LOGISTICS AND DIRECTIONS

EVLA Correlator TIMECODE Cable Installation Plan

(Penticton and the EVLA Site)

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1 Revision History

Revision	Date	Changes/Notes	Author
DRAFT	Oct. 24, 2007	Initial DRAFT release for review.	B. Carlson

2 Introduction

This manual contains instructions for the installation of cabling to distribute TIMECODE to Station Boards in the EVLA correlator.

This cable distributes TIMECODE via X-bar Boards to all Station Boards in the system in a redundant manner that eliminates single board or single rack failures from taking down timing to the entire correlator.

Each cable is a single 4-pair 2.0 mm hardmetric “wafer”, which contains a clock and the TIMECODE signal.

Each of the 8 EVLA Correlator Station Racks are wired for TIMECODE identically in **Penticton**.

Final TIMECODE cabling to tie together all racks is done at the **EVLA site** after the racks are installed.

Cable and cable ends are delicate and so caution must be exercised during installation not to damage cables, cable ends, or mating header pins.

Cables must be installed into mating headers, contained within Common Backplanes, **very carefully** otherwise damage to the cable connectors or header pins may occur.

Cables are installed with the cable connector PLASTIC facing UP in all cases.

READ AND FULLY UNDERSTAND THESE INSTRUCTIONS BEFORE BEGINNING ANY WIRING.

3 Overview

Figure 3-1 is a diagram looking into the rear of the Station Rack. It shows the location of the Common Backplane headers into which TIMECODE cables will be installed.

Figure 3-2 is a close-up diagram of the Station Board CENTER Common Backplane header. Header rows 22-25 are where TIMECODE cables are installed.

Figure 3-3 is a close-up diagram of the X-bar Board Common Backplane header. The bottom 2 header rows are for TIMECODE cables. Note that the TOP and BOTTOM CB headers have different assignments.

Figure 4-1 shows how cables are routed inside a Station Rack.

Figure 4-2 shows TIMECODE-A and B signal flow from rack to rack inside the correlator.

