

MICHIGAN STATE  
UNIVERSITY

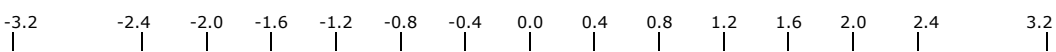
# L1Calo Fibre-Optic Exchange (FOX)

Update  
18th Sep 2017

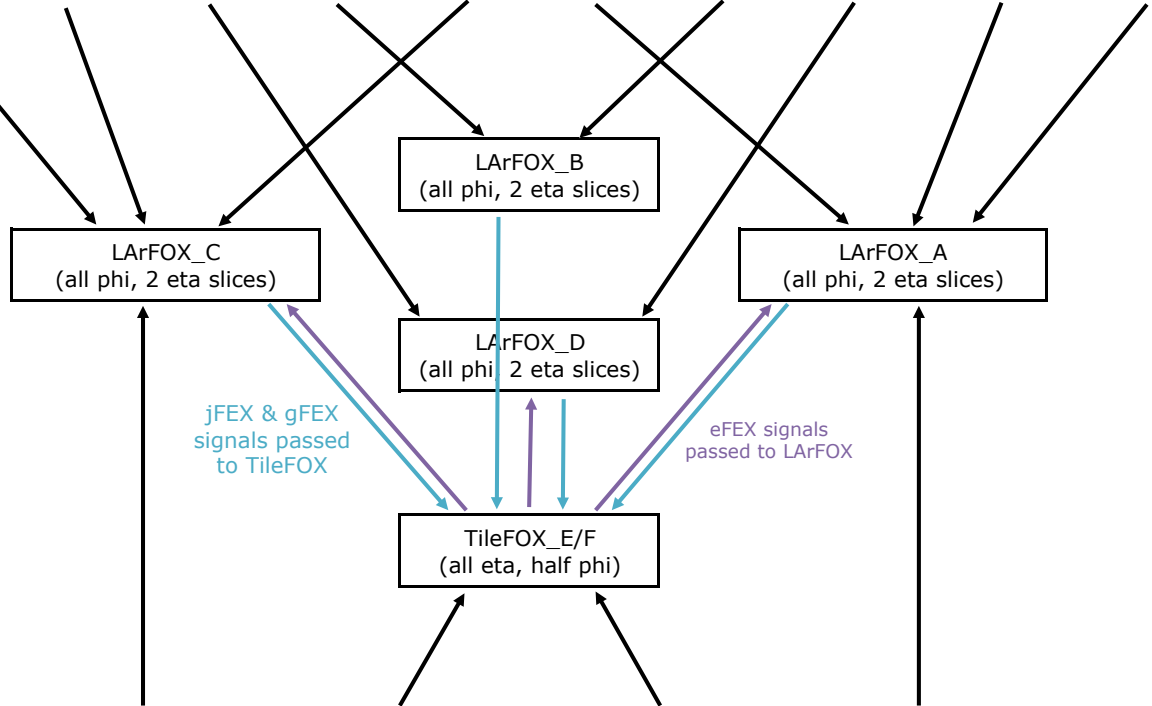
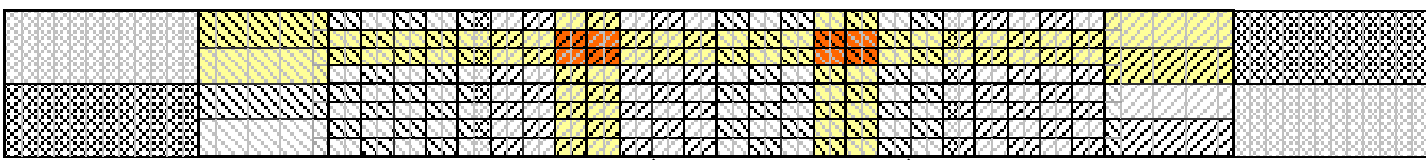
Daniel Hayden  
[daniel.hayden@cern.ch](mailto:daniel.hayden@cern.ch)



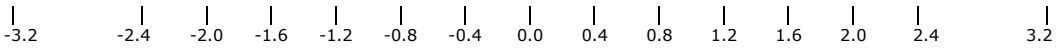
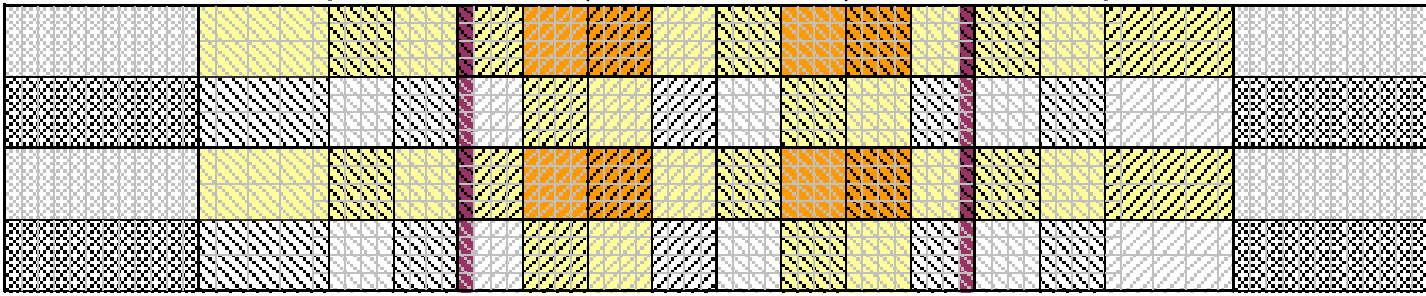
FCAL	EMEC/HEC	EMEC0	EMB/EMEC1	EMB0	EMB0	EMB/EMEC0	EMEC0	EMEC/HEC	FCAL
		EMEC1	EMB/EMEC1	EMB1	EMB1	EMB/EMEC1	EMEC1		
CL		DL	BL	CR	AL	BR	DR	AR	



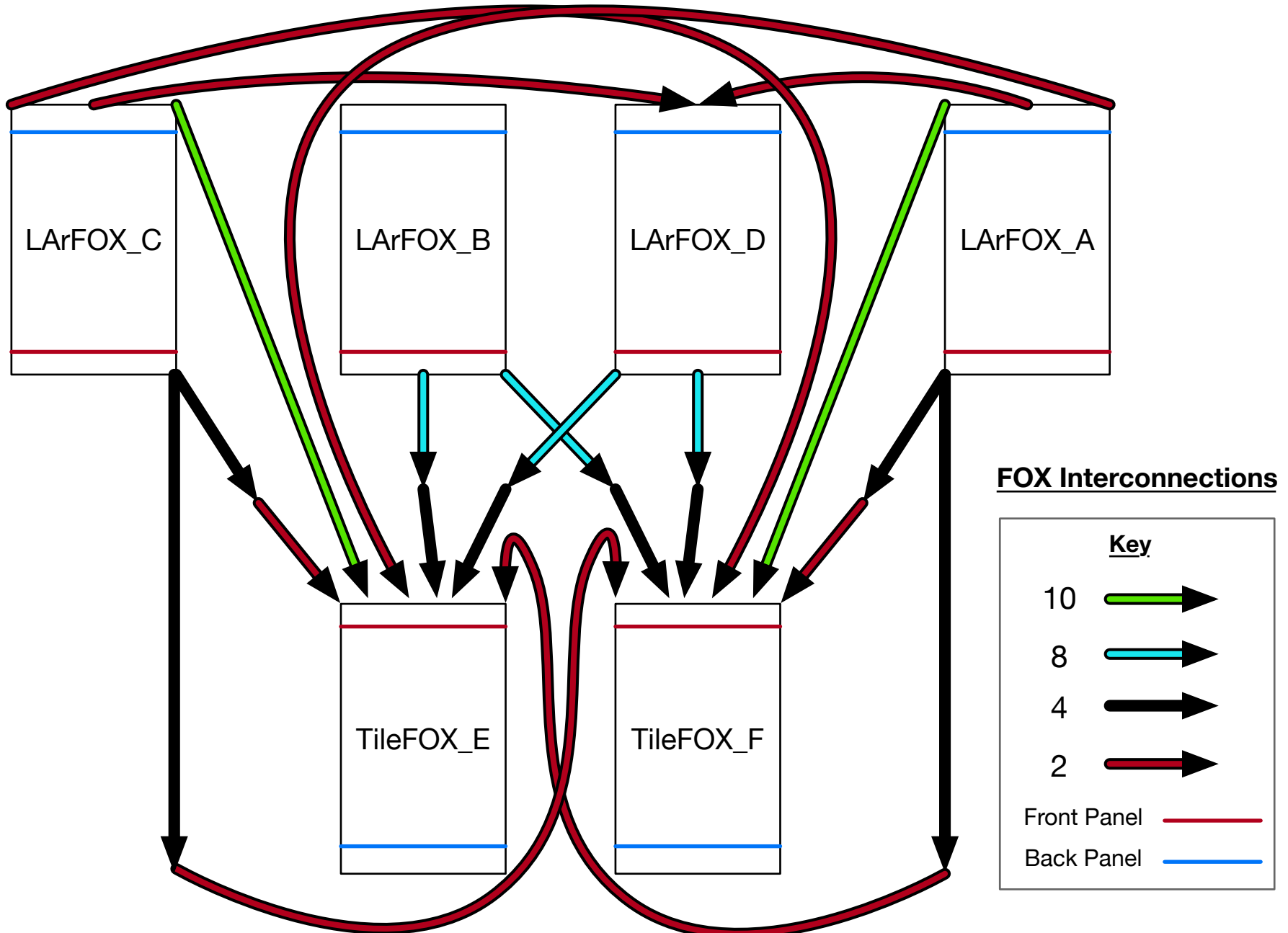
EM Layer  
(octant)

