

GE2/1 & ME0 fiber systems

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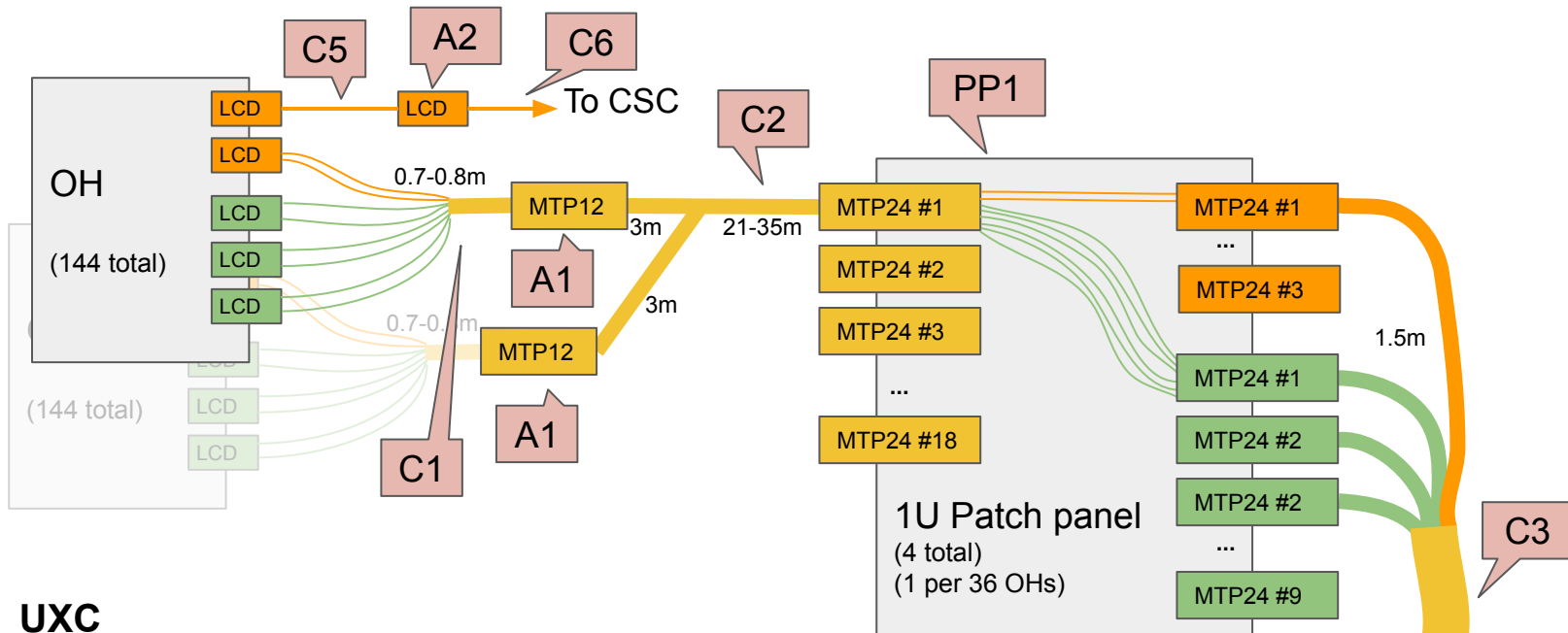
- **GE1/1 fiber system status**

- All parts have been received, and tested at b904
- Found one cable with marginal signal strength
 - Sent back to manufacturer, but they retested it as good
 - It is now our spare
- All fibers and patch panels have already been installed in UXC
- UXC-USC fibers also installed
- The only thing left to do is plugging them in
- Will be done first thing next week

