

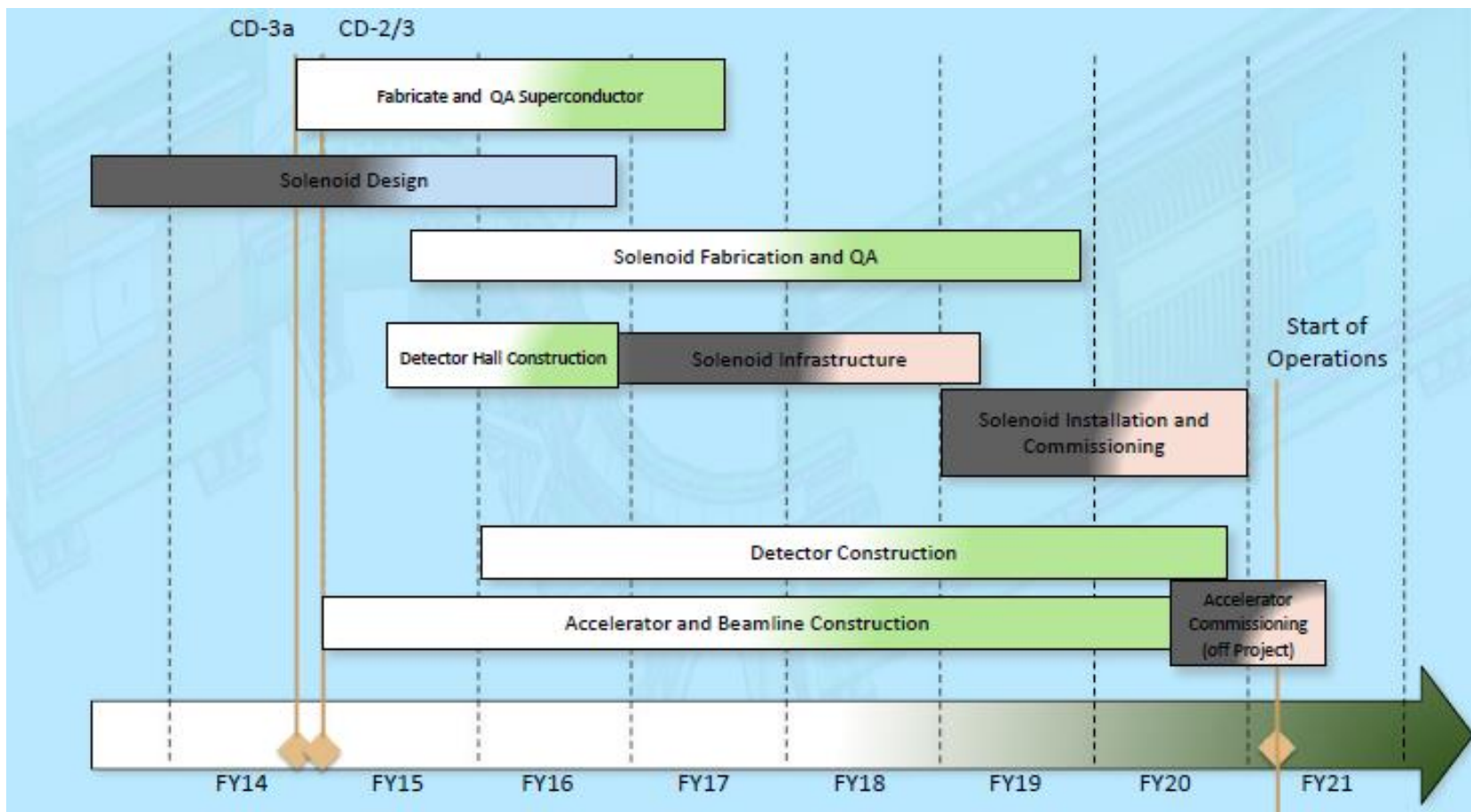
Mu2e Construction: The Summer Plan



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Mu2e Construction plan

Critical path is Solenoid Design, Construction and Commissioning

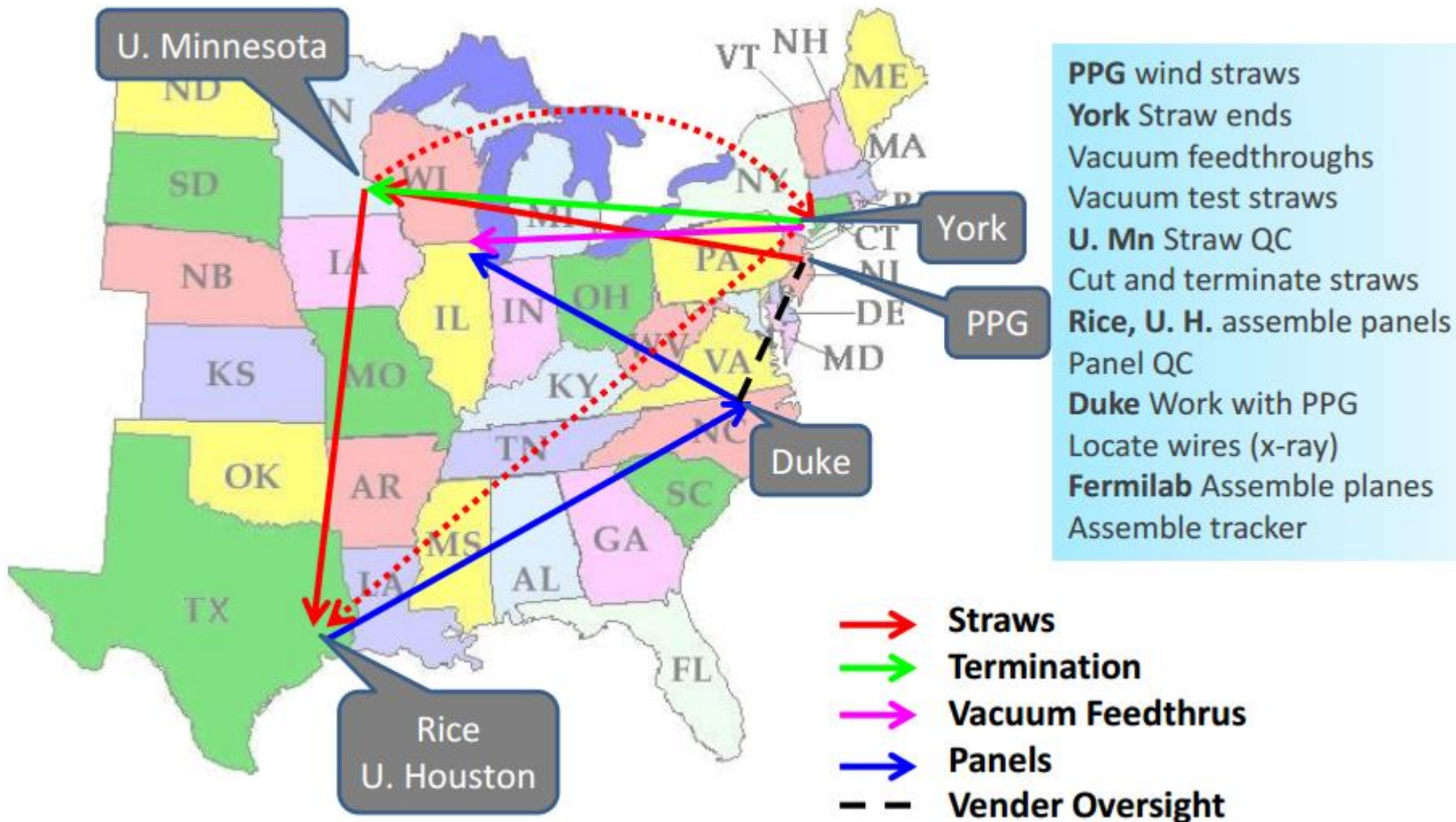


Tracker Production Schedule

8/1/16 Single Panel Prototype Evaluation Complete
12/1/16 Single Plane Prototype Evaluation Complete
6/5/17 Production Straws ready for assembly
6/13/17 LV power supplies received
7/13/17 Production preamps tested
10/30/17 All panels complete and tested
5/23/18 Straw Assemblies Complete
7/6/18 LV System installed
7/20/18 Cooling system installed and tested
7/24/18 Gas System Installed and Tested
8/31/18 HV system installed
2/25/19 Electronic Installation Complete
2/25/19 Implementation Tasks Complete
4/10/20 Ready for Cosmic Ray Test
10/15/20 Ready for Operations