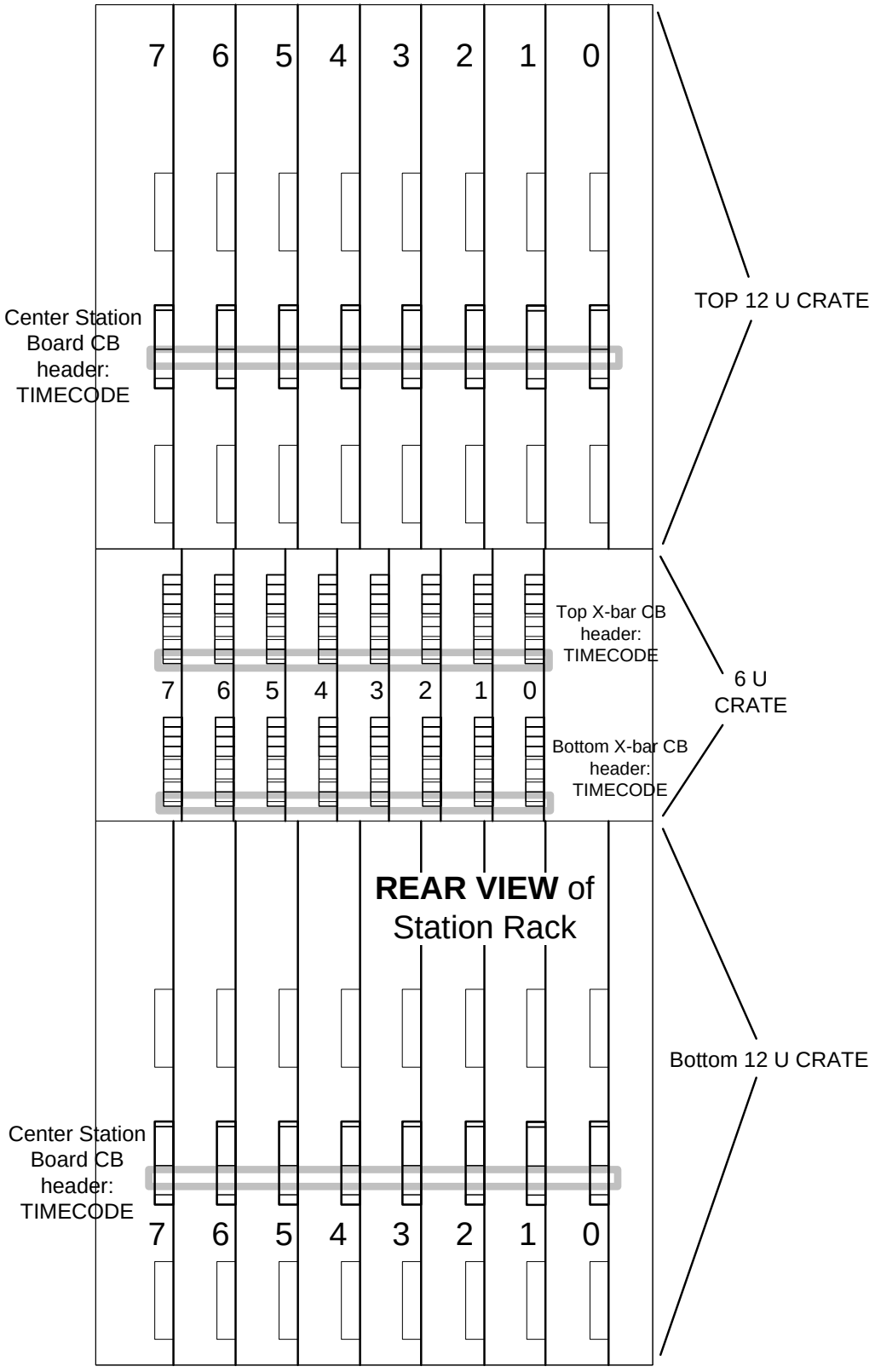

Figure 3-1 Simplified rear-view layout of the EVLA Station rack showing CB headers where TIMECODE cables are installed.