- **GE2/1 fiber system differences w.r.t. GE1/1**
 - No trigger fibers to backend
 - Backend trigger data is embedded in the GBT links
 - This removes a lot of the complication in the fiber system
 - No need for a special shuffle patch panel to separate trigger fibers from GBT fibers
 - 16 GBT bidirectional links per 20 degrees (32 fibers)
 - GE1/1 has 12 GBT links per 20 degrees (24 fibers)
 - But GE1/1 also has 8 backend trigger links per 20 degrees (8 fibers)
 - So total fiber density is exactly the same between GE2/1 and GE1/1
 - The CSC trigger fibers is much longer and a bit denser
 - GE1/1 uses very short 1m LC-LC fibers to CSC (8 fibers per 20 deg)
 - GE2/1 to CSC trigger fiber is about 25m long
 - GE2/1 has 10 fibers per 20 degrees
 - The cost of 8 fibers or 10 fibers is the same due to the use of 12 fiber bundle anyway
 - The ATCA backend optical interface is different from CTP7
 - It is simpler than CTP7, which is a welcome change
 - Removes the need of special MTP48 cables
 - All interfaces are MTP12 with 4 TX + 4 RX (firefly)
 - In general the fiber system is similar to GE1/1, but much simplified

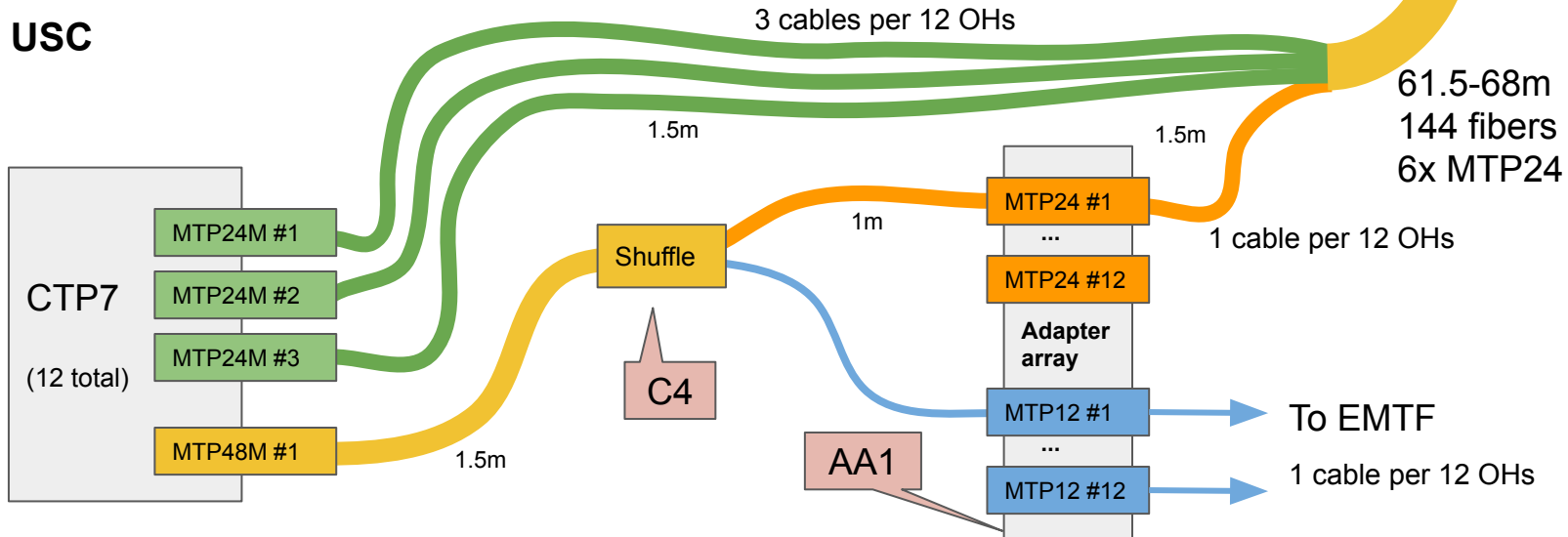
3. Reminder: GE1/1 Fiber System Overview

