{2}\partial_2\partial_0 h_{22} + \frac{\partial_2\partial_0 h}{2} - \frac{1}{2}\partial_2\partial_1 h_{01} - \frac{1}{2}\partial_3\partial_0 h_{23} - \frac{1}{2}\partial_3\partial_2 h_{03} + \frac{1}{2}\partial_3\partial_3 h_{02}$
03	$-\frac{1}{2}\partial_1\partial_0 h_{13} + \frac{1}{2}\partial_1\partial_1 h_{03} - \frac{1}{2}\partial_2\partial_0 h_{23} + \frac{1}{2}\partial_2\partial_2 h_{03} + \frac{1}{2}\partial_3\partial_0 h_{00} - \frac{1}{2}\partial_3\partial_0 h_{33} + \frac{\partial_3\partial_0 h}{2} - \frac{1}{2}\partial_3\partial_1 h_{01} - \frac{1}{2}\partial_3\partial_2 h_{02}$
12	$-\frac{1}{2}\partial_0\partial_0 h_{12} + \frac{1}{2}\partial_1\partial_0 h_{02} + \frac{1}{2}\partial_2\partial_0 h_{01} - \frac{1}{2}\partial_2\partial_1 h_{11} - \frac{1}{2}\partial_2\partial_1 h_{22} + \frac{\partial_2\partial_1 h}{2} - \frac{1}{2}\partial_3\partial_1 h_{23} - \frac{1}{2}\partial_3\partial_2 h_{13} + \frac{1}{2}\partial_3\partial_3 h_{12}$
13	$-\frac{1}{2}\partial_0\partial_0 h_{13} + \frac{1}{2}\partial_1\partial_0 h_{03} - \frac{1}{2}\partial_2\partial_1 h_{23} + \frac{1}{2}\partial_2\partial_2 h_{13} + \frac{1}{2}\partial_3\partial_0 h_{01} - \frac{1}{2}\partial_3\partial_1 h_{11} - \frac{1}{2}\partial_3\partial_1 h_{33} + \frac{\partial_3\partial_1 h}{2} - \frac{1}{2}\partial_3\partial_2 h_{12}$
23	$-\frac{1}{2}\partial_0\partial_0 h_{23} + \frac{1}{2}\partial_1\partial_1 h_{23} + \frac{1}{2}\partial_2\partial_0 h_{03} - \frac{1}{2}\partial_2\partial_1 h_{13} + \frac{1}{2}\partial_3\partial_0 h_{02} - \frac{1}{2}\partial_3\partial_1 h_{12} - \frac{1}{2}\partial_3\partial_2 h_{22} - \frac{1}{2}\partial_3\partial_2 h_{33} + \frac{\partial_3\partial_2 h}{2}$

Now decompose into the form with ϕ, ψ, w_i, and S_{ij}.

