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Table of Contents	
2	Notes
3	Block Diagram
4	MCF51JG 44-pin LGA MCU
5	USB/OSBDM/V-TRAN/PWR
6	Peripherals
7	Sensors
8	Elevator Connectors

1			
Revisions			
Rev	Description	Date	Approved
A	Proto Release	03-Jun-11	J.H.
AX1	Redesign Changed 1.8V regulator to 2.0V. Change MCU to 44-pin LGA Combined J12 and J14. Remove LEDs D1 and D2 Change SAI header pin 1 from PTA4 to PTA6 DNC Elevator pins A10, A11, B22 -----EMI Changes----- Changed USB shield inductors to zero ohm resistors Changed USB VBUS inductors to 1K ohm @ 100 MHz Changed C12 to 150pf Changed C18 to 470 pf	30-Jul-12	J.H.
B	Production Release	17-AUG-12	J.H.

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Designer: Jay Hartvigsen		ICAP Classification: FCP: FIUC: X PUBI:	
Drawing Title:		TWR-MCF51JG	
Drawn by: Jay Hartvigsen		Page Title: Table of Contents/Revisions	
Approved: MARILYN HUBBARD	Size C	Document Number SCH-27129 PDF: SPF-27129	Rev B
Date: Friday, August 17, 2012		Sheet 1 of 8	

1. Unless Otherwise Specified:
All resistors are in ohms
All capacitors are in uF
All voltages are DC
All polarized capacitors are aluminum electrolytic
2. Interrupted lines coded with the same letter or letter combinations are electrically connected.
3. Device type number is for reference only. The number varies with the manufacturer.
4. Special signal usage:
_B Denotes - Active-Low Signal
<> or [] Denotes - Vectored Signals
5. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.

Power & Ground Nets		
NET	VOLTAGE	DESCRIPTION
P5V_USB	5V	Primary input power. Filtered from USB connector. Input to USB power switch.
P5V_SW	5V	Output of USB power switch controlled by the 5V_EN signal from the JM60 MCU. Used by OSBDM voltage translation circuits.
P5V_TRG_USB	5V	Output of USB power switch controlled by the VTRG_EN signal from the JM60 MCU. Goes to regulator input select header.
USB0_VBUS	5V	USB power from primary elevator.
JG_P5V_USB	5V	Secondary input power. Filtered from JG micro AB USB connector. Goes to regulator input select header
P5V_ELEV	5V	Power from the elevator boards.
P3V3	3.3V	Output of 3.3V regulator.
P2V	2.0V	Output of 2.0V regulator.
V_BRD	2.0 -3.3V	Output of 2.0v or 3.3V regulators as selected by the board voltage select header. May also be supplied externally by connecting to the board voltage select header at pins 5 and 6.
P5V	5V	Power into the on board voltage regulators.
MCU_PWR	2.0-3.3V	MCU digital power. Filtered from V_BRD
GND	0V	Digital Ground.

Sheet 5

OSBDM/USB Bridge Circuit

USB Mini B Connector

MC9S08JM60

Voltage Translation

OSBDM AND EZPORT Header

Power Supply Circuits

Sheets 4

MCF51JG MCU

8 MHz Crystal

32 KHz Crystal

VREGIN, VOUT33

Sheet 6

Push Buttons

SAI Header

JG USB MICRO-AB Connector
with Power Switch

Sheet 7

TOWER PLUG-IN (TWRPI)

