

CLIC Schedule issues

K. Foraz

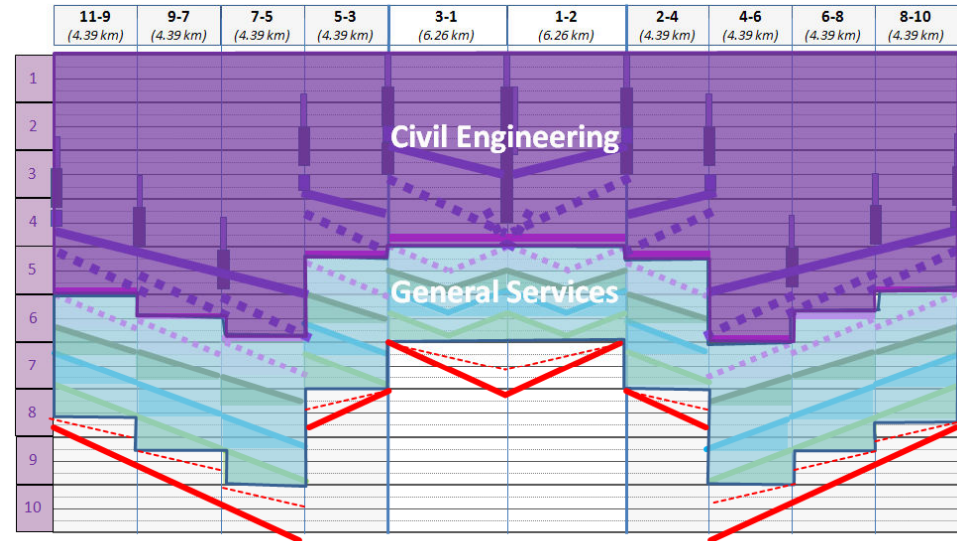
CLIC09 Workshop

12-16 October 2009

- **CLIC-ILC comparisons : From CLIC workshop 2008 to ALCPG09 in Albuquerque**
 - CLIC workshop 2008
 - ILC - GDE in Tsukuba in 2009
 - ILC - ALCPG09 in Albuquerque in 2009
- **CLIC schedule progress and issues**
 - Main LINAC: from module production to installation schedule
 - Injectors: very first drafts

CLIC workshop 2008

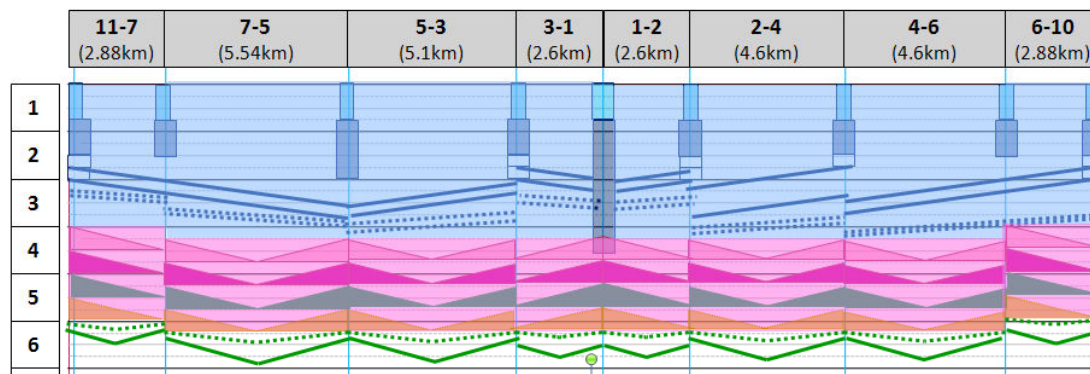
- First draft for the main LINAC was presented:
 - Phase 1: ~ 7 years
 - Phase 2: ~ 10 years



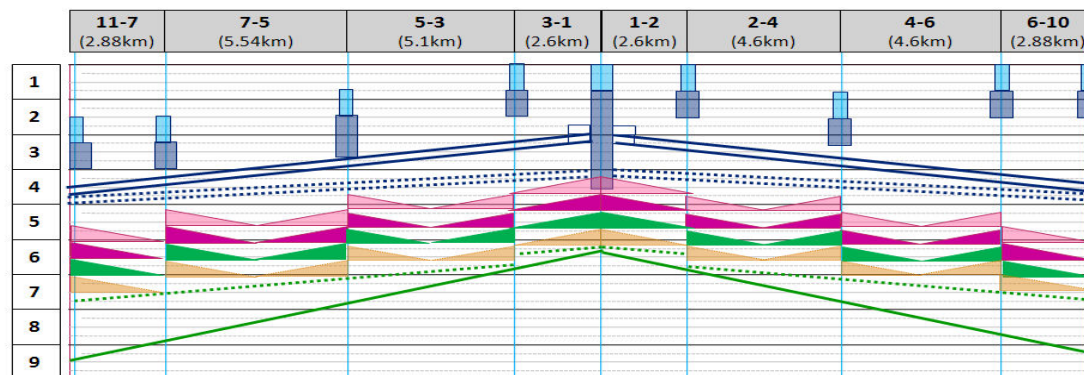
- Actions were:
 - Compare CLIC and ILC assumptions
 - Review ILC schedule with same CLIC assumptions