Note that the trace condition is

```
"h = 2\!\(\*
InterpretationBox[
StyleBox[\"ϕ\",
ShowAutoStyles->False,
AutoSpacing->False],
$CellContext`ϕ[],
Editable->False]\) - 6\!\(\*
InterpretationBox[
StyleBox[\"ψ\",
ShowAutoStyles->False,
AutoSpacing->False],
$CellContext`ψ[],
Editable->False]\)
```

00	$-2\,\partial^i\partial_i\psi - \frac{1}{2}\,\partial^i\partial^j S_{ij}$
11	$-2\,\partial_0\partial_0\psi - \partial_2\partial_2\phi + \partial_2\partial_2\psi - \partial_3\partial_3\phi + \partial_3\partial_3\psi - \frac{1}{2}\,\partial_2\partial_0 w_2 - \frac{1}{2}\,\partial_3\partial_0 w_3 - \frac{1}{2}\,\partial_0\partial_0 S_{11} + \frac{1}{2}\,\partial_2\partial_2 S_{11} + \frac{1}{2}\,\partial_2\partial_2 S_{22} + \frac{1}{2}\,\partial_3\partial_3 S_{11} + \partial_3\partial_2 S_{23} + \frac{1}{2}\,\partial_3\partial_3 S_{33}$
22	$-2\,\partial_0\partial_0\psi - \partial_1\partial_1\phi + \partial_1\partial_1\psi - \partial_3\partial_3\phi + \partial_3\partial_3\psi - \frac{1}{2}\,\partial_1\partial_0 w_1 - \frac{1}{2}\,\partial_3\partial_0 w_3 - \partial_0\partial_0 S_{22} + \partial_1\partial_1 S_{11} + \partial_1\partial_1 S_{22} + 2\,\partial_3\partial_1 S_{13} + \partial_3\partial_3 S_{22} + \partial_3\partial_3 S_{33}$
33	$-2\,\partial_0\partial_0\psi - \partial_1\partial_1\phi + \partial_1\partial_1\psi - \partial_2\partial_2\phi + \partial_2\partial_2\psi - \frac{1}{2}\,\partial_1\partial_0 w_1 - \frac{1}{2}\,\partial_2\partial_0 w_2 - \frac{1}{2}\,\partial_0\partial_0 S_{33} + \frac{1}{2}\,\partial_1\partial_1 S_{11} + \frac{1}{2}\,\partial_1\partial_1 S_{33} + \partial_2\partial_1 S_{12} + \frac{1}{2}\,\partial_2\partial_2 S_{22} + \frac{1}{2}\,\partial_2\partial_2 S_{33}$
01	$-2\,\partial_1\partial_0\psi - \frac{1}{2}\,\partial_0\partial^i S_{i1} - \frac{1}{4}\,\partial_2\partial_1 w_2 + \frac{1}{4}\,\partial_2\partial_2 w_1 - \frac{1}{4}\,\partial_3\partial_1 w_3 + \frac{1}{4}\,\partial_3\partial_3 w_1$
02	$-2\,\partial_2\partial_0\psi - \frac{1}{2}\,\partial_0\partial^i S_{i2} + \frac{1}{4}\,\partial_1\partial_1 w_2 - \frac{1}{4}\,\partial_2\partial_1 w_1 - \frac{1}{4}\,\partial_3\partial_2 w_3 + \frac{1}{4}\,\partial_3\partial_3 w_2$
03	$-2\,\partial_3\partial_0\psi - \frac{1}{2}\,\partial_0\partial^i S_{i3} + \frac{1}{4}\,\partial_1\partial_1 w_3 + \frac{1}{4}\,\partial_2\partial_2 w_3 - \frac{1}{4}\,\partial_3\partial_1 w_1 - \frac{1}{4}\,\partial_3\partial_2 w_2$
12	$\partial_2\partial_1\phi - \partial_2\partial_1\psi + \frac{1}{4}\,\partial_1\partial_0 w_2 + \frac{1}{4}\,\partial_2\partial_0 w_1 - \frac{1}{2}\,\partial_0\partial_0 S_{12} - \frac{1}{2}\,\partial_2\partial_1 S_{11} - \frac{1}{2}\,\partial_2\partial_1 S_{22}\ \frac{1}{2} - \partial_3\partial_1 S_{23} - \frac{1}{2}\,\partial_3\partial_2 S_{13} + \frac{1}{2}\,\partial_3\partial_3 S_{12}$
13	$\partial_3\partial_1\phi - \partial_3\partial_1\psi + \frac{1}{4}\,\partial_1\partial_0 w_3 + \frac{1}{4}\,\partial_3\partial_0 w_1 - \frac{1}{2}\,\partial_0\partial_0 S_{13} - \frac{1}{2}\,\partial_2\partial_1 S_{23} + \frac{1}{2}\,\partial_2\partial_2 S_{13} - \frac{1}{2}\,\partial_3\partial_1 S_{11} - \frac{1}{2}\,\partial_3\partial_1 S_{33} - \frac{1}{2}\,\partial_3\partial_2 S_{12}$
23	$\partial_3\partial_2\phi - \partial_3\partial_2\psi + \frac{1}{4}\,\partial_2\partial_0 w_3 + \frac{1}{4}\,\partial_3\partial_0 w_2 - \frac{1}{2}\,\partial_0\partial_0 S_{23} + \frac{1}{2}\,\partial_1\partial_1 S_{23} - \frac{1}{2}\,\partial_2\partial_1 S_{13} - \frac{1}{2}\,\partial_3\partial_1 S_{12} - \frac{1}{2}\,\partial_3\partial_2 S_{22} - \frac{1}{2}\,\partial_3\partial_2 S_{33}$

Now further decompose S_{ij} and w_i as given in the first equations.