GENERAL PURPOSE HEADERS

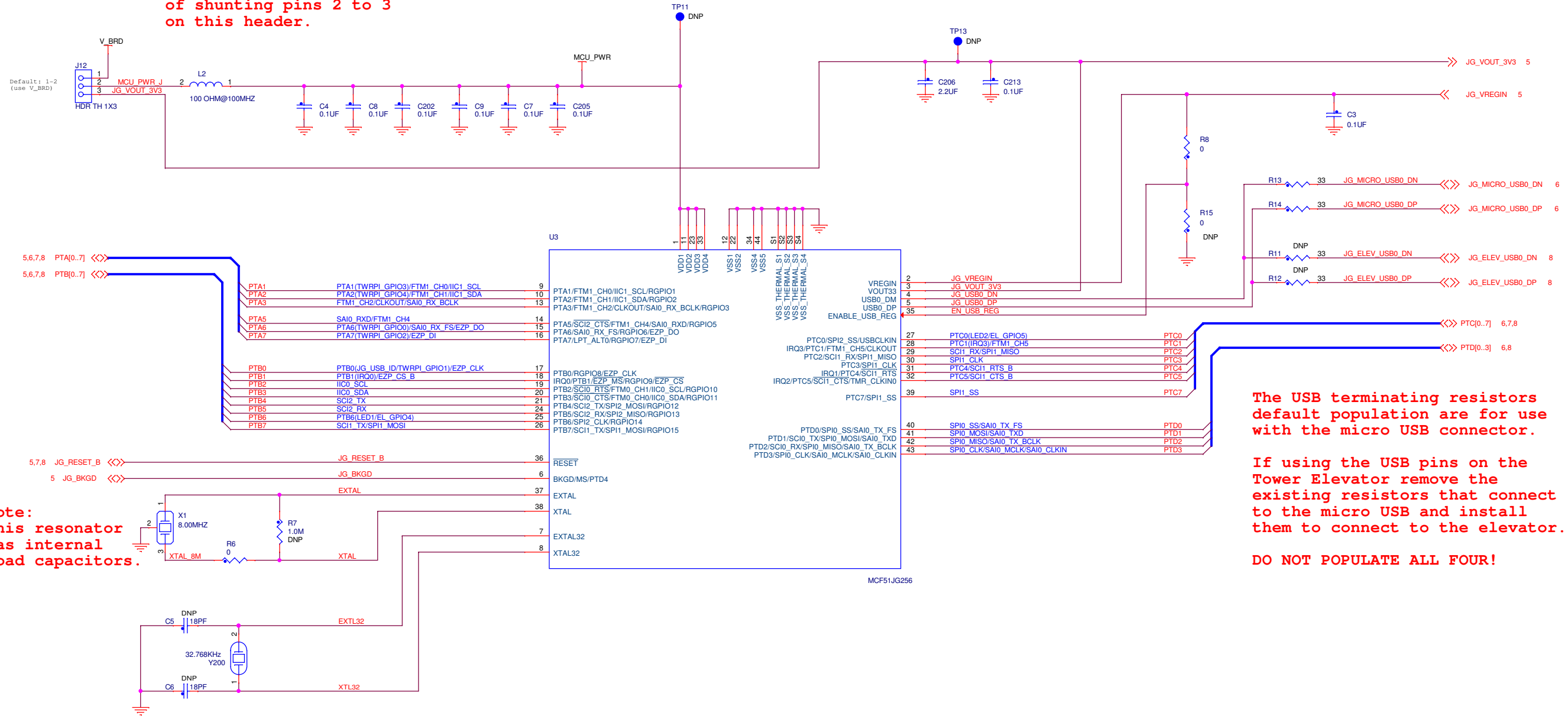
LEDs

ACCELEROMETER

Sheet 8

ELEVATOR CONNECTORS

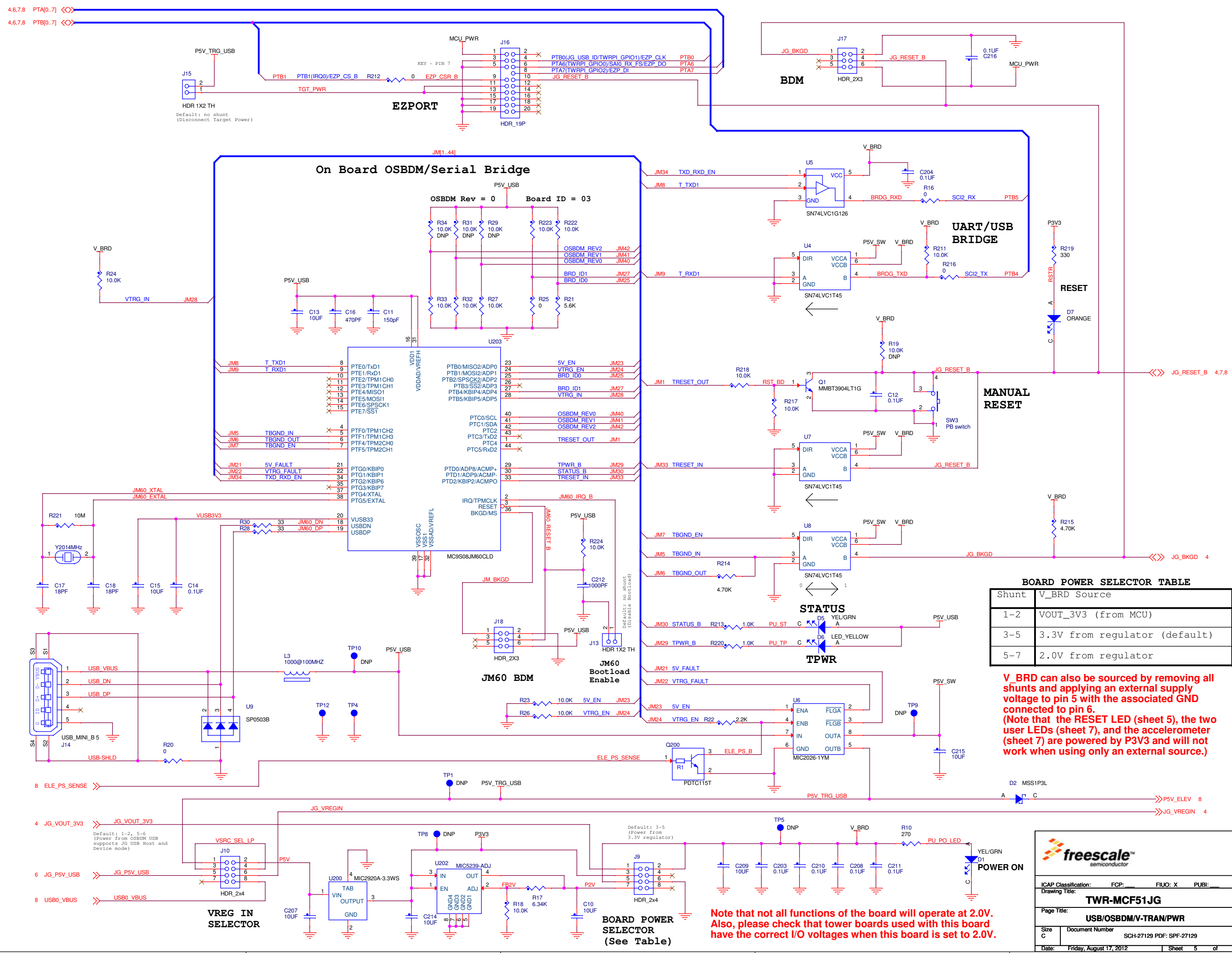
NOTE: If you are powering the whole board from the MCU VOUT33 pin use the "BOARD POWER SELECTOR" header on sheet 5 instead of shunting pins 2 to 3 on this header.



The USB terminating resistors default population are for use with the micro USB connector.

If using the USB pins on the Tower Elevator remove the existing resistors that connect to the micro USB and install them to connect to the elevator.

DO NOT POPULATE ALL FOUR!