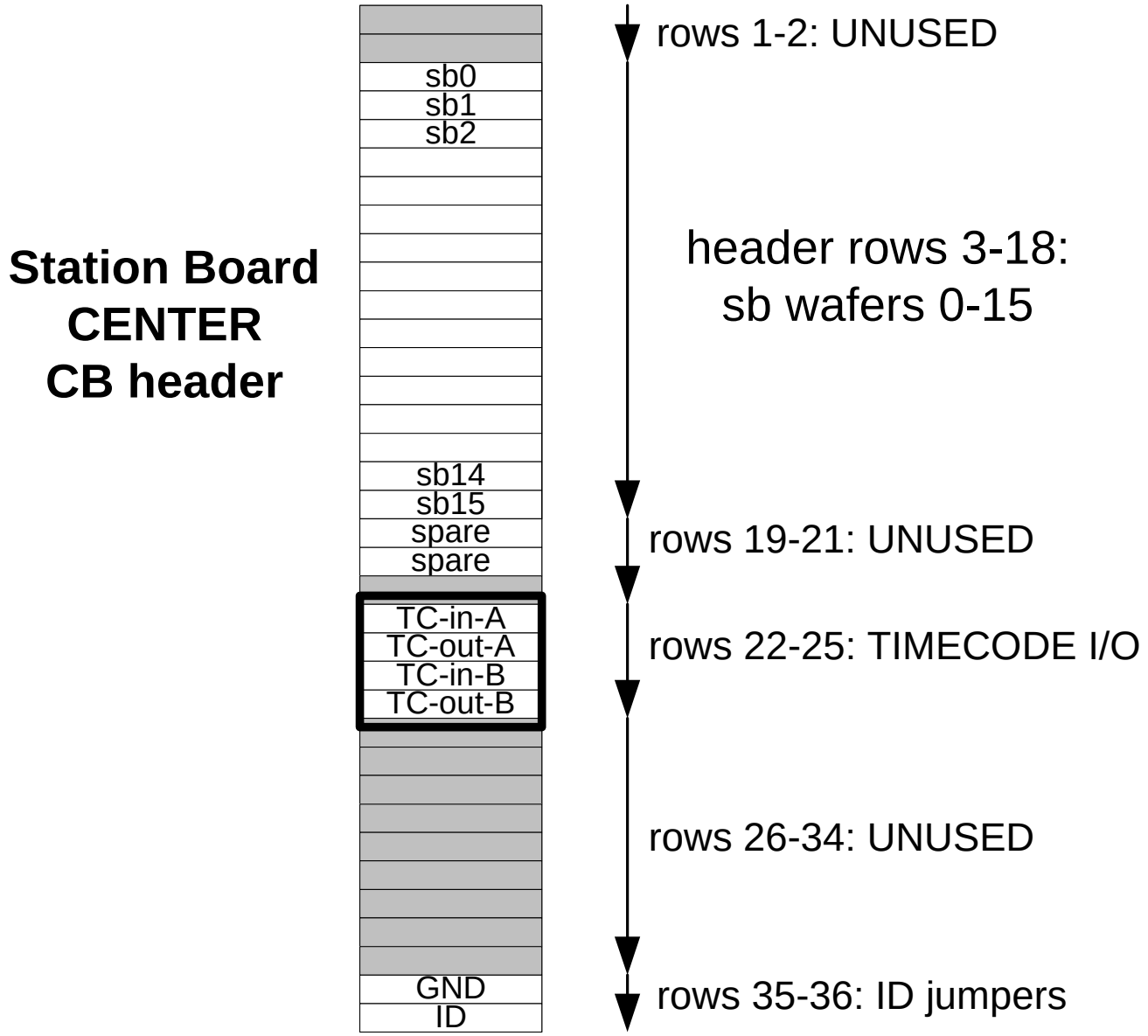

Figure 3-2 Arrangement of Station Board CENTER CB header showing TIMECODE input and output wafers.