ILC-GDE Tsukububa 09: ILC schedule – 2 tunnels

- 2 versions were presented:
 - Unlimited resources → total duration = 6 years



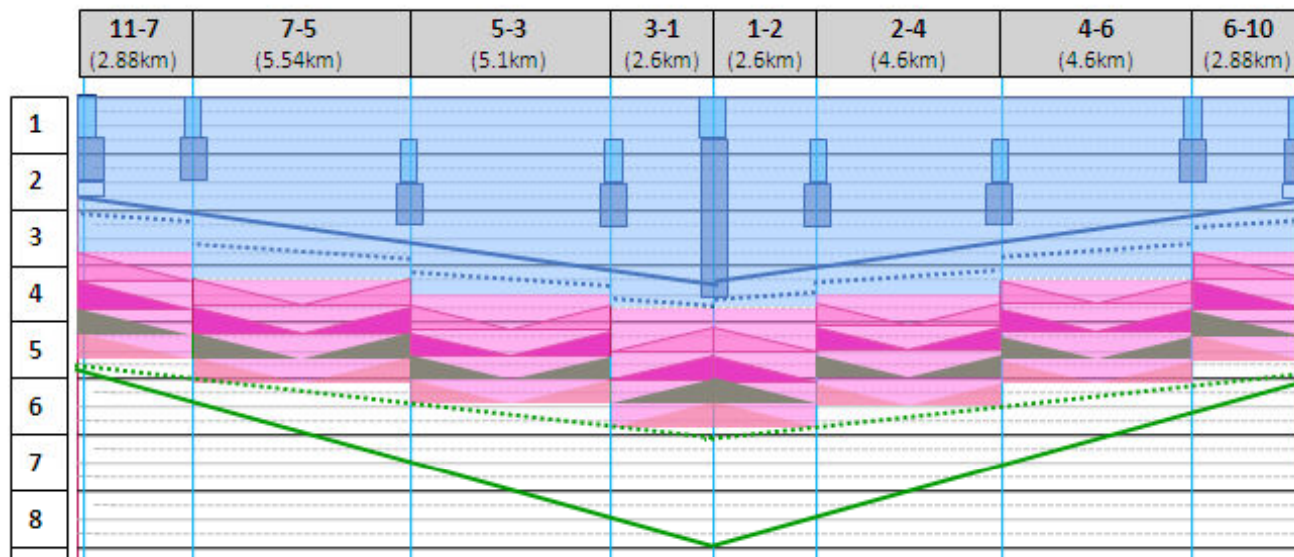
- Resource « leveled → total duration = 9 years



Tsukuba 09: ILC and CLIC Schedule comparison

	CLIC		ILC	
	500GeV	3 TeV	Unlim. Resour.	Leveled resources
Nb of TBM	2		9	4
Nb of teams for elec. general services	4		24	8
Nb of teams for cooling and ventilation	4		12	4
Nb of teams for cabling	4		24	8
Nb of teams for machine installation	2		12	2
(years)	7,2	10,5	6	9,5

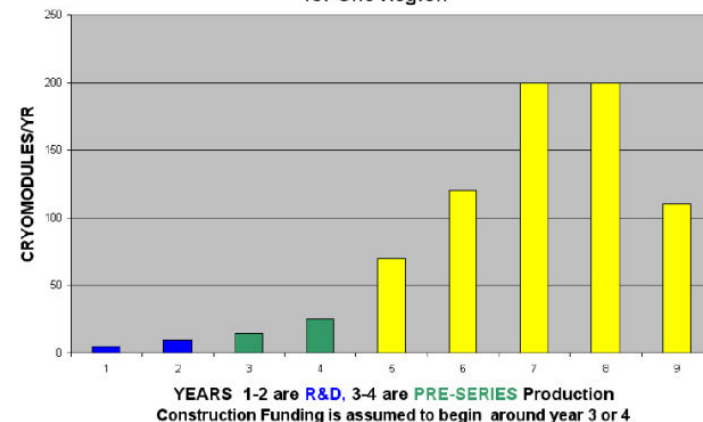
ALCPG09 in Albuquerque– ILC schedule 1 tunnel



Question raised:

- Number of fronts for the machine
- Number of TBM

A Sample Cryomodule Production Schedule for One Region

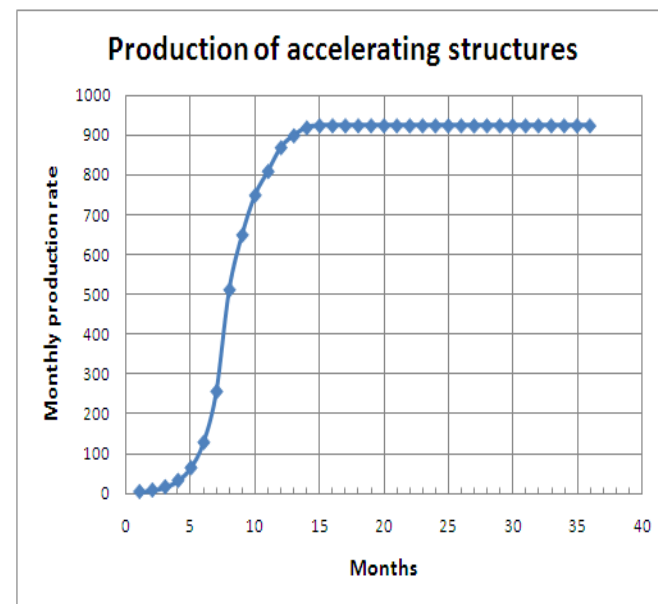


- Main Linac
 - The schedule of the production of modules has been checked with respect to the installation schedule (see next slides)
 - Since last year, the cross section evolved (ventilation ducts, pipes in “radier”, and the system are becoming more matures (for instance the survey); the progress rates will be reviewed with the project engineers (to be done)
- Injectors
 - First draft for 500 GeV

Modules production and installation

- Production

- Tendering process ends $t_0+1.5$ year
- Module comp. reception starts t_0+3 years
- Module assembly starts t_0+4 years
- Module ready for inst. starts t_0+5 years
- Last module ready for inst t_0+10 years
- 3 lines of production
- 60 months of production