- DAQ & Control (TX & RX)
- Trigger data (TX only)
- Mixed
- EMTF



UXC

USC

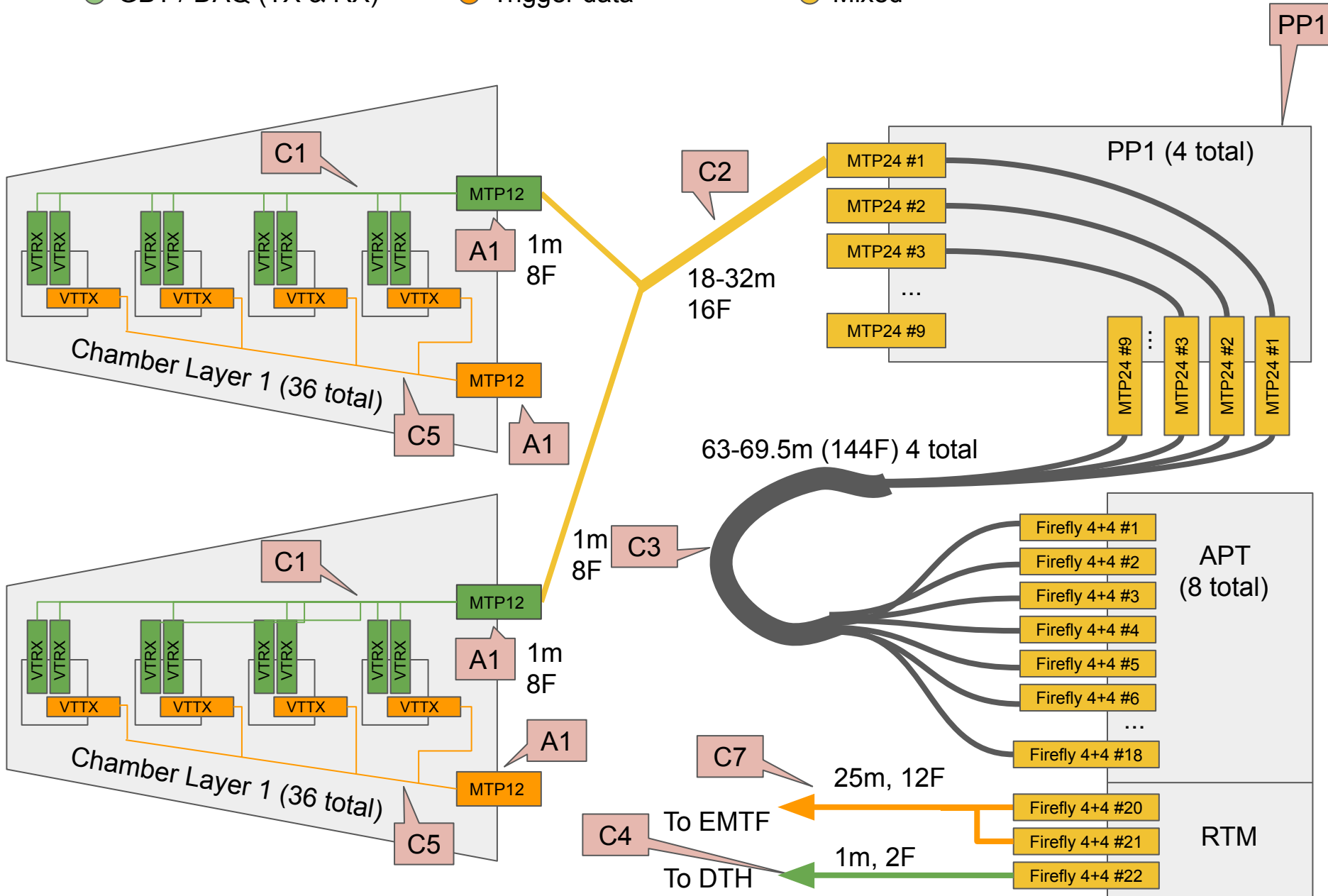


To EMTF

1 cable per 12 OHs

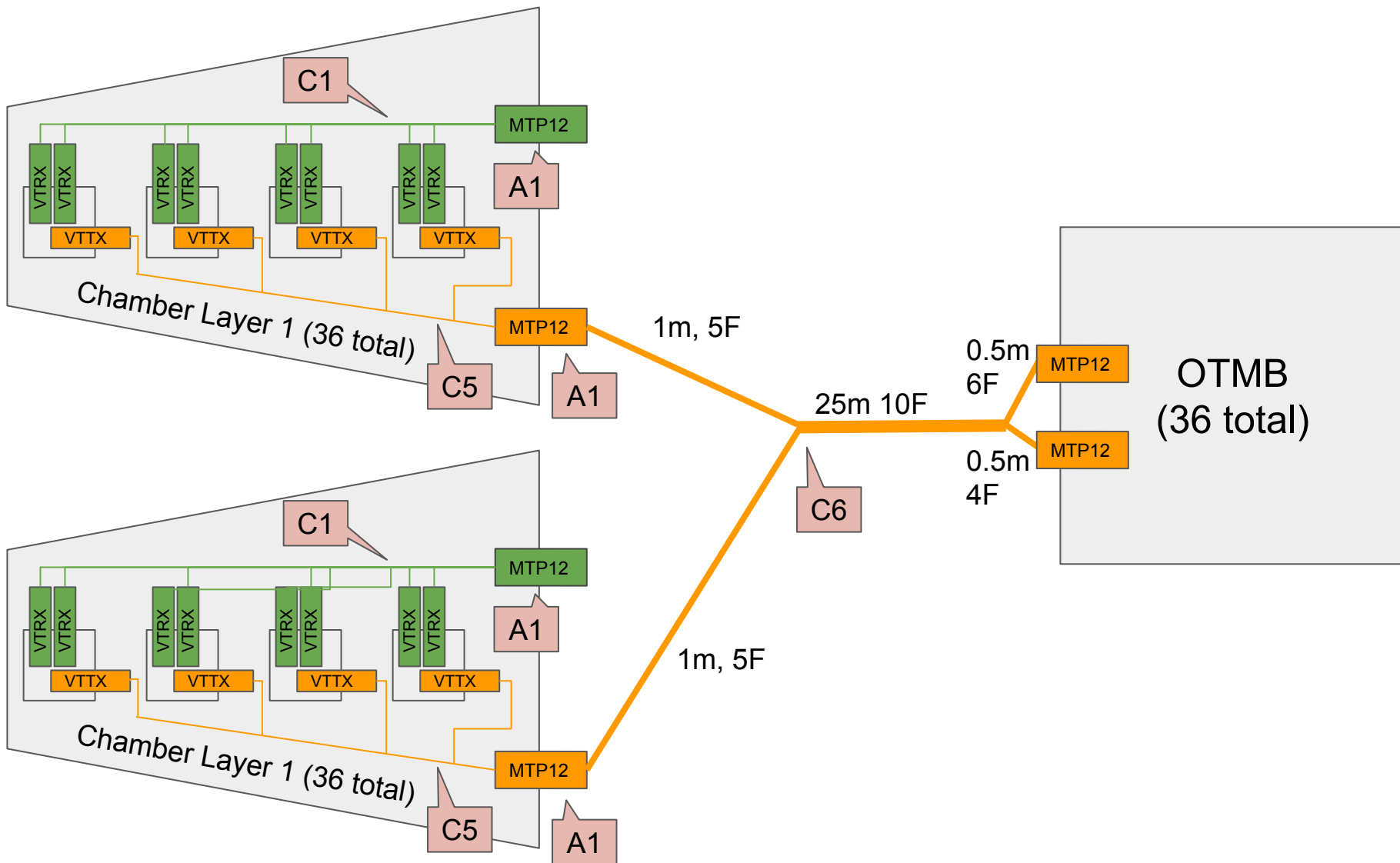
4. GE2/1 Fiber System Diagram

- GBT / DAQ (TX & RX)
- Trigger data
- Mixed



5. GE2/1 To CSC Fiber Diagram

- GBT / DAQ (TX & RX)
- Trigger data
- Mixed

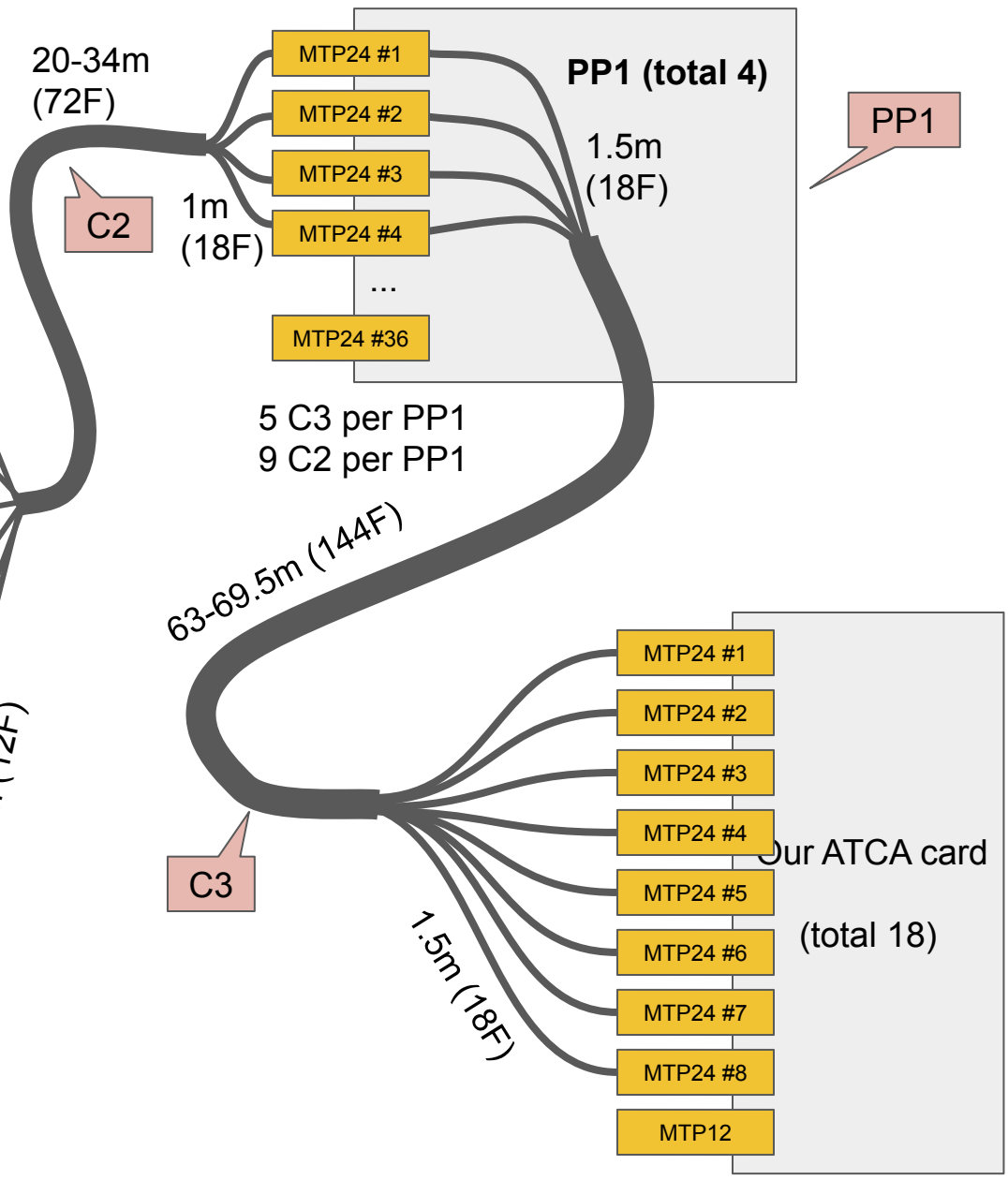