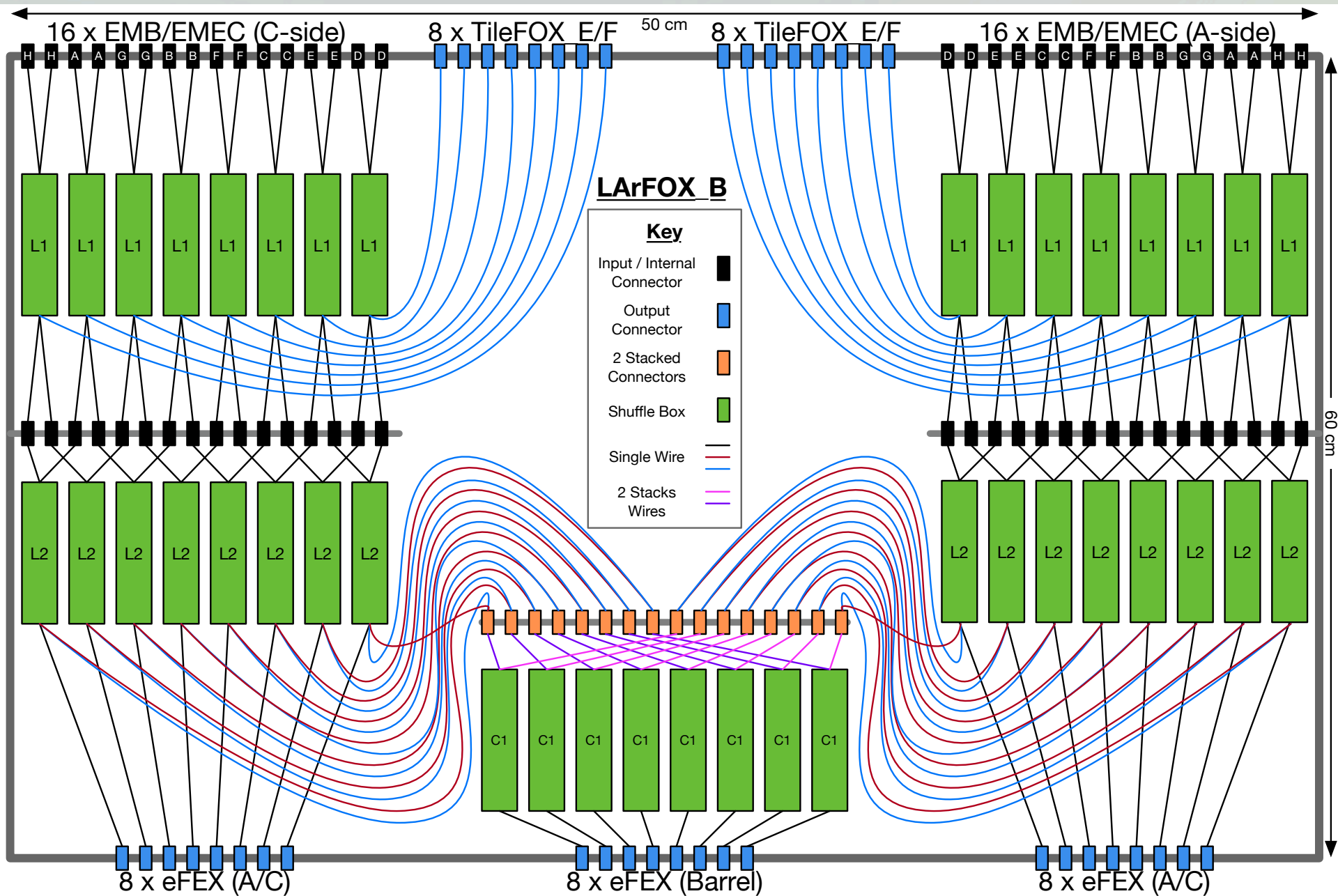


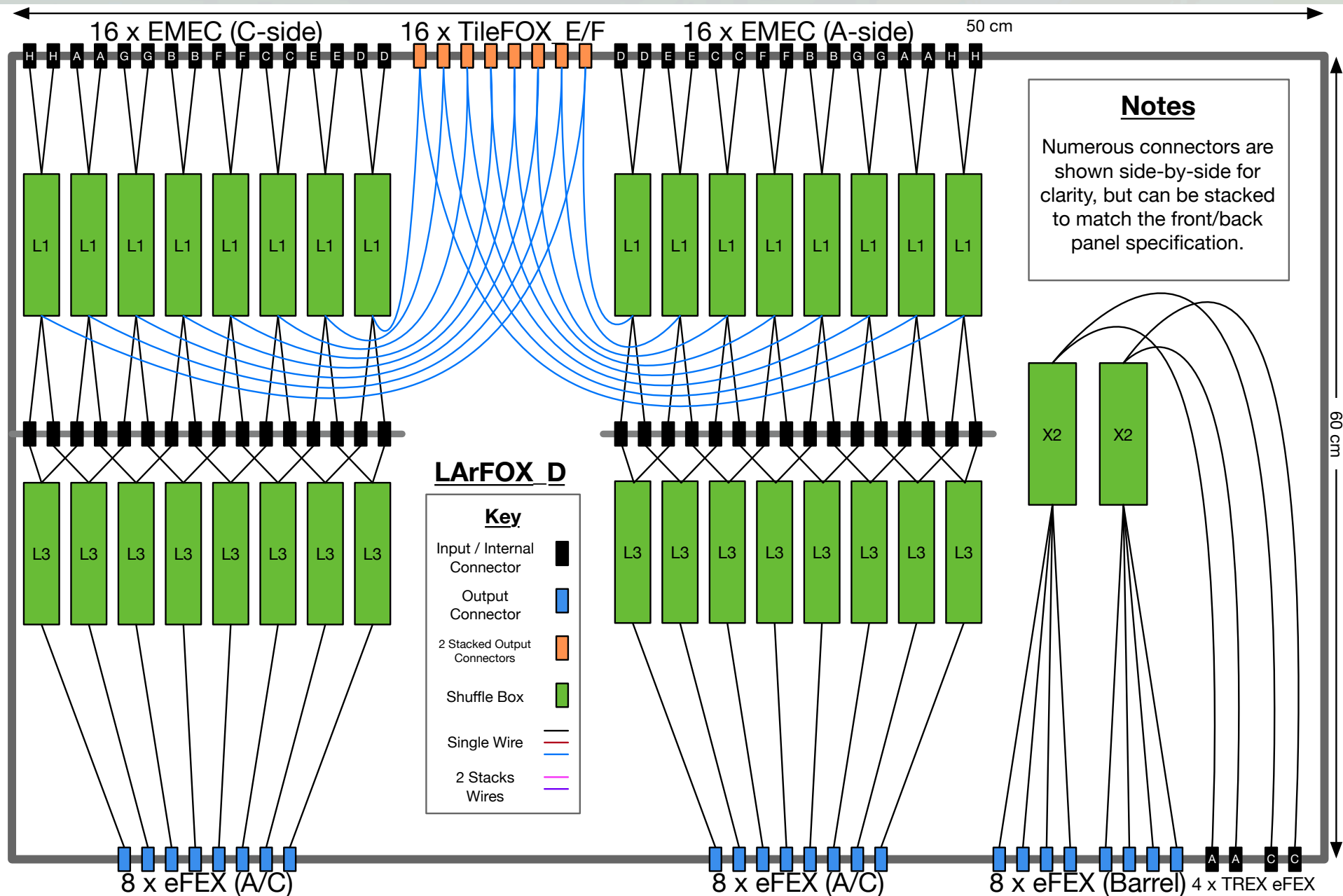
Hadronic Layer  
(quadrant)