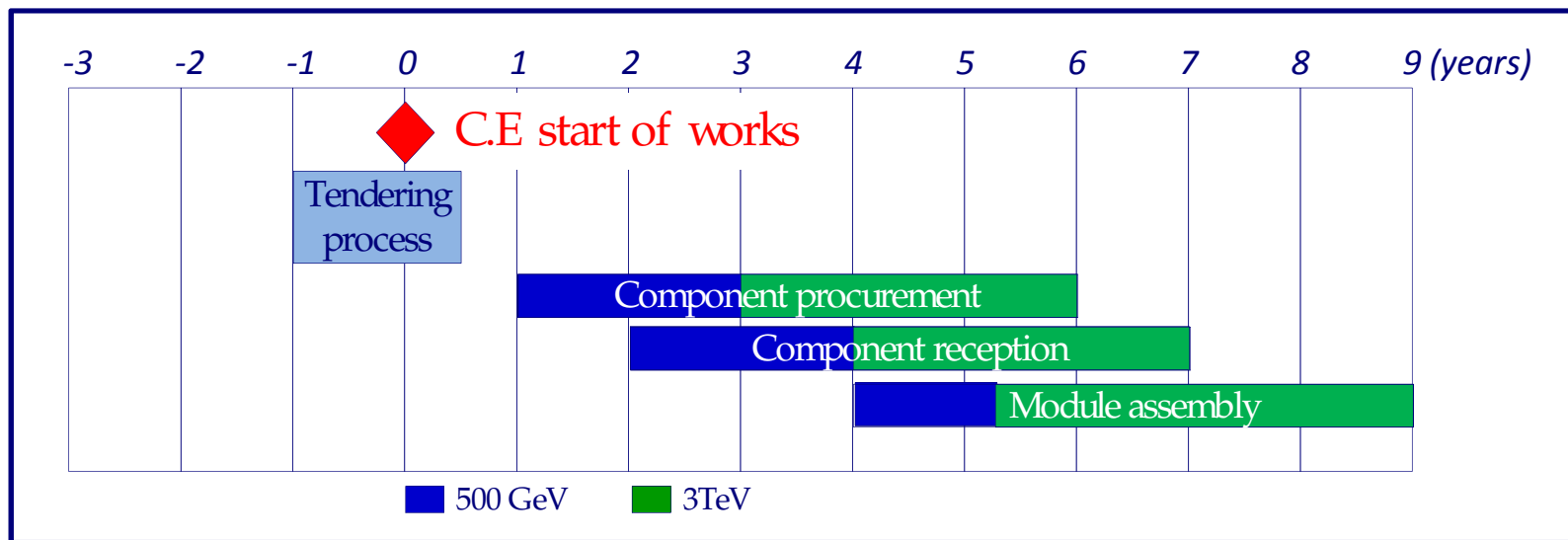
Courtesy G. Riddone

- Installation

- Transport : up to 40 modules /day with 6 vehicles (1 shift, 5d/wk) (K. Kershaw)

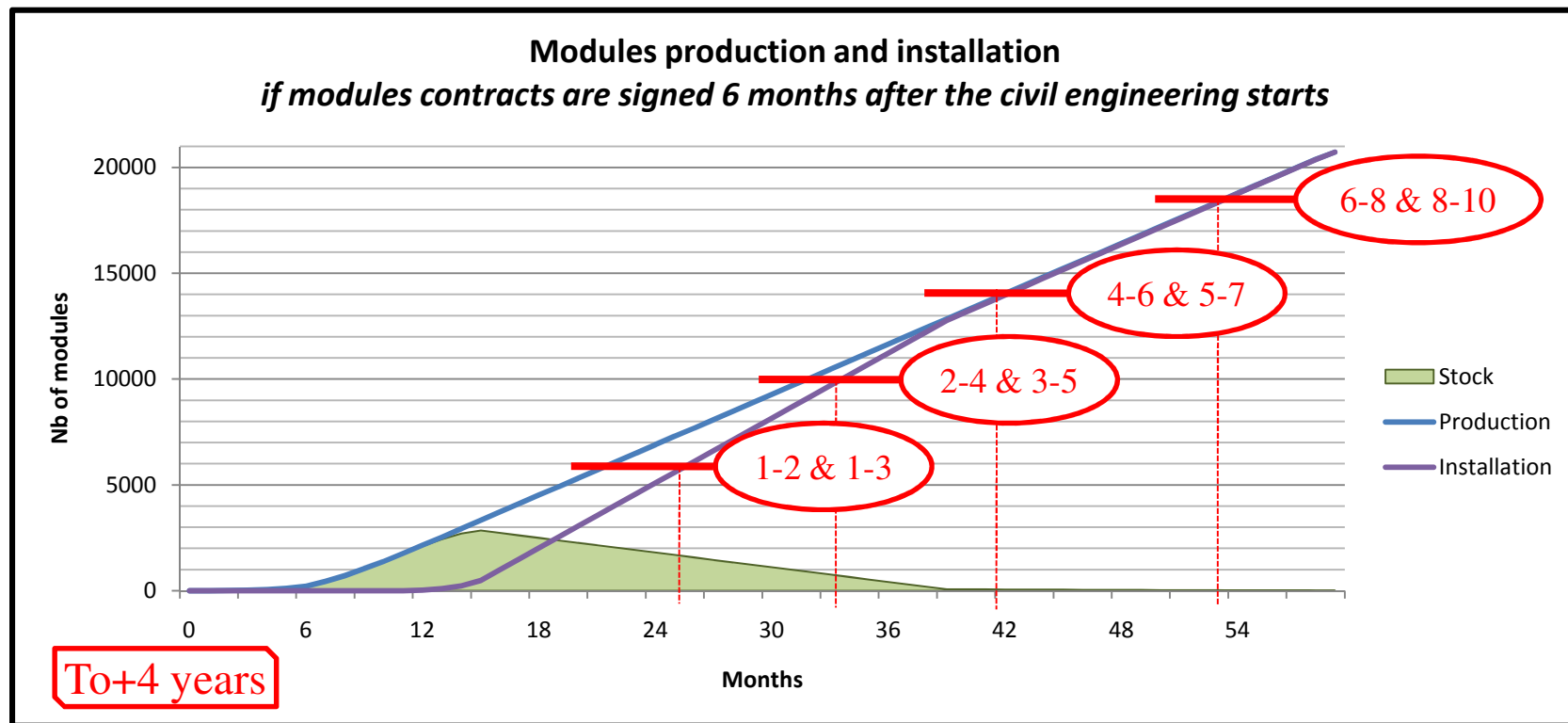
Schedule of the main LINAC – Machine * Case 1

- **What is the t_0 (for module production) ?**
 - With the hypothesis that the contracts for modules will be signed 6 months after the start of civil engineering works:
 - ▶ **$t_0(\text{modules}) = t_0(\text{c.e. start}) - 2 \text{ years}$**
 - → modules will have to be stored before installation (see next slides)
 - → but the installation of modules can end at $t_0(\text{c.e. start}) + 9 \text{ years}$!!!