Tracker construction

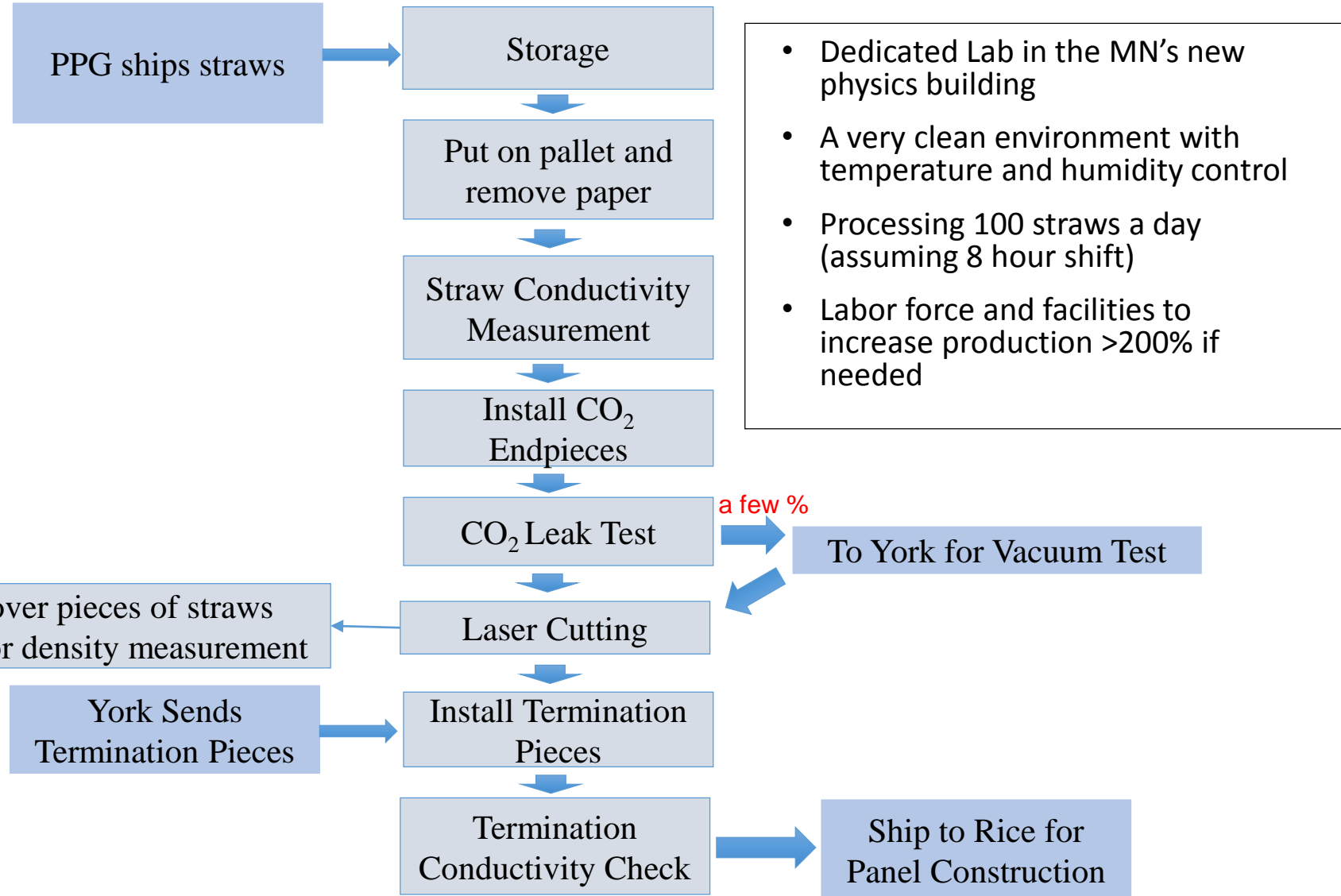


Production at Minnesota



- QC for straws
 - Leak Testing
 - Resistance Testing
- Cutting the straws to length:
 - Laser cutting
- Install End Pieces
- Record in Production Database

Minnesota Straw Processing Factory



Mu2e Straws

Physical description:

- 15 μm thick Mylar straws
- 5 mm diameter
- Length from 45 to 120 cm
- 500 \AA of aluminum on both inside and outside
- An additional 200 \AA of gold on the inside

The outside aluminization of the Mylar straws act as additional electrostatic shielding and reduces leak rate of straws.