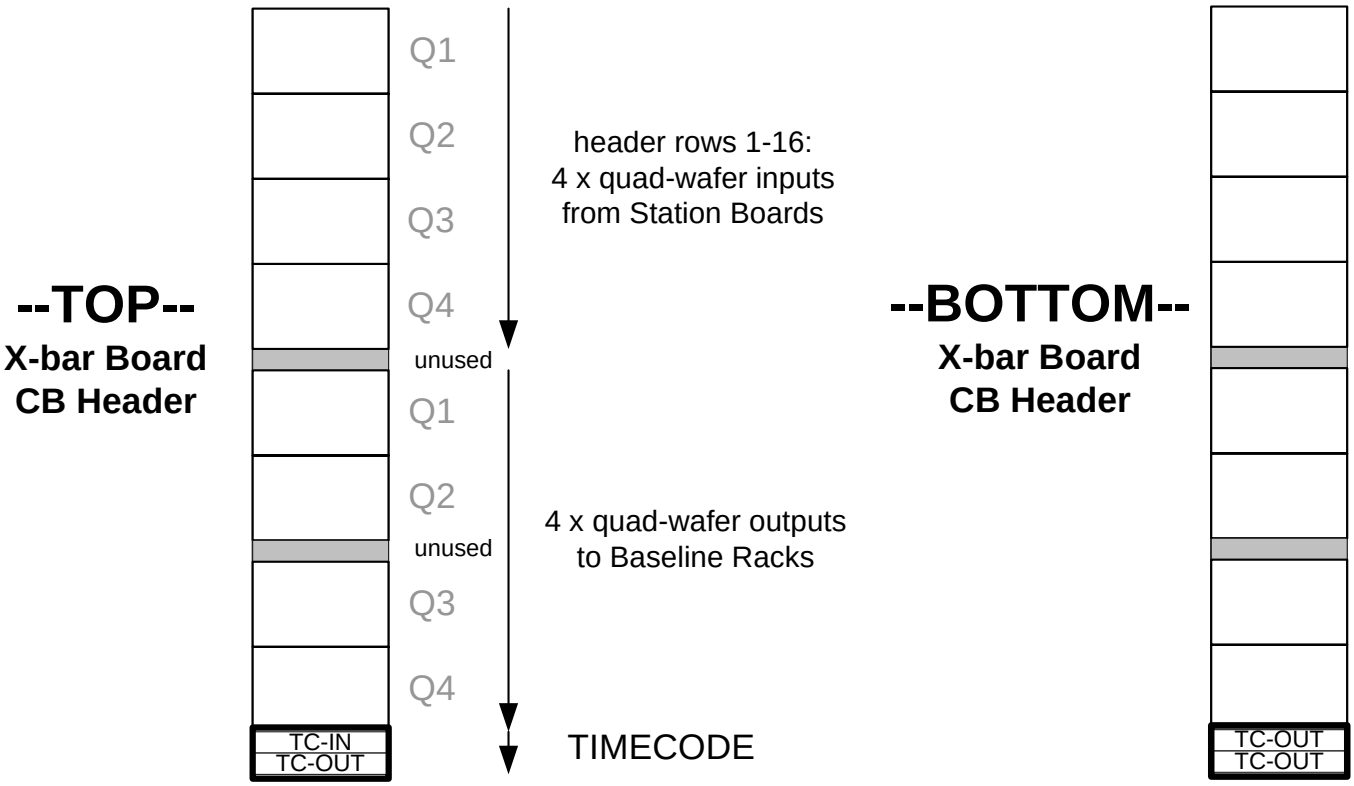

Figure 3-3 Arrangement of X-bar Board TOP and BOTTOM CB headers showing the location of TIMECODE input and output signals. The TOP header has one input and one output; in the bottom header, both are outputs.

4 Instructions

4.1 Penticton Cable Installation

Figure 4-1, is the cabling diagram for each Station Rack. Cables are installed in Penticton. Each Station Rack is wired identically, except that in some cases TIMECODE cables that go to adjacent racks are different in length.

IMPORTANT! ENSURE that cables are installed into the correct CB header, and CB header row according to Figure 3-4.

If the connector won't engage, it likely means misalignment, and **further mechanical force will damage CB header pins**.

Rack-to-rack cables are installed as well in Penticton but connect to the outputs only (the dangling cable must be temporarily tied-off inside the rack). Final connection of the cable to the inputs of adjacent racks is performed at the EVLA site once racks are finally installed and secured.

Cable lengths for rack-to-rack cables are as follows:

S-rack	TIMECODE Signal	Cable Length
S004	TC-OUT-A	1 m
S003	TC-OUT-A	1 m
S002	TC-OUT-A	1 m
S001	TC-OUT-A	5 m
S008	TC-OUT-A	1 m
S007	TC-OUT-A	1 m
S006	TC-OUT-A	1 m
S005	TC-OUT-B	1 m
S006	TC-OUT-B	1 m
S007	TC-OUT-B	1 m
S008	TC-OUT-B	5 m
S001	TC-OUT-B	1 m
S002	TC-OUT-B	1 m
S003	TC-OUT-B	1 m