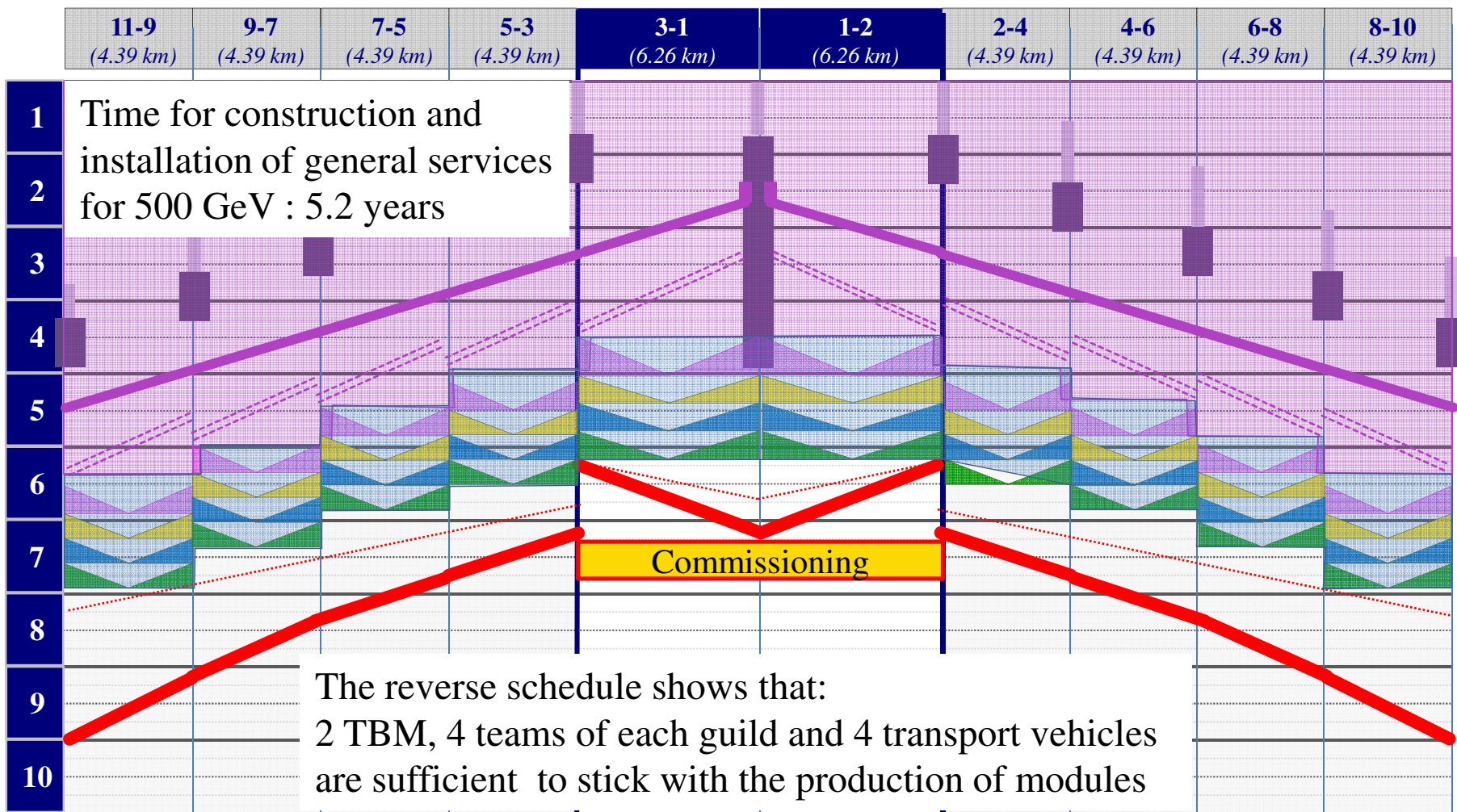
Courtesy G. Riddone

Schedule of the main LINAC – Machine * Case 1

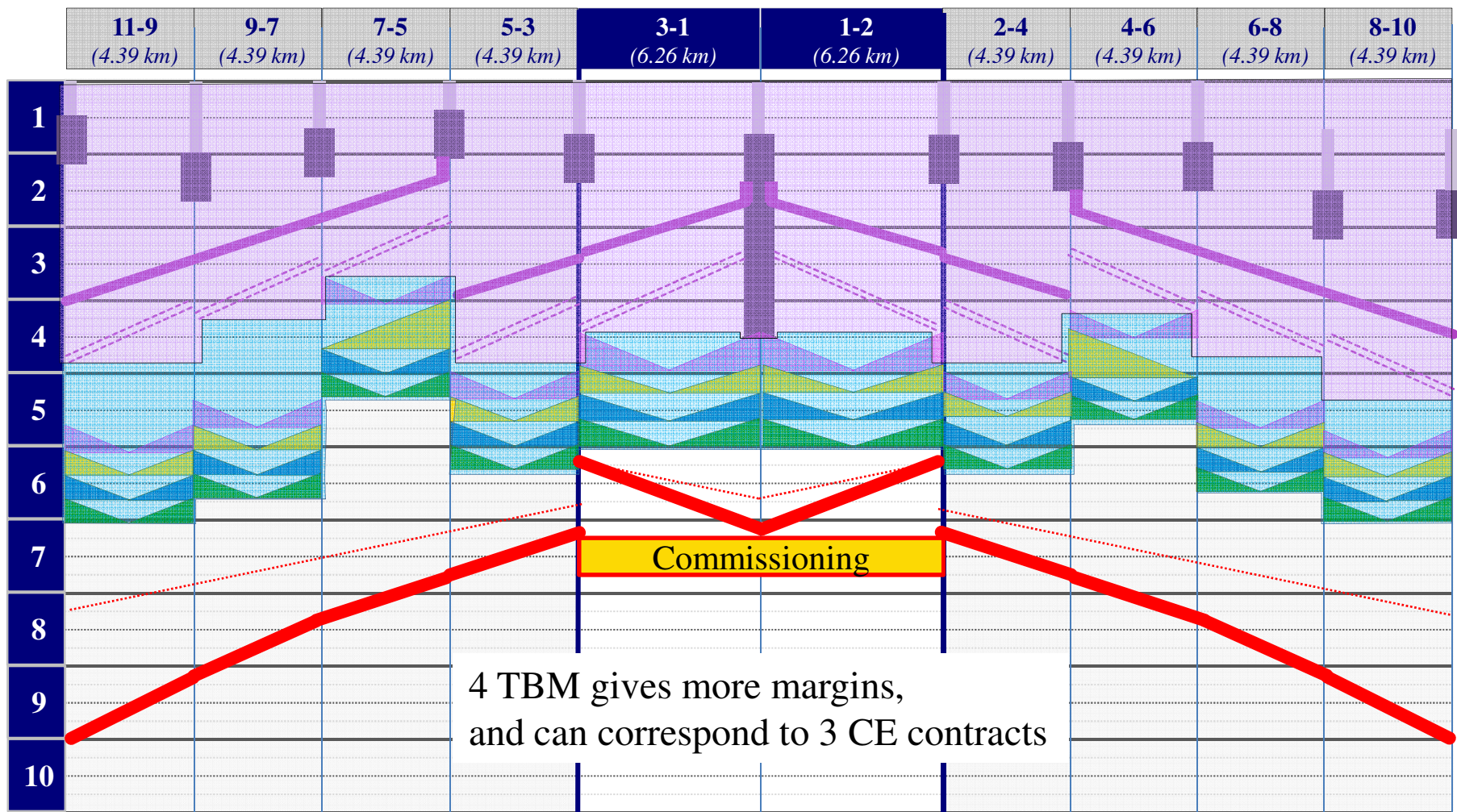


- 500GeV modules in place at to+6 years
- 3TeV modules in place at to+9 years

From module prod. to installation schedule * Case 1

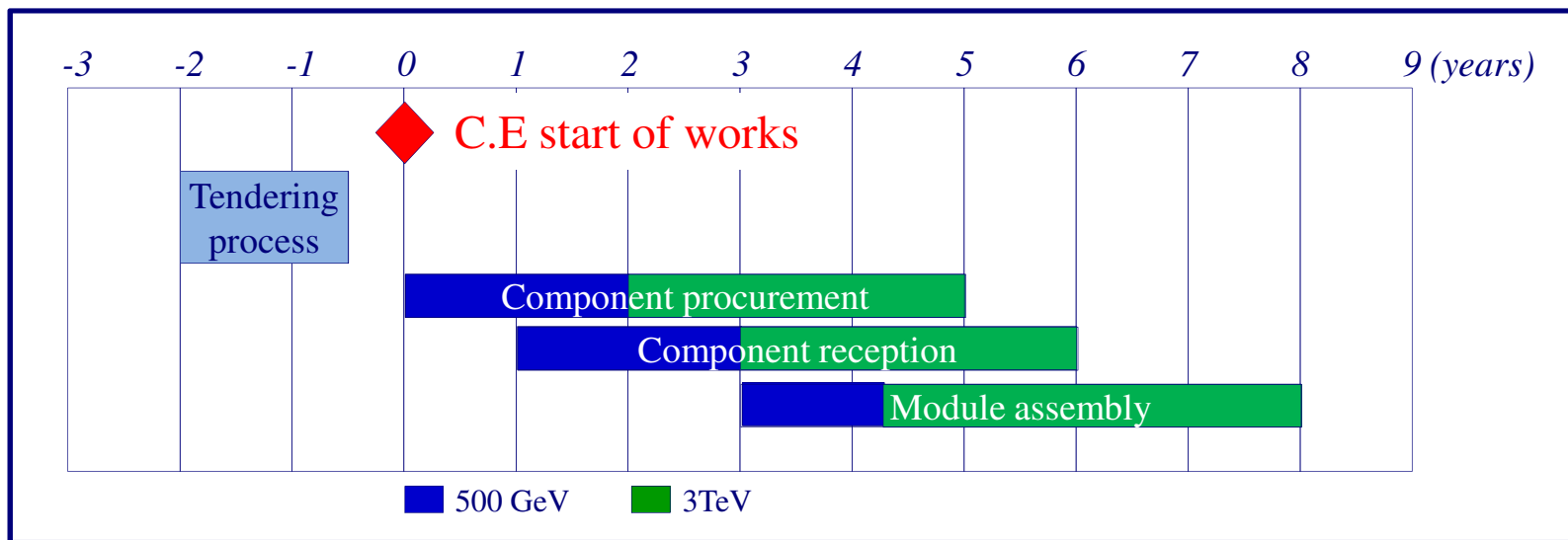


With 4 TBM * Case 1



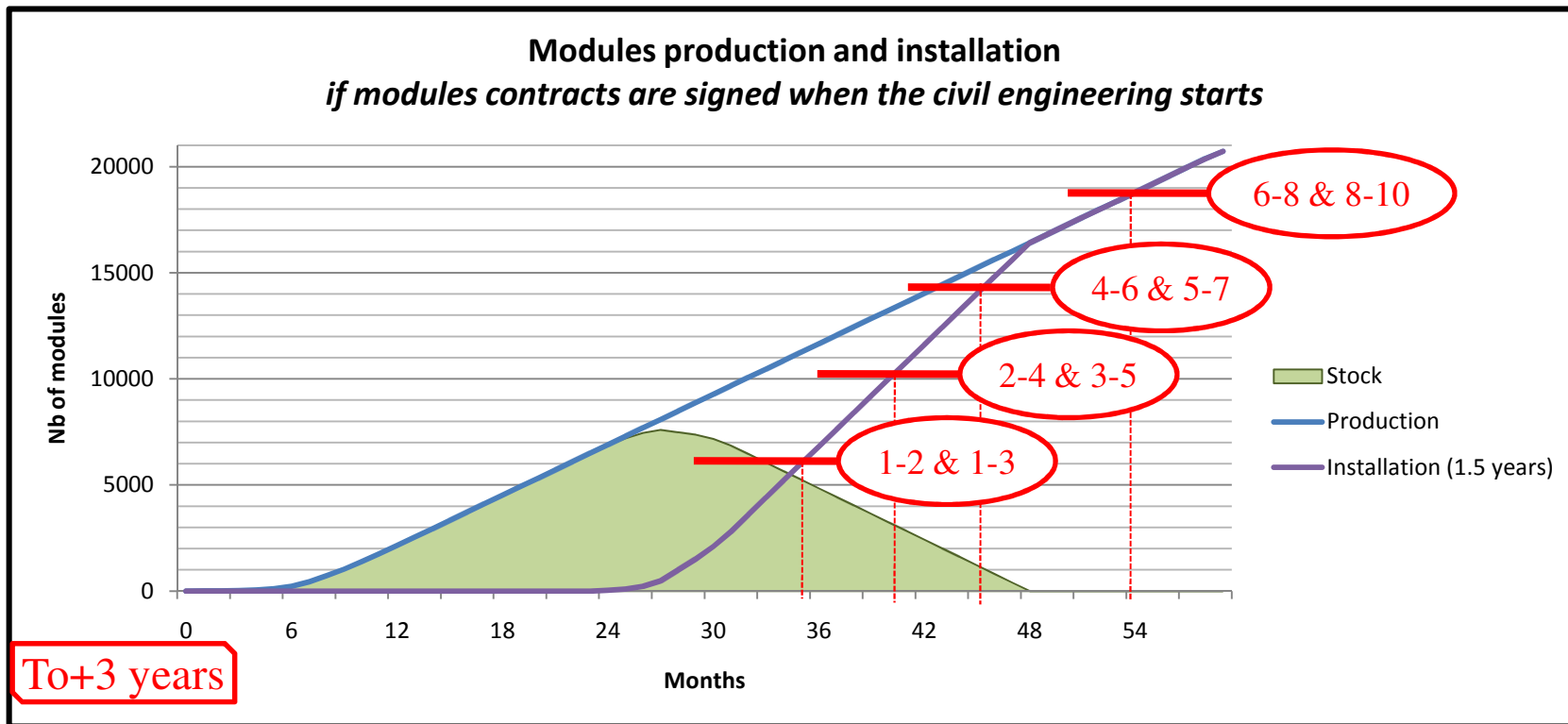
Schedule of the main LINAC – Machine * Case 2

- **What is the t0 (for module production) ?**
 - With the hypothesis that the contracts for modules will be signed 6 months before the start of civil engineering works:
 - ▶ **t0(modules)=to(c.e. start)-3 years**
 - → modules will have to be stored before installation (see next slides)
 - → but the installation of modules can end at t0(c.e. start)+8 years !!!