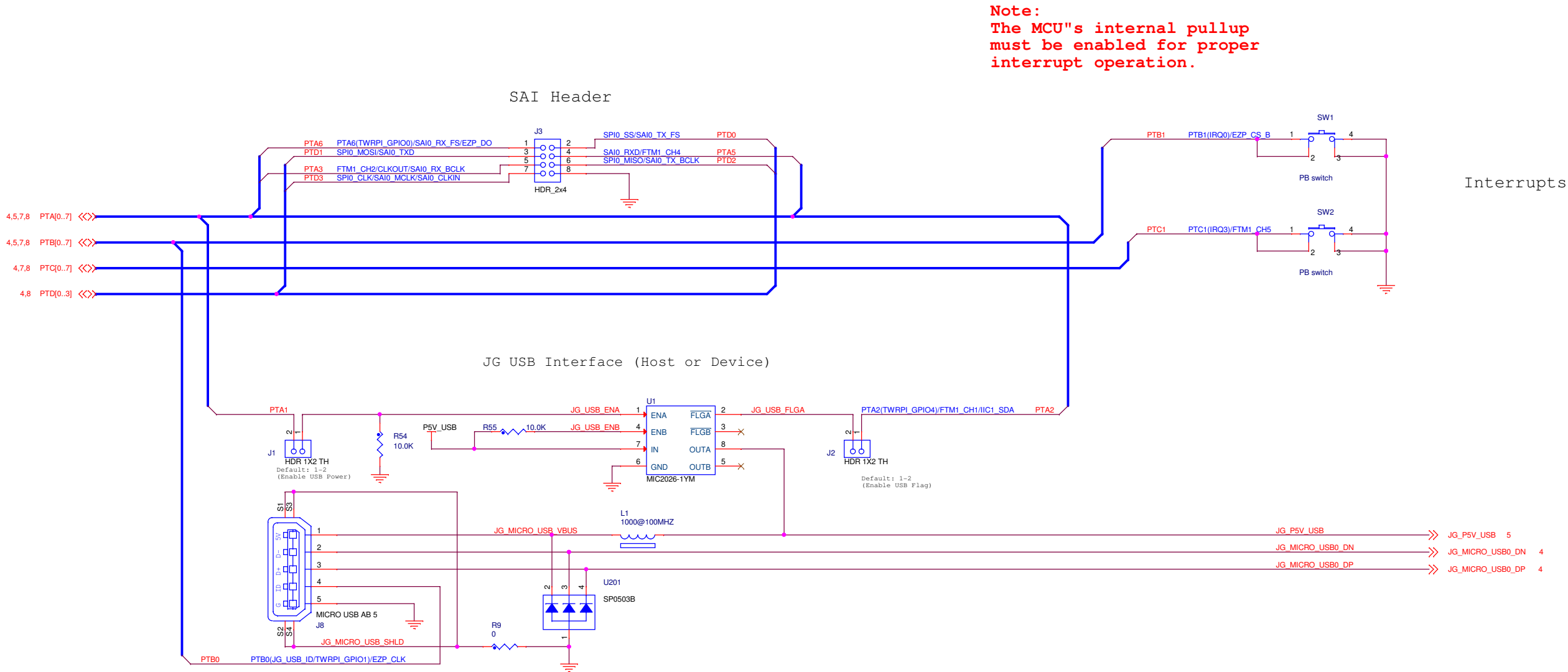


BOARD POWER SELECTOR TABLE	
Shunt	V_BRD Source
1-2	VOUT_3V3 (from MCU)
3-5	3.3V from regulator (default)
5-7	2.0V from regulator

V_BRD can also be sourced by removing all shunts and applying an external supply voltage to pin 5 with the associated GND connected to pin 6.
(Note that the RESET LED (sheet 5), the two user LEDs (sheet 7), and the accelerometer (sheet 7) are powered by P3V3 and will not work when using only an external source.)

Note that not all functions of the board will operate at 2.0V. Also, please check that tower boards used with this board have the correct I/O voltages when this board is set to 2.0V.