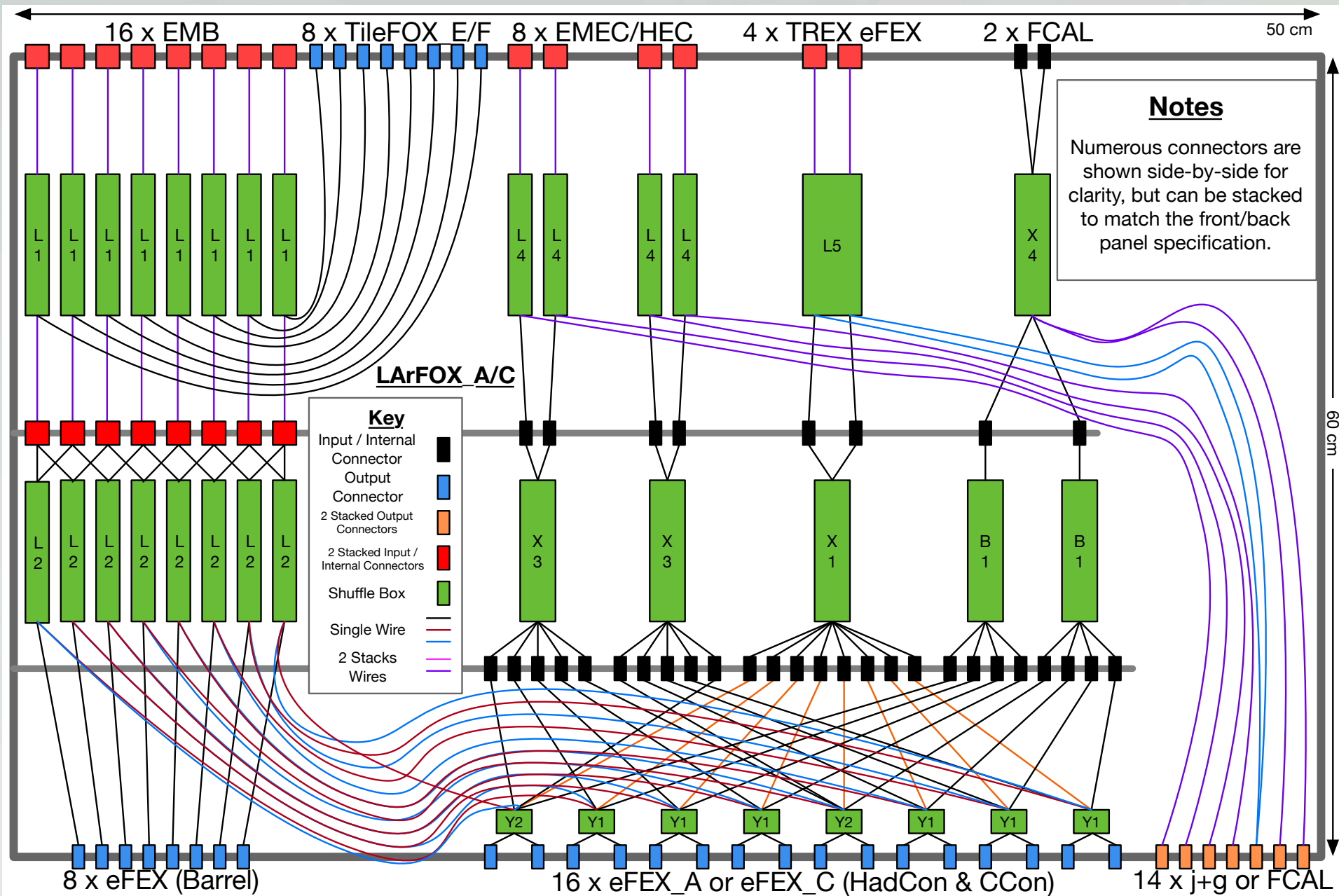
FCAL	EMEC/HEC		TR0	TR1	TR1	TR0	TR0	TR1	TR1	TR0	EMEC/HEC		FCAL
	EMEC/HEC	EMEC/HEC									EMEC/HEC	EMEC/HEC	