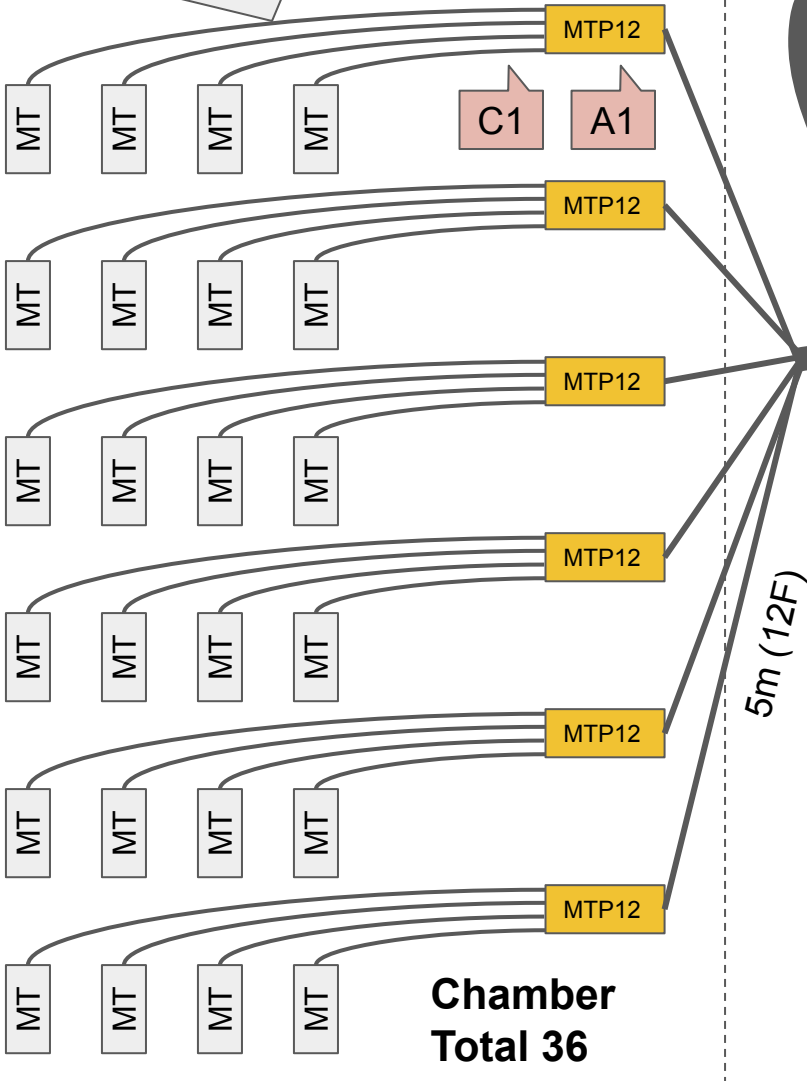


- **GE0 fiber system**

- Using VL+ transceivers on ASIAGO OHs
- Only GBT links to ATCA backend
- No connection to CSC
- Two transmit fibers + 1 receive fiber for each ASIAGO OH
- 864 ASIAGO OHs total
- 2592 fibers total in the system
 - That's 4.5x denser than GE1/1 & GE2/1 on the path to backend
- Dense but rather simple system
 - No shuffle cables or shuffle patch panels
- Already have a quote for this system
 - Total \$86k (without spares)
 - Minor changes will be needed
 - Additional cable between the ME0 stack and the services patch panel
 - ATCA card optical interface changed
 - Assumed MTP24 before, but it will be MTP12 4+4

7. ME0 Fiber System Diagram

3 fibers each (1 RX & 2 TX)
Total 12 * 6 fibers (4 * 6 RX & 8 * 6 TX)
Each pigtail slightly different length (~0.5m)



8. Summary

- **Fiber systems for GE2/1 and ME0 are well understood**
- **GE2/1 fiber system has the same density as GE1/1**
 - But a lot simpler
 - Will start requesting quotes soon
- **ME0 fiber system is very dense, but very simple**
 - Already have quotes
 - Price is very good