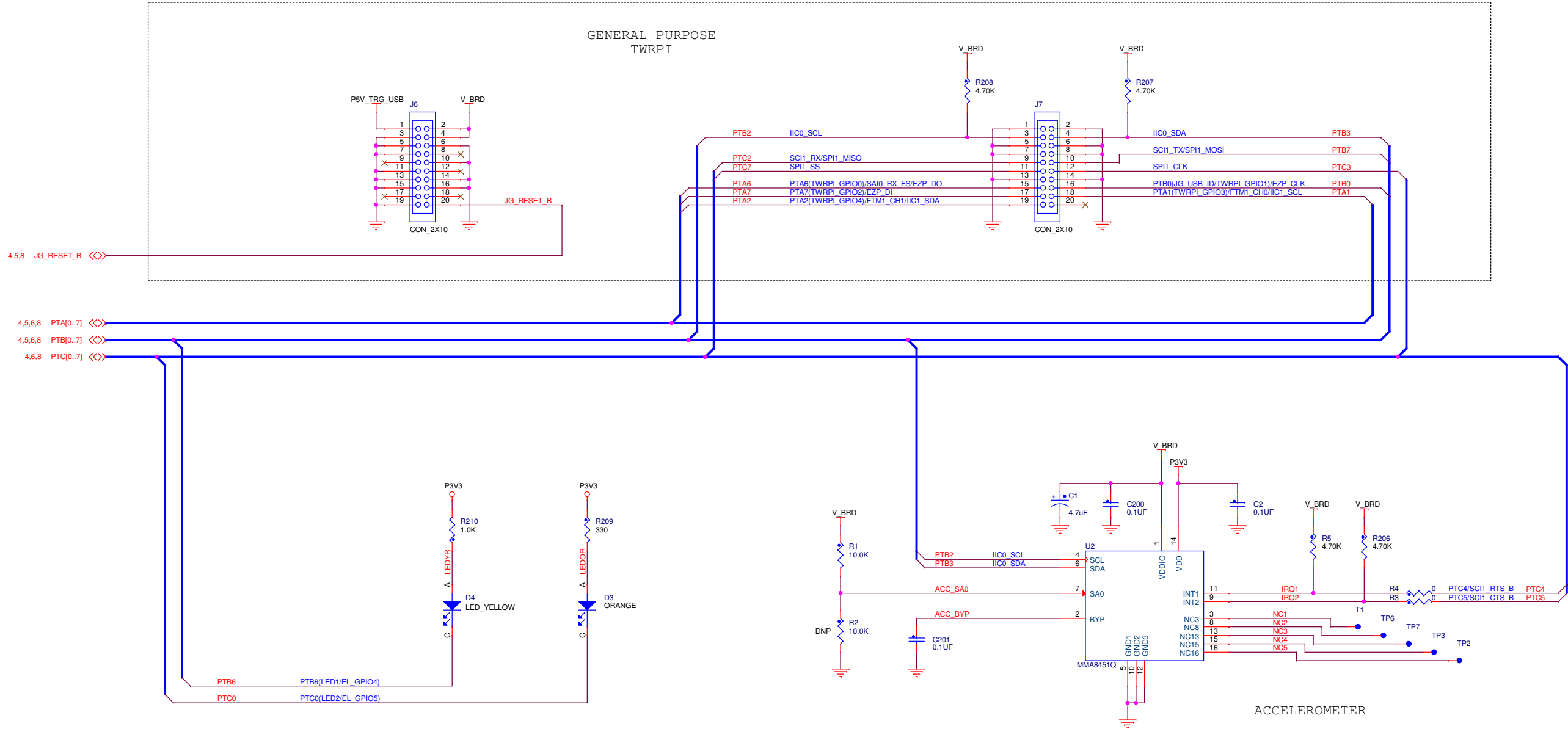
ICAP Classification: FCP: _____ FIUO: X PUBI: _____	
Drawing Title: TWR-MCF51JG	
Page Title: USB/OSBDM/V-TRAN/PWR	
Size C	Document Number SCH-27129 PDF: SPF-27129
Date: Friday, August 17, 2012	Sheet 5 of 8