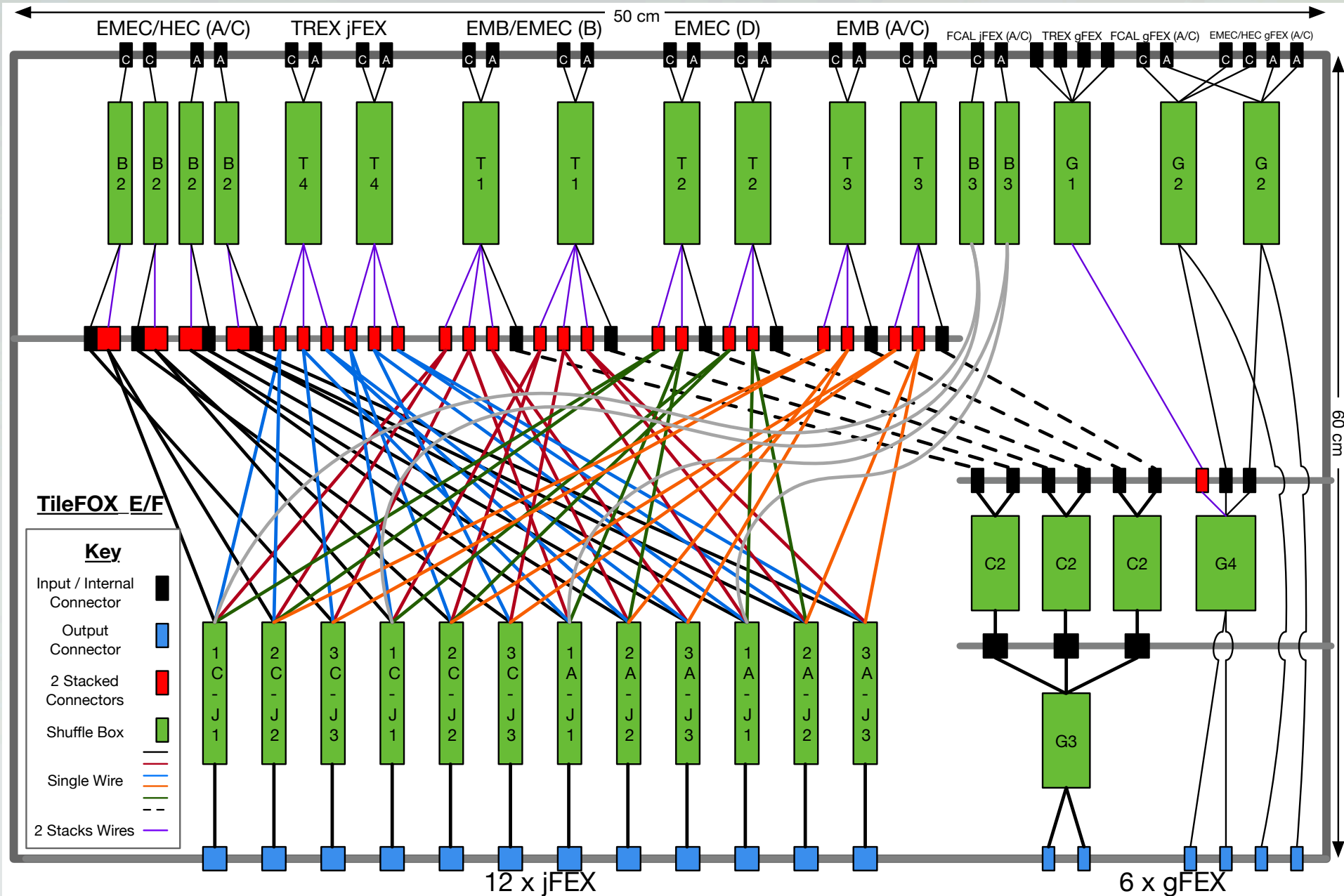






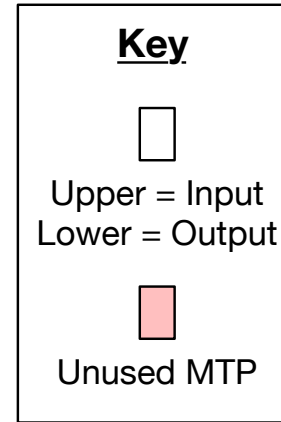
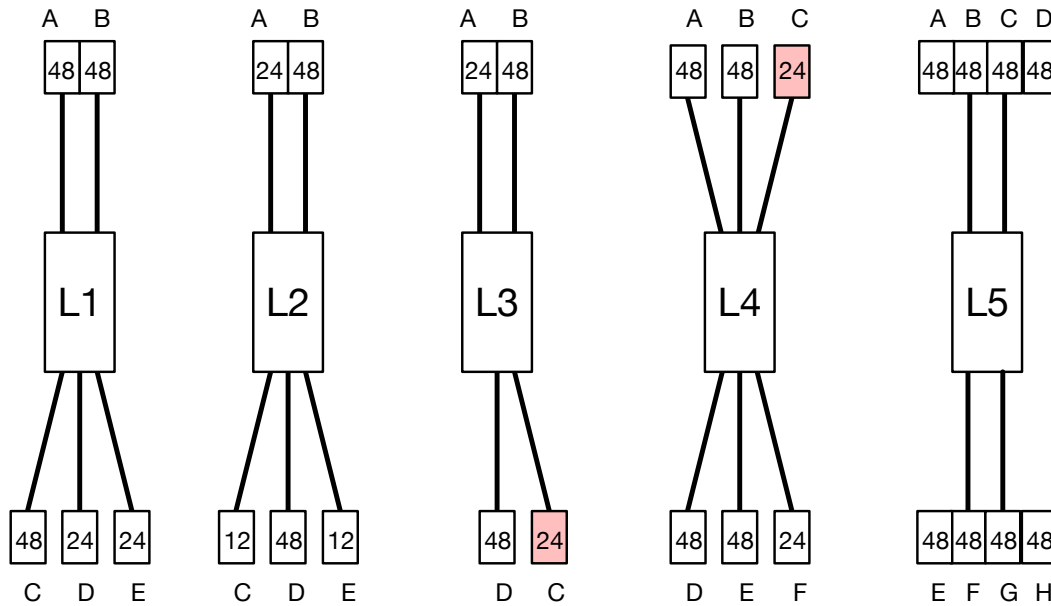






Ribbon Type (27)	LArFOX B	LArFOX D	LArFOX A+C	TileFOX E+F	Total (212)
L1	16	16	16	-	48
L2	16	-	-	-	16
L3	-	16	16	-	32
L4	-	-	8	-	8
L5	-	-	2	-	2
X1	-	-	2	-	2
X2	-	2	-	-	2
X3	-	-	4	-	4
X4	-	-	2	-	2
Y1	-	-	12	-	12
Y2	-	-	4	-	4
B1	-	-	4	-	4
B2	-	-	-	8	8
B3	-	-	-	4	4
C1	8	-	-	-	8
C2	-	-	-	6	6
T1	-	-	-	4	4
T2	-	-	-	4	4
T3	-	-	-	4	4
T4	-	-	-	4	4
G1	-	-	-	2	2
G2	-	-	-	4	4
G3	-	-	-	2	2
G4	-	-	-	2	2
J1	-	-	-	8	8
J2	-	-	-	8	8
J3	-	-	-	8	8





**Naming**

Everywhere:

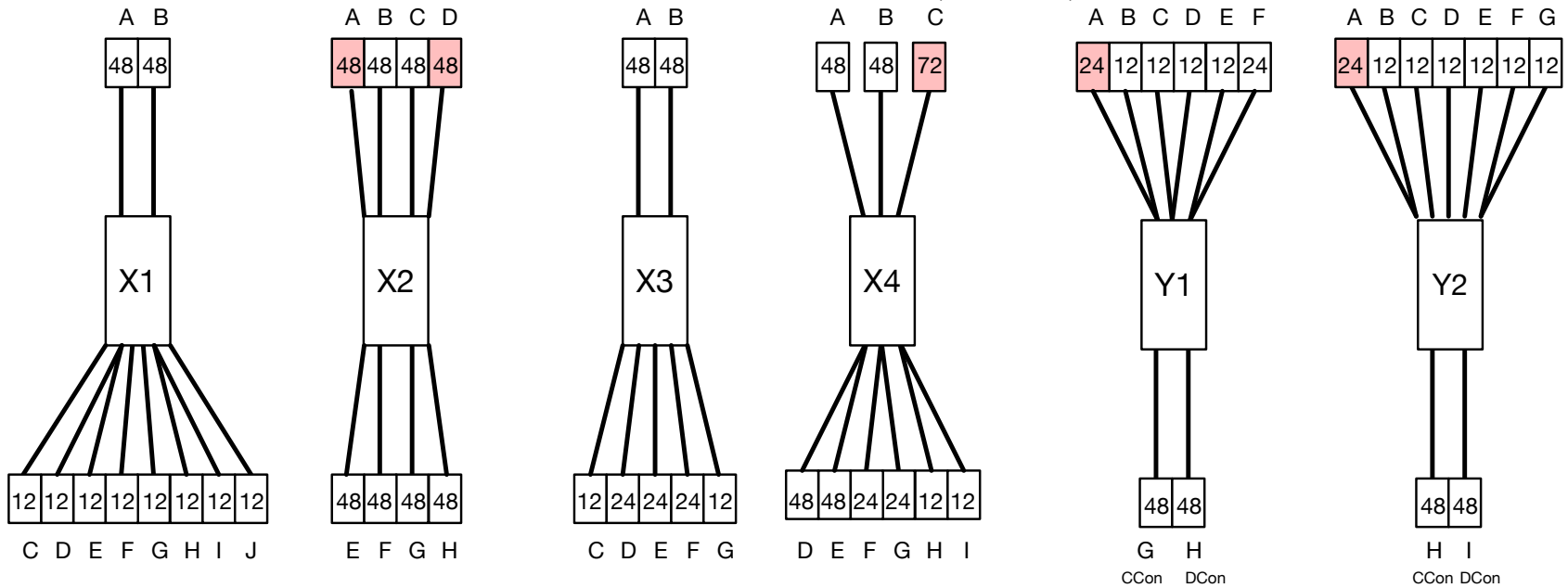
- 1 = (I) = B
- 1 = (O) = C

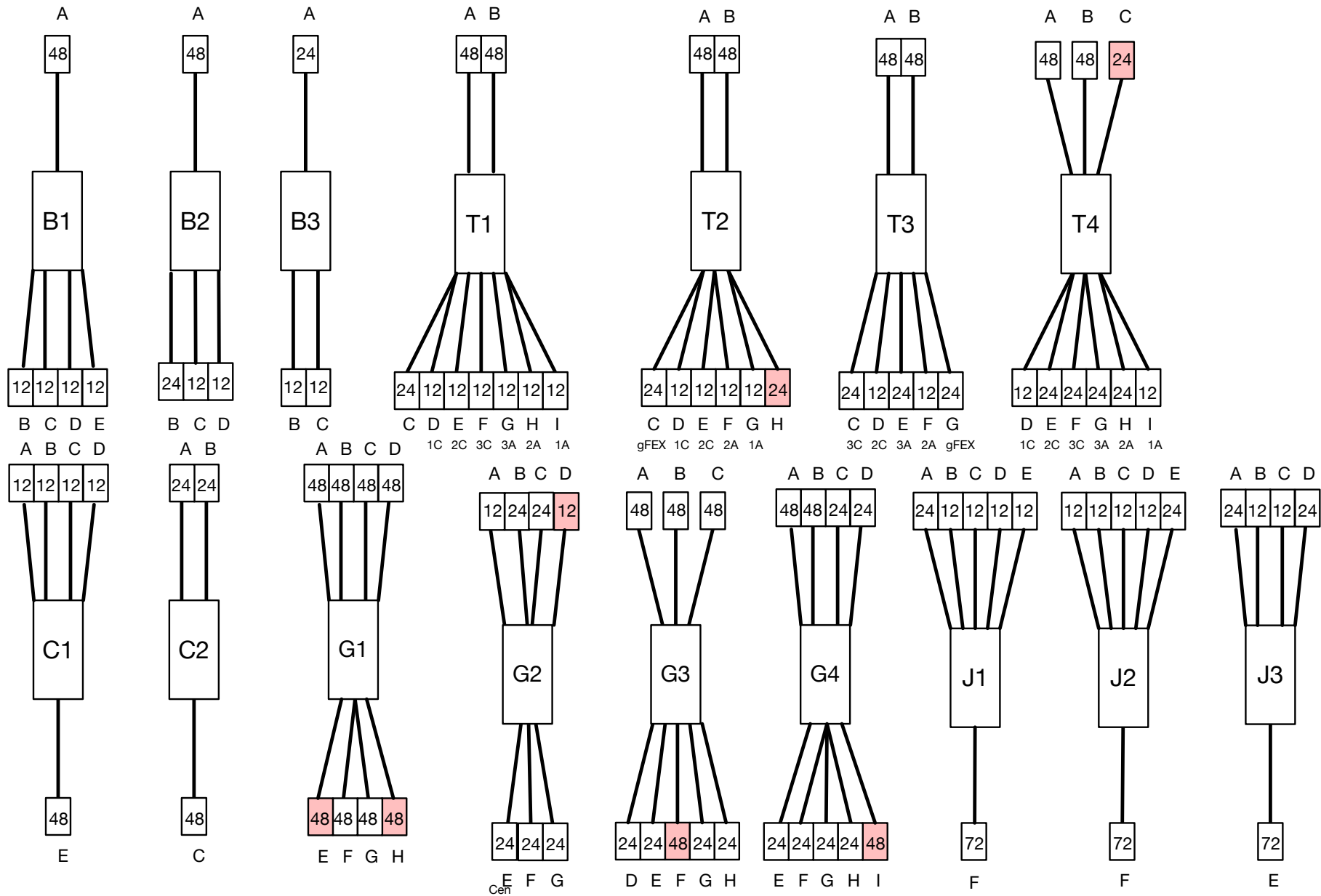
LArFOX Boxes:

- 1 < (I/O) < 4 = L
- >= 4 (O) = X
- >= 4 (I) = Y

TileFOX Boxes:

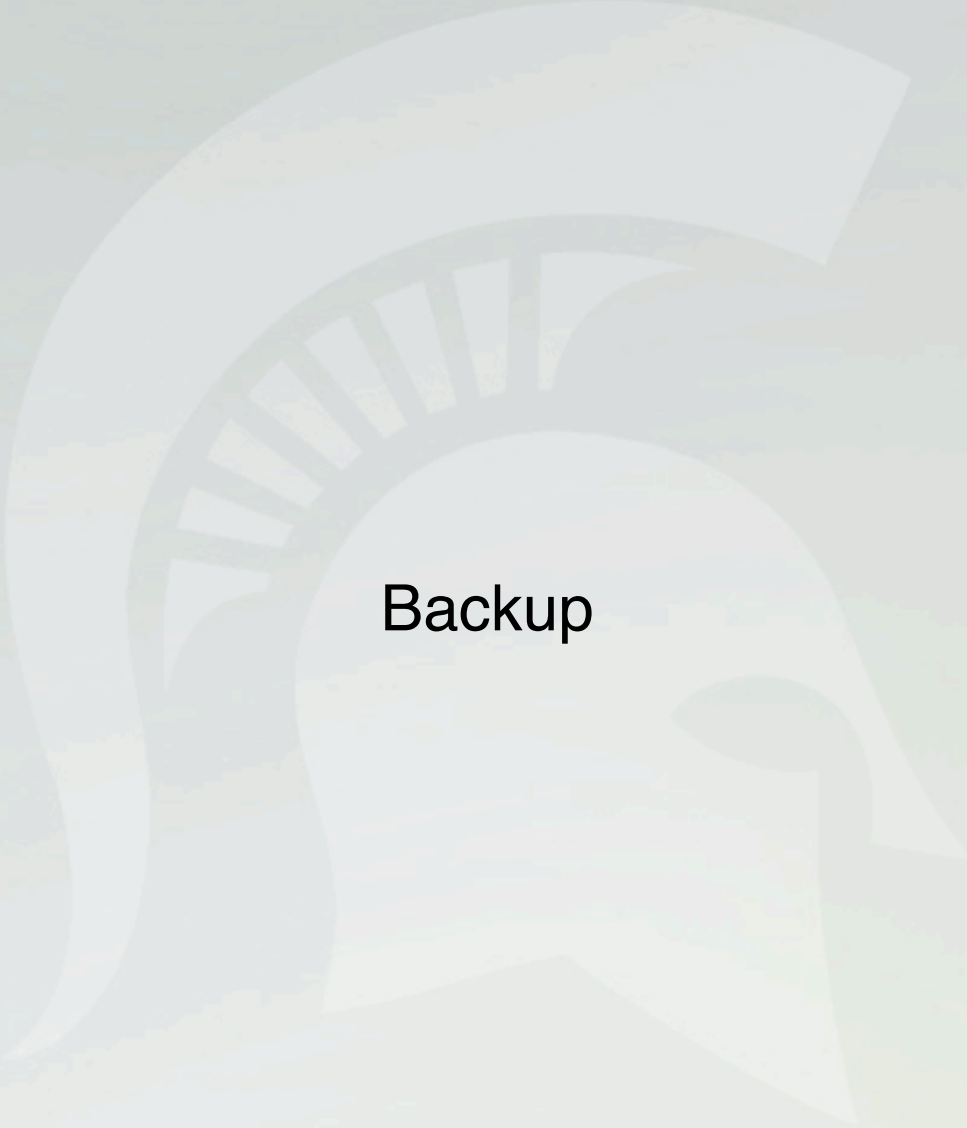
- jFEX first half = T
- jFEX output = J
- gFEX output = G





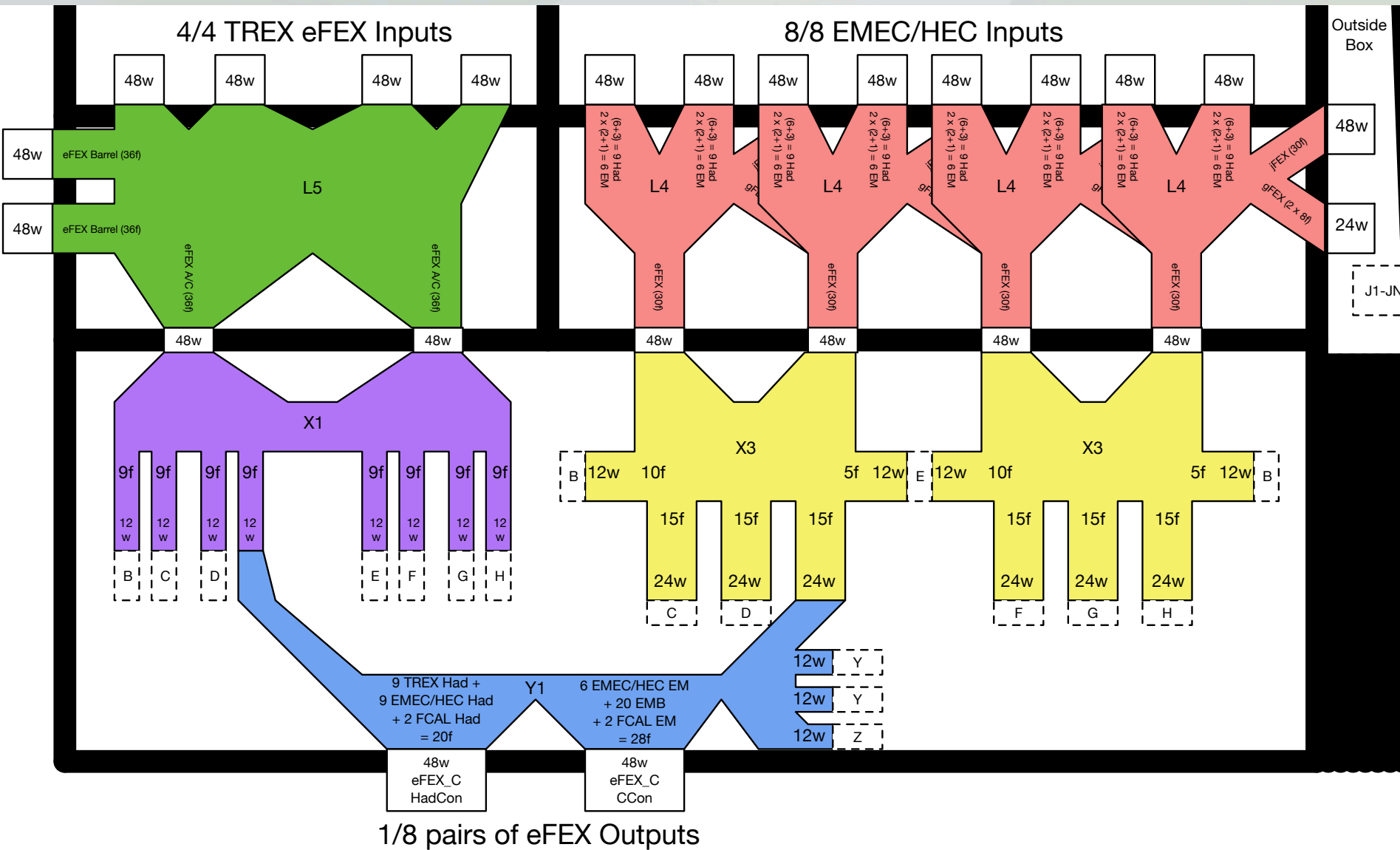
[Ribbon Mapping]