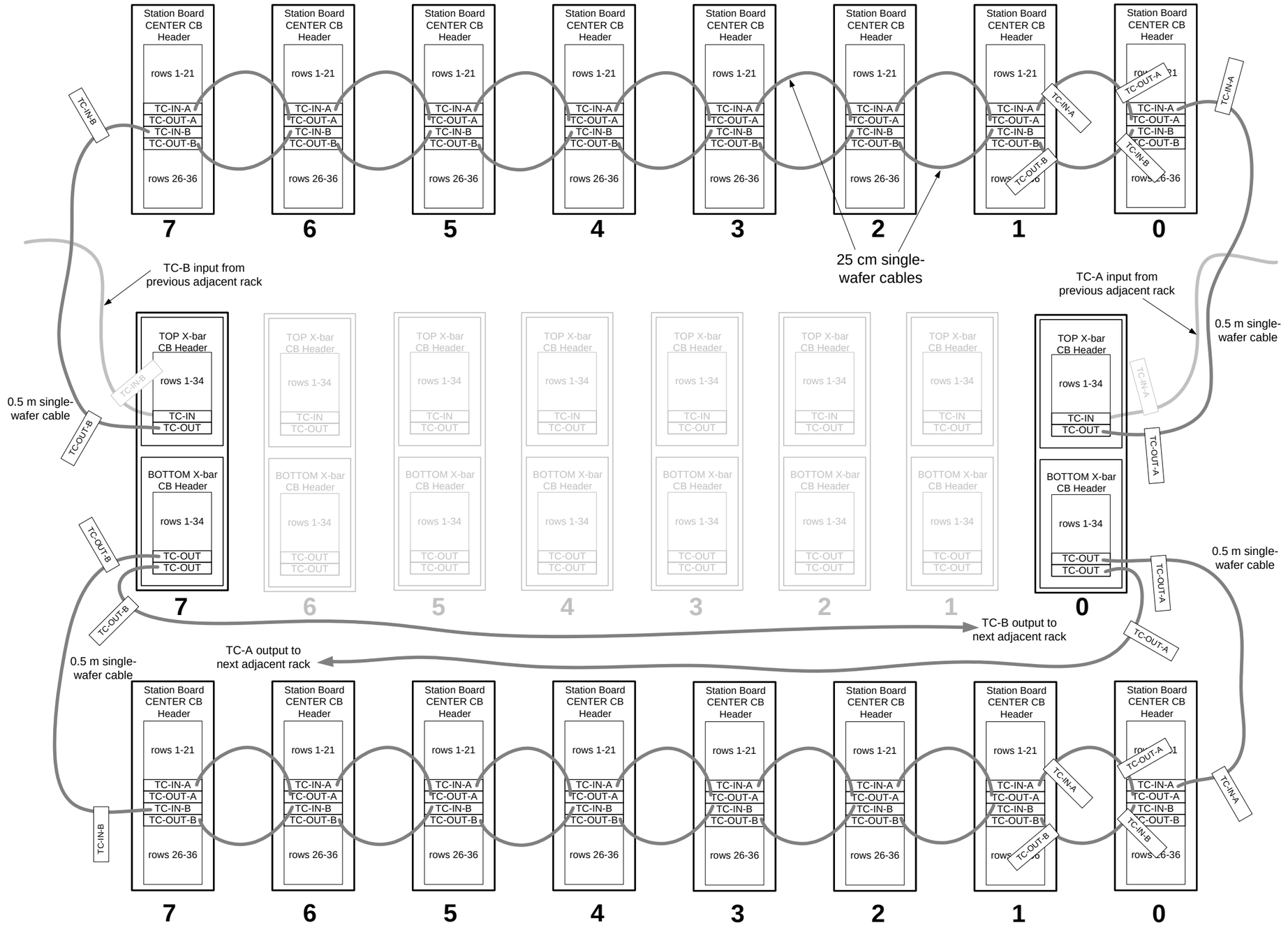

Figure 4-1 Station Rack TIMECODE cabling detail <u>looking into the REAR</u> of the rack.