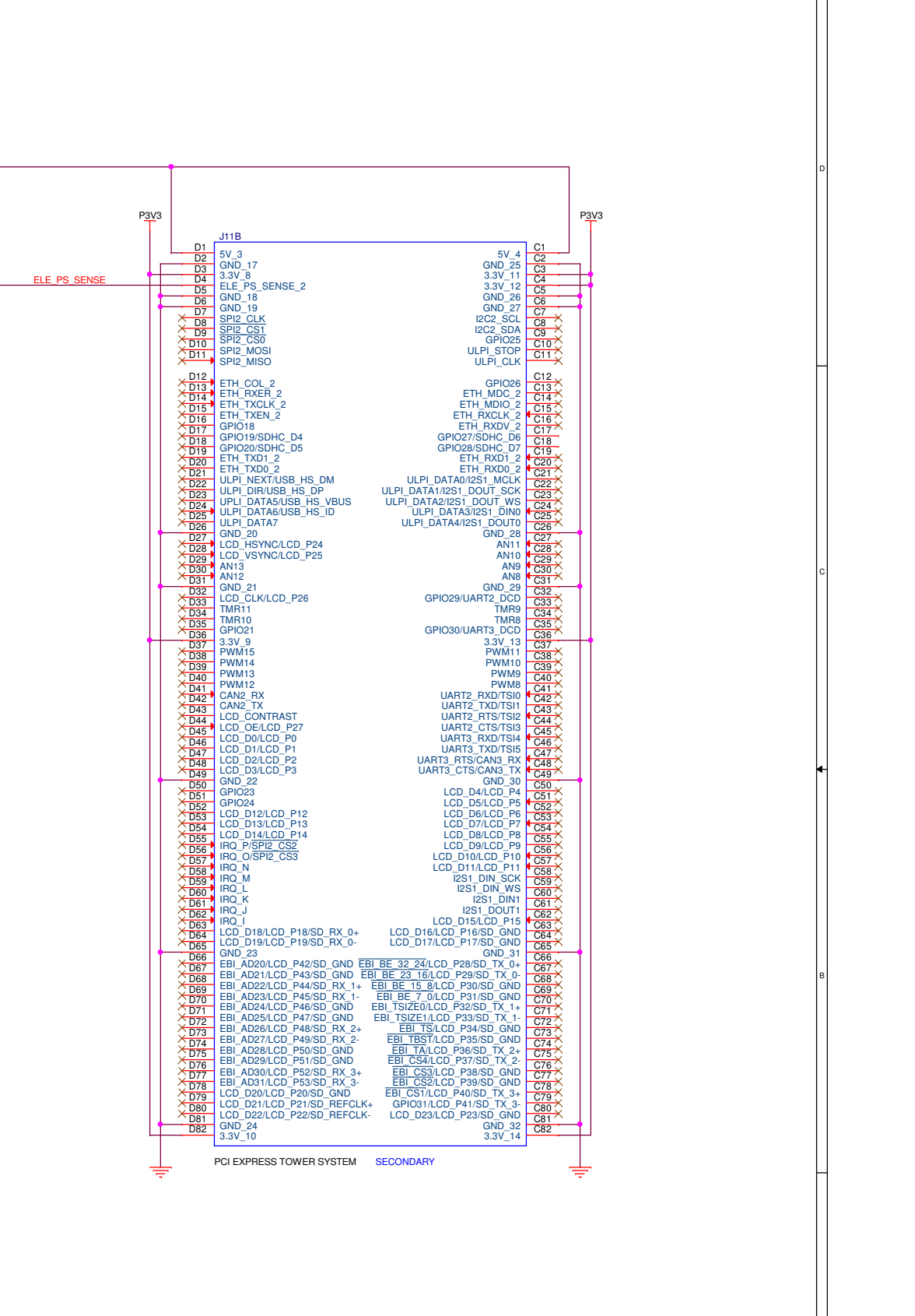
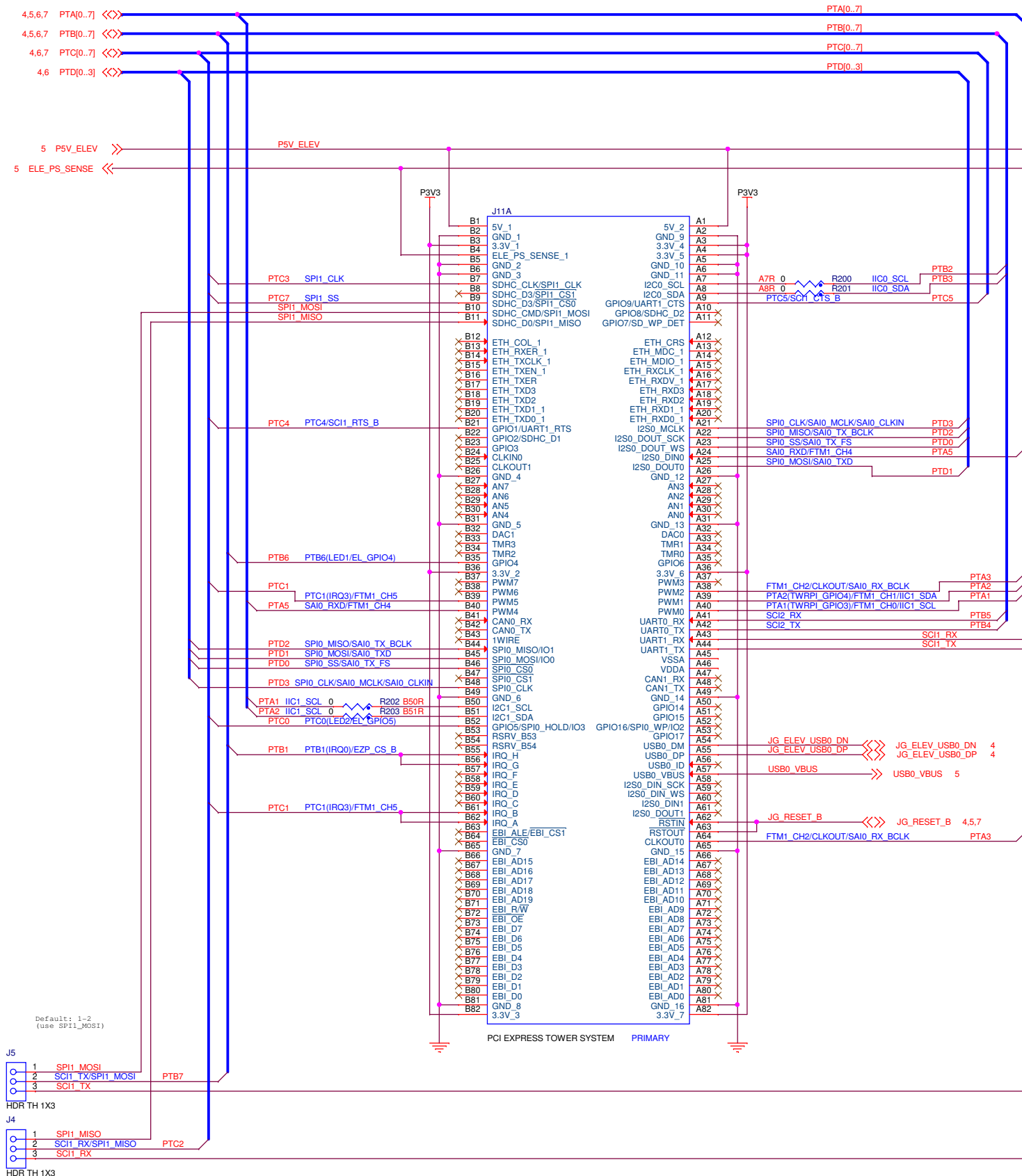


Note: The TWRPI connectors are powered by V_BRD which may be 2.0V or 3.3V.

Not all TWRPI boards will work at 2.0V.

Check that TWRPI boards will work at 2.0V before using them with this board when V_BRD is jumpered for 2.0V.





Note that signals coming from the elevator are usually 3.3V. They should not be used when the board is configured for 1.8V operation.