[Ribbon Explanation]



# Backup

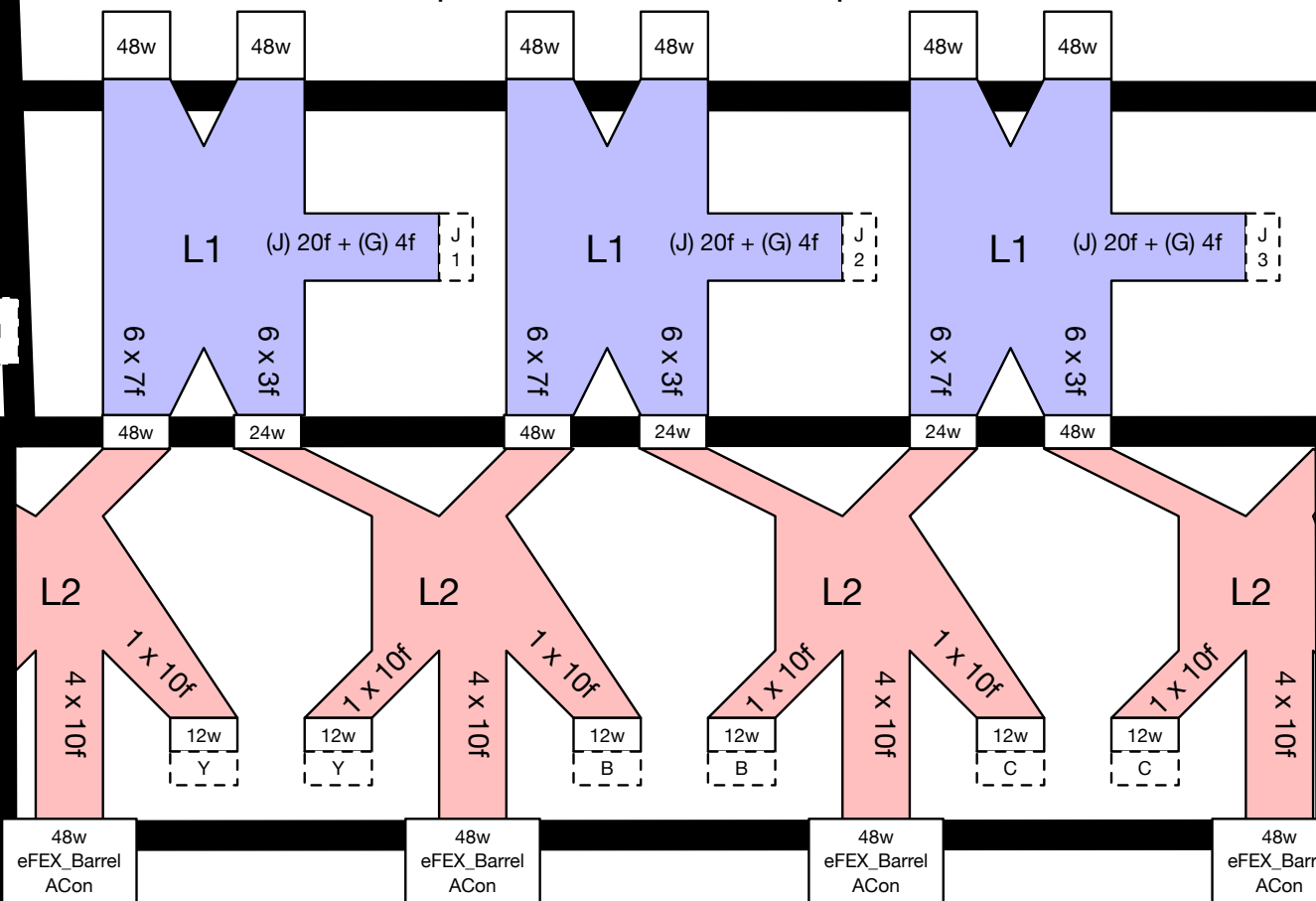
# LArFOX A/C (Part 1)



LArFOX A/C Part 1 (LHS Box)