(The following still needs to be compared to literature)

00	$-2\,\partial_1\partial_1\psi - \partial_1\partial_1\partial_1\partial_1 E - 2\,\partial_2\partial_2\psi - 2\,\partial_2\partial_2\partial_1\partial_1 E - \partial_2\partial_2\partial_2\partial_2 E - 2\,\partial_3\partial_3\psi - 2\,\partial_3\partial_3\partial_1\partial_1 E - 2\,\partial_3\partial_3\partial_2\partial_2 E - \partial_3\partial_3\partial_3\partial_3 E$
11	$-\partial_0\partial_0 E_{11} - 2\,\partial_0\partial_0\psi + \frac{1}{2}\,\partial_1\partial_0 B_1 + \partial_1\partial_1 E_{11} - \partial_1\partial_1\partial_0\partial_0 E + \partial_2\partial_2 E_{11} -$ $\partial_2\partial_2\phi + \partial_2\partial_2\psi - \frac{1}{2}\,\partial_2\partial_2\partial_0 B - \partial_2\partial_2\partial_0\partial_0 E + \partial_2\partial_2\partial_1\partial_1 E + \partial_2\partial_2\partial_2\partial_2 E + \partial_3\partial_3 E_{11} -$ $\partial_3\partial_3\phi + \partial_3\partial_3\psi - \frac{1}{2}\,\partial_3\partial_3\partial_0 B - \partial_3\partial_3\partial_0\partial_0 E + \partial_3\partial_3\partial_1\partial_1 E + 2\,\partial_3\partial_3\partial_2\partial_2 E + \partial_3\partial_3\partial_3\partial_3 E$
22	$-\partial_0\partial_0 E_{22} - 2\,\partial_0\partial_0\psi + \partial_1\partial_1 E_{22} - \partial_1\partial_1\phi + \partial_1\partial_1\psi - \frac{1}{2}\,\partial_1\partial_1\partial_0 B -$ $\partial_1\partial_1\partial_0\partial_0 E + \partial_1\partial_1\partial_1\partial_1 E + \frac{1}{2}\,\partial_2\partial_0 B_2 + \partial_2\partial_2 E_{22} - \partial_2\partial_2\partial_0\partial_0 E + \partial_2\partial_2\partial_1\partial_1 E + \partial_3\partial_3 E_{22} -$ $\partial_3\partial_3\phi + \partial_3\partial_3\psi - \frac{1}{2}\,\partial_3\partial_3\partial_0 B - \partial_3\partial_3\partial_0\partial_0 E + 2\,\partial_3\partial_3\partial_1\partial_1 E + \partial_3\partial_3\partial_2\partial_2 E + \partial_3\partial_3\partial_3\partial_3 E$
33	$-\partial_0\partial_0 E_{33} - 2\,\partial_0\partial_0\psi + \partial_1\partial_1 E_{33} - \partial_1\partial_1\phi + \partial_1\partial_1\psi - \frac{1}{2}\,\partial_1\partial_1\partial_0 B -$ $\partial_1\partial_1\partial_0\partial_0 E + \partial_1\partial_1\partial_1\partial_1 E + \partial_2\partial_2 E_{33} - \partial_2\partial_2\phi + \partial_2\partial_2\psi - \frac{1}{2}\,\partial_2\partial_2\partial_0 B - \partial_2\partial_2\partial_0\partial_0 E +$ $2\,\partial_2\partial_2\partial_1\partial_1 E + \partial_2\partial_2\partial_2\partial_2 E + \frac{1}{2}\,\partial_3\partial_0 B_3 + \partial_3\partial_3 E_{33} - \partial_3\partial_3\partial_0\partial_0 E + \partial_3\partial_3\partial_1\partial_1 E + \partial_3\partial_3\partial_2\partial_2 E$