Mu2e Tracker and Leak Requirements

Panel Prototype



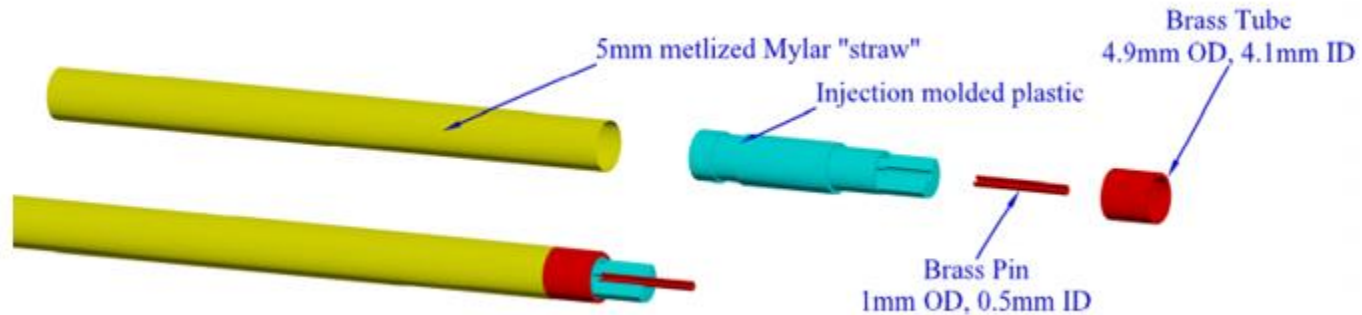
Tracker Unit	Qty
Stations	18
Planes	36
Panels	216
Straws	20736

Throughout the tracker, the straws have a total surface area of over 3 million cm².

The straws must hold in the Argon-CO₂ (80:20) gas for the tracker and maintain a 1 atm pressure difference with the vacuum.

In order to maintain a steady state vacuum in the detector solenoid, the entire tracker's leak rate must be below 7 cc/min.

Endpiece Attachment



After being cut to length, endpieces need to be connected to straws. Endpieces are attached to the straw with silver epoxy to ensure conductive connection to the straw wall.

Goals

- Cut 100 Straws and send to Fermilab in 2 weeks. (Very hard)
- Significant improvement to the factory setup.
- All stations clean and fully operational by August for inspection.
- 600 straws completed by the end of the summer.
- All stations documented and work time is estimated.

Rough Outline of Summer Plan

- Week 1 : Introduction, Laser Cutting Calibration, Start Individual projects, Clean room,
- Week 2 : Laser cutting Calibrations, Start official cuts and Termination epoxy procedure
Would be great to have the first 100 straws done.
- Week 3 : Fermilab CD3-c Review. Finish calibrating and documenting. Start setting up all stations
- Week 4-5 : Improve Factory aspects, New projects
- Week 6 : Second 100 straws, Full Factory processes, (Wrapped straws, leak test,)
- Week 7-8 : Improve Factory aspects
- Week 9 : Third 100 straws
- Week 10 : Fourth 100 straws, continue improvement
- Week 11 : Make sure everything is set for Fermilab Site visit
- Week 12 : Straws 400-600 complete.
- Week 13 : Finish up projects, make sure everything done over the summer was documented if not done during

Laser Cutting

- a) Come up with a set of criteria to judge a straw cut.
- b) Test Power, speed, multiple cuts.
- c) Move into new room. Set up ventilation properly.

First Set of Personal Projects

- a) Create a Stand that holds 2 straws (140 cm) and have the laser be able to align and cut to length.
- b) Setup Temperature and humidity sensor. Have recorded information update to a database. Work on analyzing and creating room stability.
- c) Determine consistent method of testing conductivity of the inside and outside of straw, both with and without termination pieces.