# LArFOX A/C (Part 2)

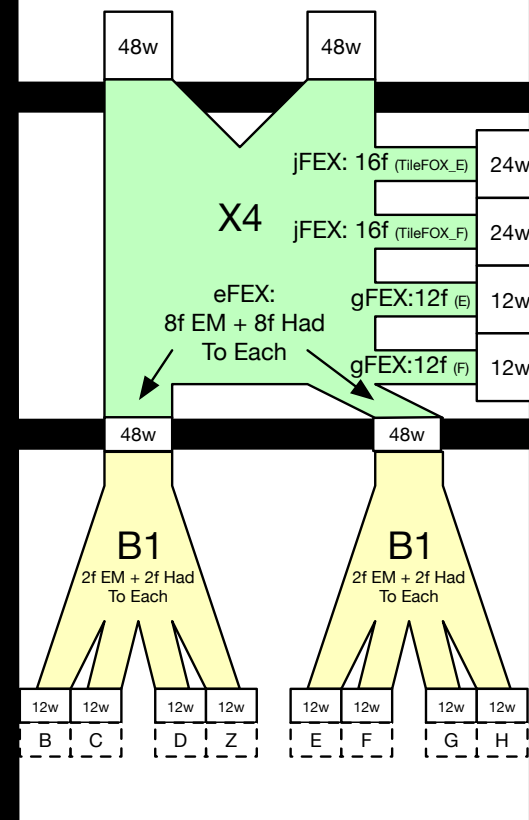
3/8 pairs of EMB Latome Inputs



4/8 of eFEX\_Barrel ACon Outputs

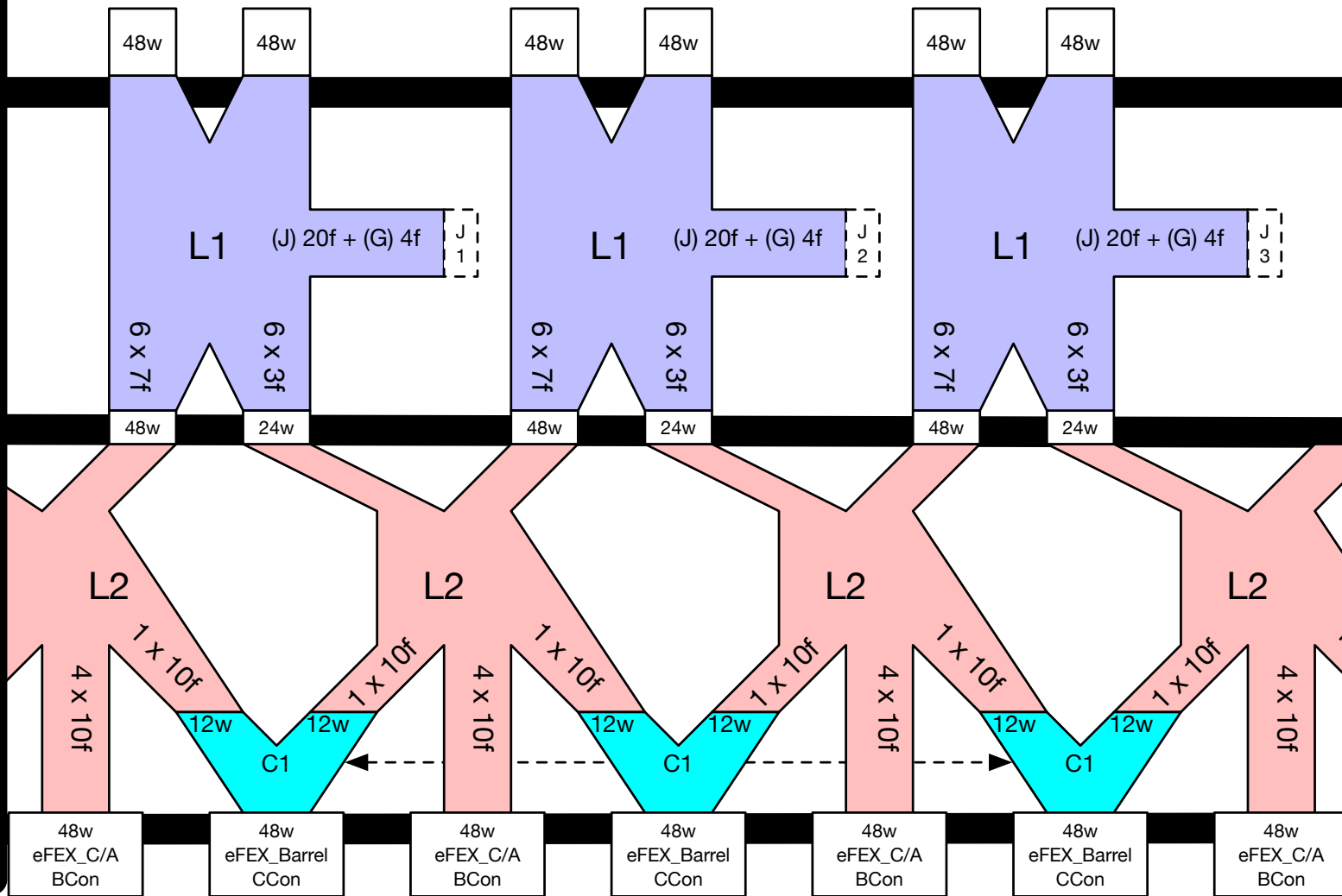
FCAL1 1/1

FCAL2 1/1





3/8 pairs of EMB/EMEC Latome Inputs for 1/2 phi rings

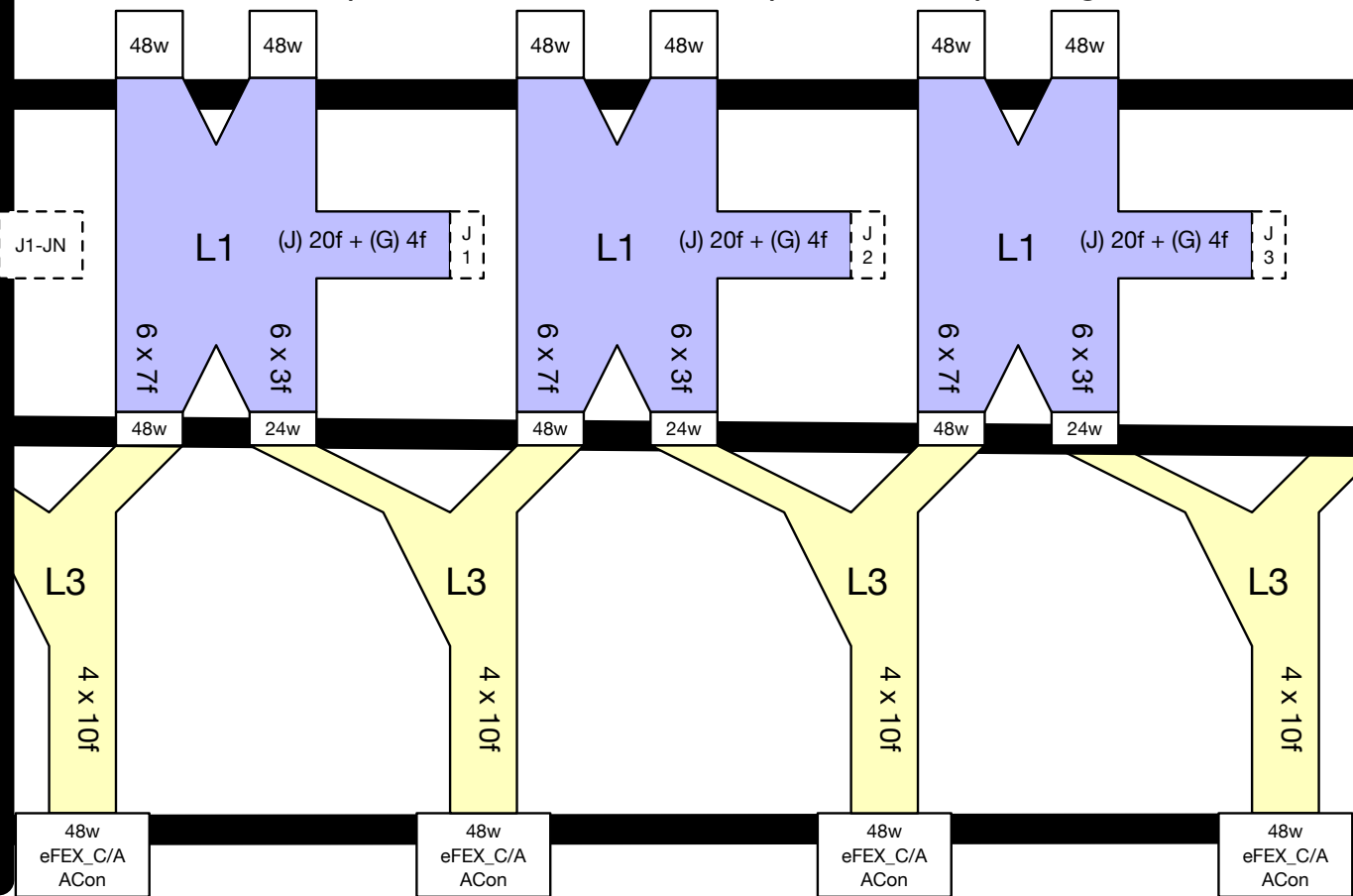


4/16 of eFEX\_C or eFEX\_A BCon Outputs (depending on half)

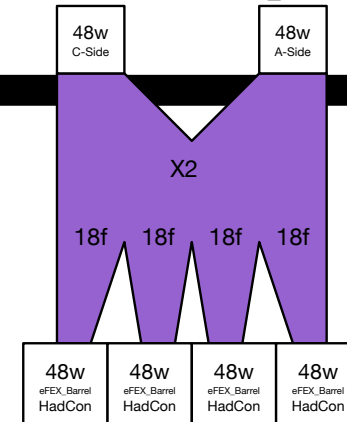
3/8 of eFEX\_Barrel CCon Outputs

# LArFOX D

3/8 pairs of EMEC Latome Inputs for 1/2 phi rings



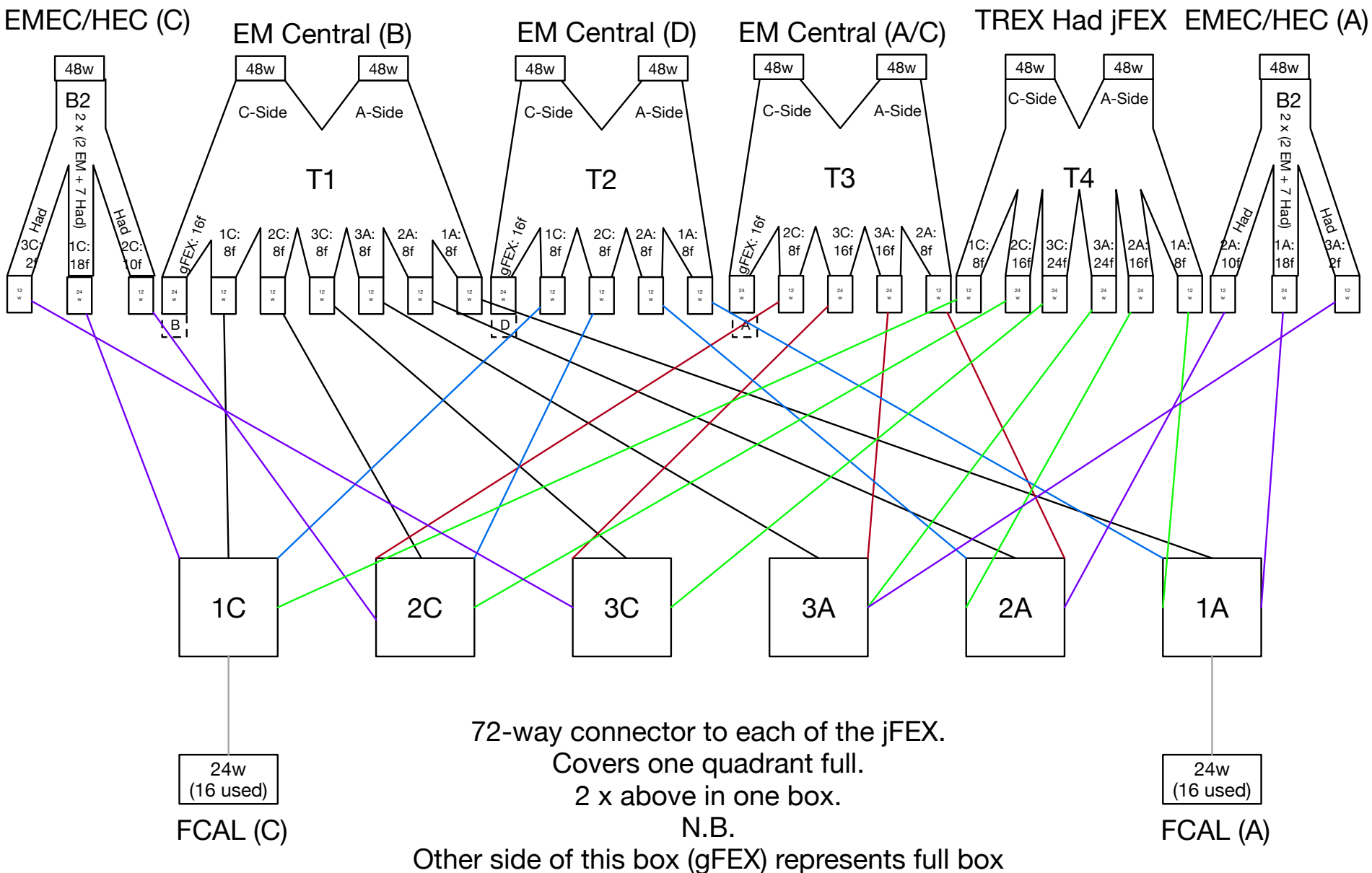
1/2 TREX Had Inputs each from LArFOX\_A/C