01	$-2\,\partial_1\partial_0\psi + \frac{1}{4}\,\partial_1\partial_1 B_1 - \partial_1\partial_1\partial_1\partial_0 E + \frac{1}{4}\,\partial_2\partial_2 B_1 - \partial_2\partial_2\partial_1\partial_0 E + \frac{1}{4}\,\partial_3\partial_3 B_1 - \partial_3\partial_3\partial_1\partial_0 E$
02	$\frac{1}{4}\,\partial_1\partial_1 B_2 - 2\,\partial_2\partial_0\psi - \partial_2\partial_1\partial_1\partial_0 E + \frac{1}{4}\,\partial_2\partial_2 B_2 - \partial_2\partial_2\partial_2\partial_0 E + \frac{1}{4}\,\partial_3\partial_3 B_2 - \partial_3\partial_3\partial_2\partial_0 E$
03	$\frac{1}{4}\,\partial_1\partial_1 B_3 + \frac{1}{4}\,\partial_2\partial_2 B_3 - 2\,\partial_3\partial_0\psi - \partial_3\partial_1\partial_1\partial_0 E - \partial_3\partial_2\partial_2\partial_0 E + \frac{1}{4}\,\partial_3\partial_3 B_3 - \partial_3\partial_3\partial_3\partial_0 E$
12	$-\partial_0\partial_0 E_{12} + \frac{1}{4}\,\partial_1\partial_0 B_2 + \partial_1\partial_1 E_{12} + \frac{1}{4}\,\partial_2\partial_0 B_1 + \partial_2\partial_1\phi - \partial_2\partial_1\psi +$ $\frac{1}{2}\,\partial_2\partial_1\partial_0 B - \partial_2\partial_1\partial_1\partial_1 E + \partial_2\partial_2 E_{12} - \partial_2\partial_2\partial_2\partial_1 E + \partial_3\partial_3 E_{12} - \partial_3\partial_3\partial_2\partial_1 E$
13	$-\partial_0\partial_0 E_{13} + \frac{1}{4}\,\partial_1\partial_0 B_3 + \partial_1\partial_1 E_{13} + \partial_2\partial_2 E_{13} + \frac{1}{4}\,\partial_3\partial_0 B_1 +$ $\partial_3\partial_1\phi - \partial_3\partial_1\psi + \frac{1}{2}\,\partial_3\partial_1\partial_0 B - \partial_3\partial_1\partial_1\partial_1 E - \partial_3\partial_2\partial_2\partial_1 E + \partial_3\partial_3 E_{13} - \partial_3\partial_3\partial_3\partial_1 E$
23	$-\partial_0\partial_0 E_{23} + \partial_1\partial_1 E_{23} + \frac{1}{4}\,\partial_2\partial_0 B_3 + \partial_2\partial_2 E_{23} + \frac{1}{4}\,\partial_3\partial_0 B_2 +$ $\partial_3\partial_2\phi - \partial_3\partial_2\psi + \frac{1}{2}\,\partial_3\partial_2\partial_0 B - \partial_3\partial_2\partial_1\partial_1 E - \partial_3\partial_2\partial_2\partial_2 E + \partial_3\partial_3 E_{23} - \partial_3\partial_3\partial_3\partial_2 E$