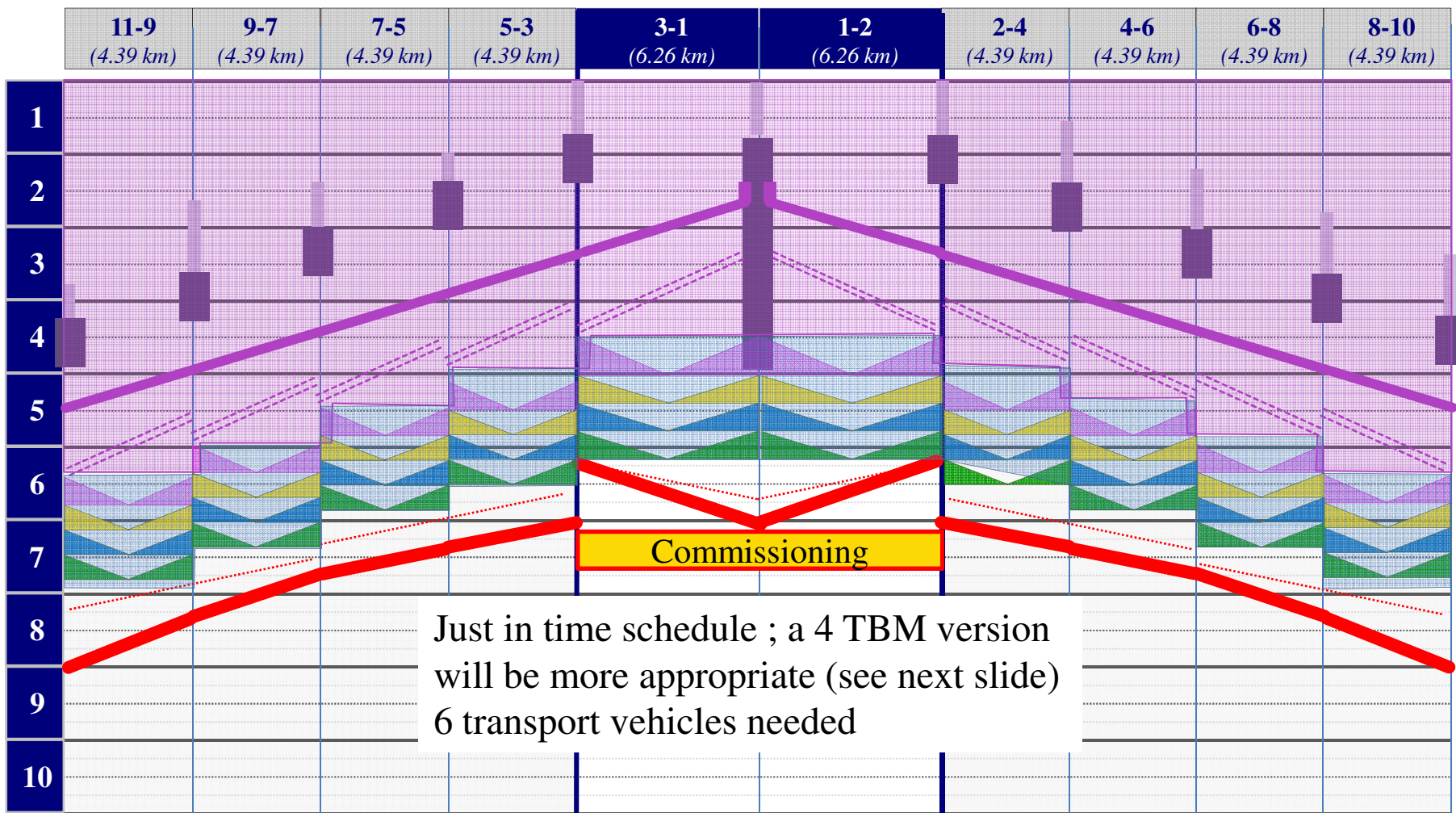
Courtesy G. Riddone

Schedule of the main LINAC – Machine * Case 2

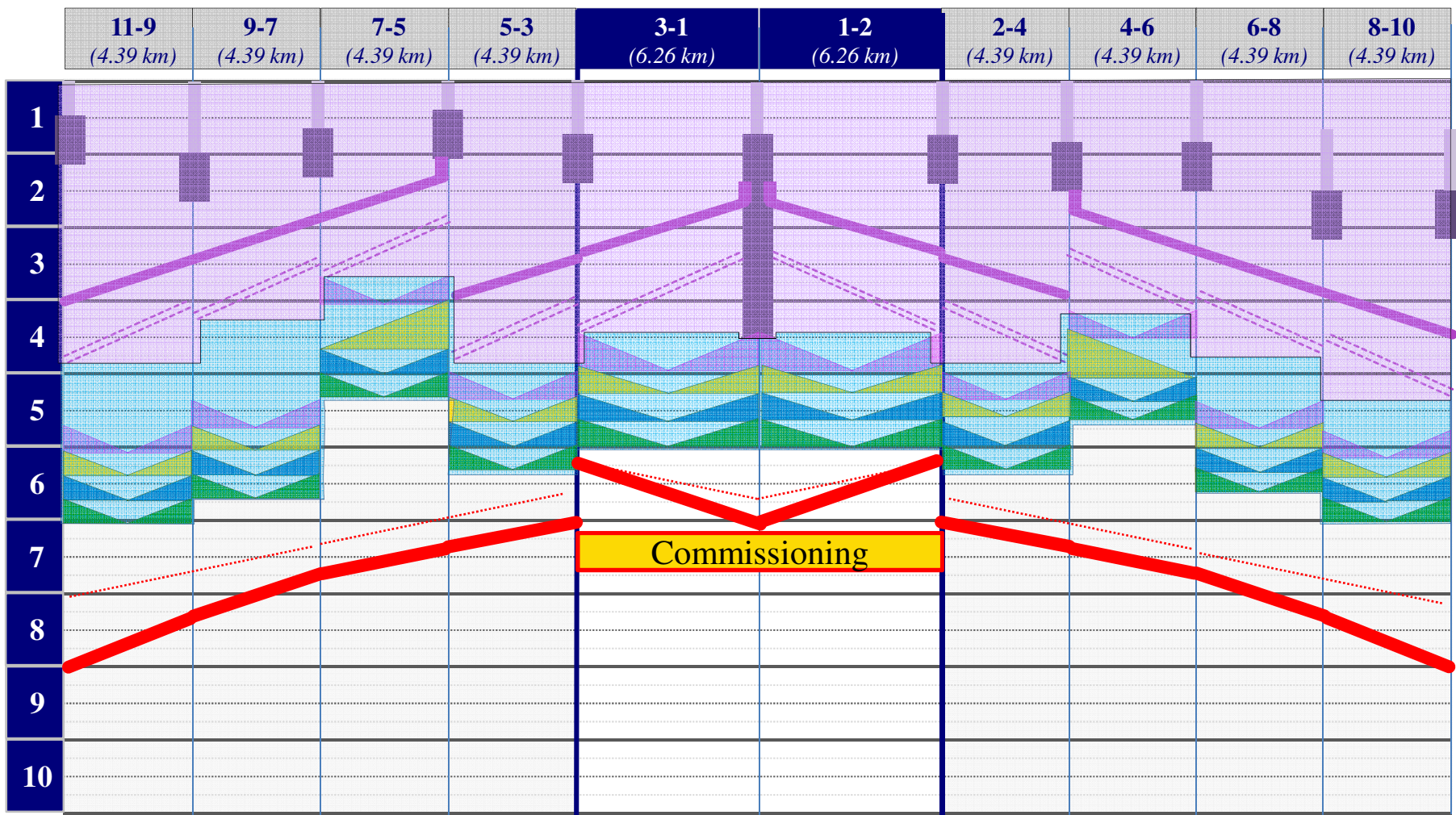


- 500GeV modules in place at to+6 years
- 3TeV modules in place at to+8 years

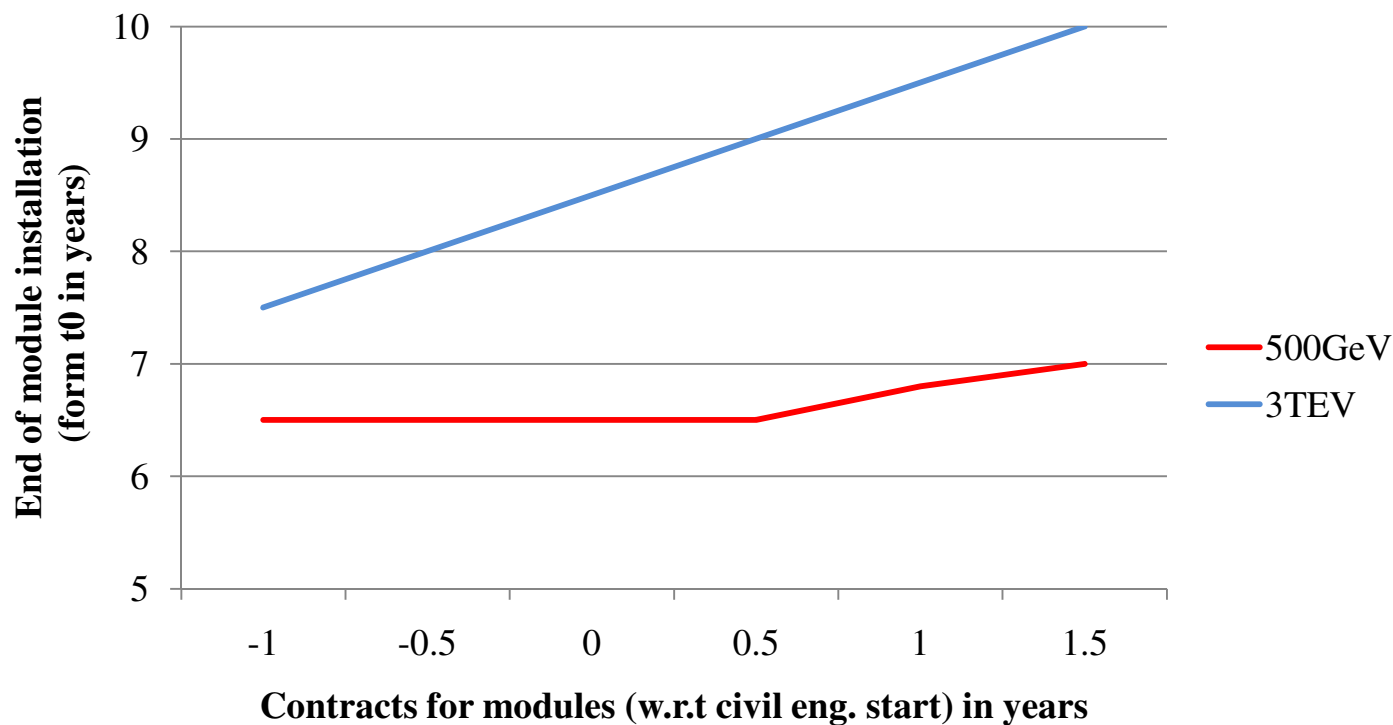
Schedule of the main LINAC – Machine * Case 2



With 4 TBM * Case 2

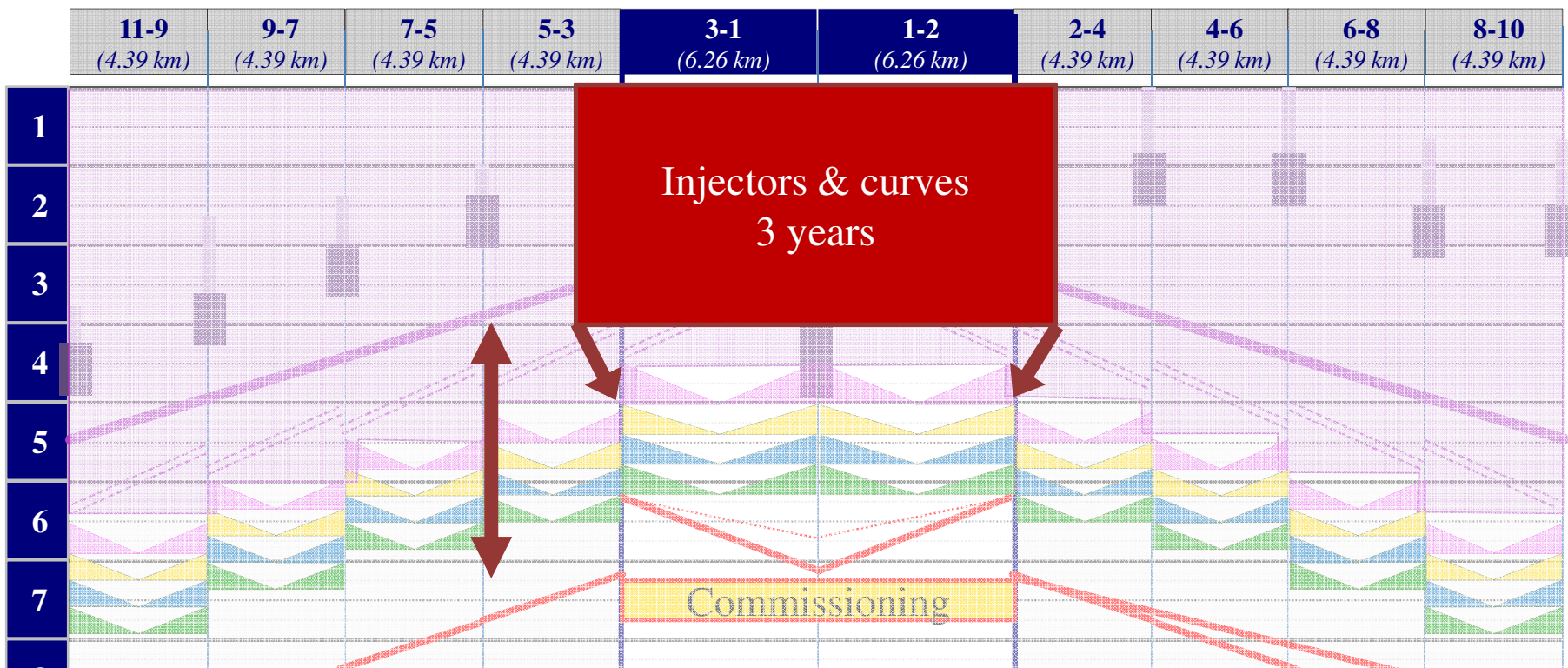


Start of Module production versus end of installation



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- The start of the process for the production of modules has an impact on the end dates.
 - The next step is to schedule the delivery and tendering process for the other components, as well as the integration milestones.
 - Since October the typical cross section changed, and each system is more mature (for instance survey); progress rates need to be reviewed with the groups.

Injectors 500GeV – first draft for civil engineering



Drive beam + Main beam + curves = 3 years

- ▶ slopes down to points 3 and 2 with a road header (15m/wk), i.e. t0+4 years slopes excavated, in line with the construction of the main LINAC.

- ▶ ~ 3 years for the installation and commissioning of the injectors (schedule to be studied)

- Main LINAC
 - Schedule the delivery and tendering process for the other components
 - Review of the progress rates w.r.t the evolution of the project.
- Injectors
 - Schedule the installation and commissioning
 - Schedule the injectors for 3TeV
- Technical note on schedule
 - Started