4/8 of eFEX\_Barrel HadCon Outputs

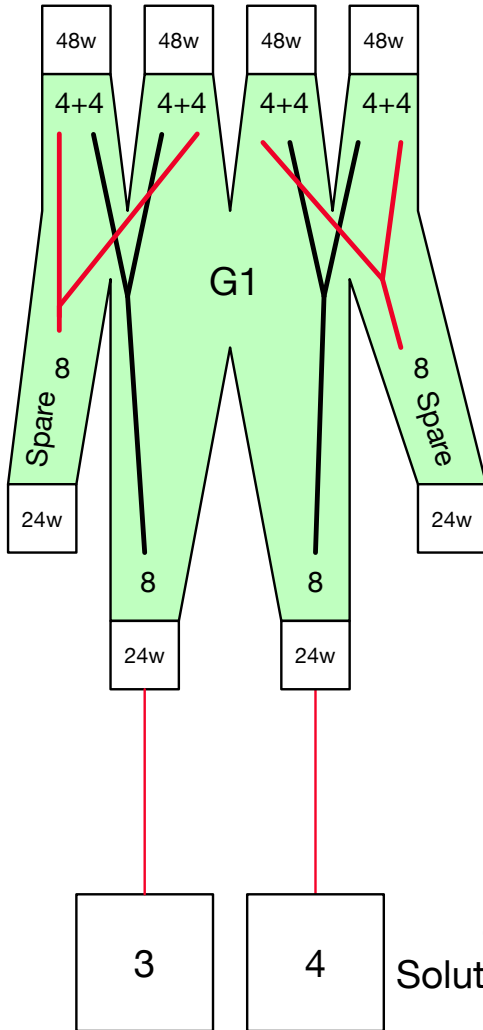
4/16 of eFEX\_C or eFEX\_A BCon Outputs (depending on half)

# TileFOX E/F (Part 1)

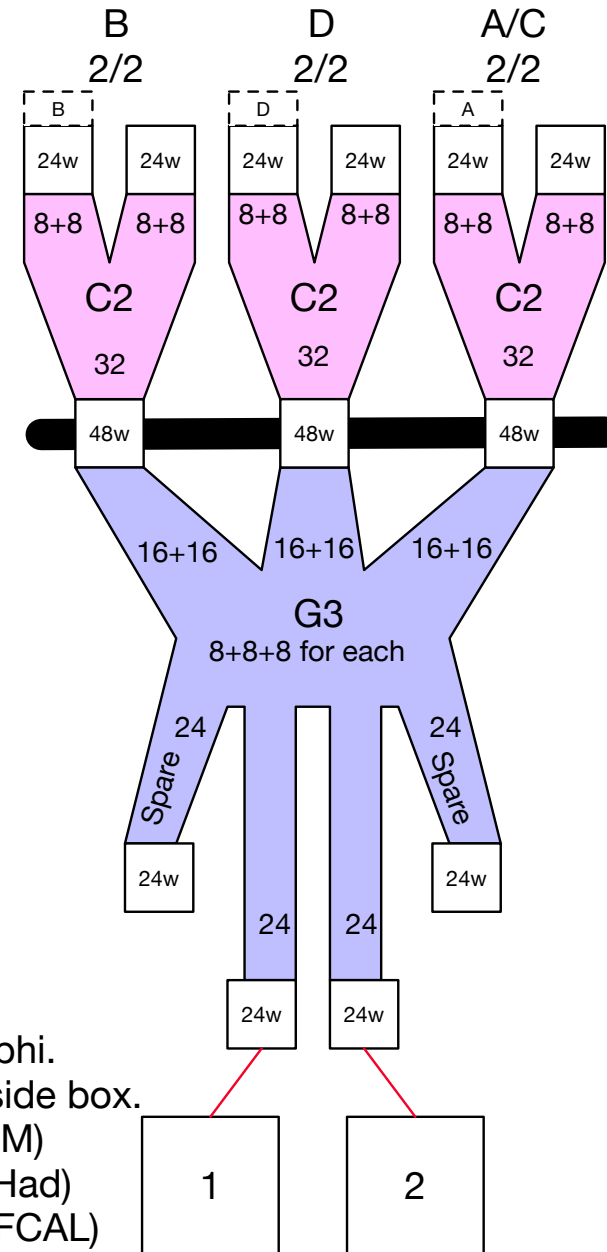
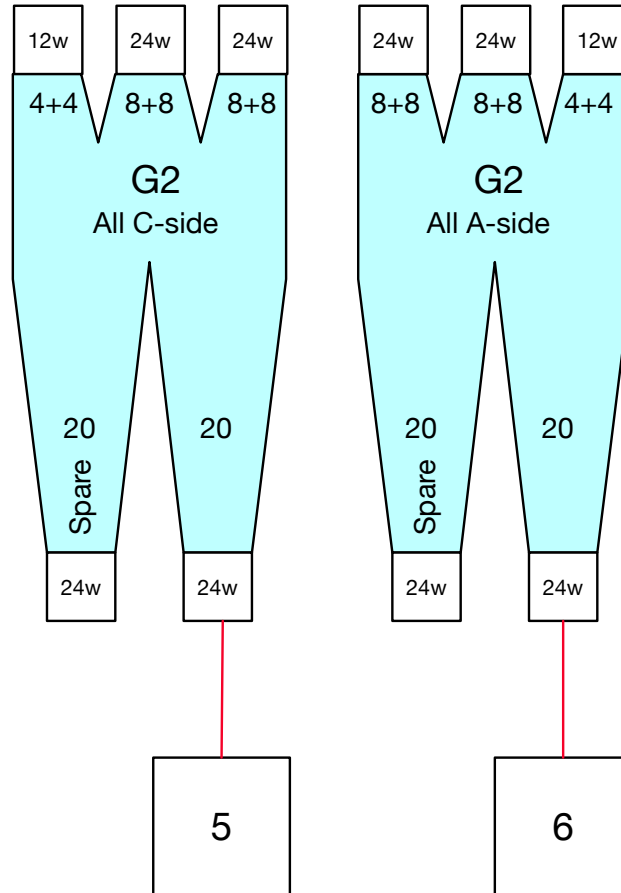


# TileFOX E/F (Part 2)

TREX Had gFEX  
4/4



FCAL (C) EMEC/HEC gFEX (A/C) FCAL (A)  
4/4



gFEX expects 6 x 48-way, but E/F covers half phi.  
 Solution: output 24w and combine two phi half outside box.  
 gFEX1 & gFEX2: eta -2.4 to 0.0 & 0.0 to 2.4 (EM)  
 gFEX3 and gFEX4: eta -2.5 to 0.0 & 0.0 to 2.5 (Had)  
 gFEX5 and gFEX6: eta < -2.5 & > 2.5 (EM+HAD, FCAL)