B. Carlson, October 24, 2007

4.2 EVLA Site Cable Installation

Two 128 MHz 0 dBm CW signals, each on 50-ohm coax using an SMA connector are tied into S004 slot 0 X-bar Board and S005 slot 7 X-bar Board SMA/coax inputs. Similarly for two fibers containing TIMECODE, sourcing from the EVLA system. These signals form the timing reference for the correlator, distributed in a redundant fashion to avoid single-point failures.

TIMECODE-A and TIMECODE-B signal flow is shown in Figure 4-2.

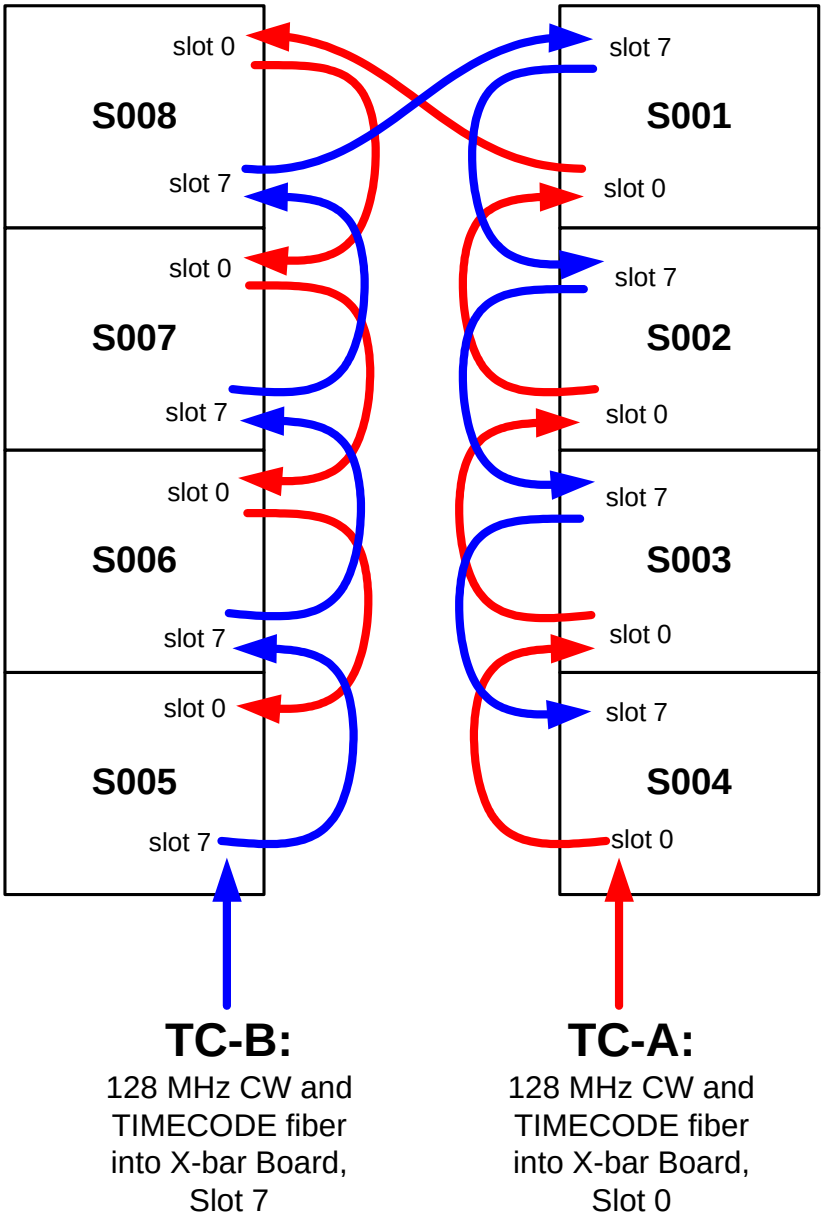

Figure 4-2 TC-A and TC-B signal flow in the correlator.

Rack-to-rack TIMECODE wafer cables, already available and tied-off in the S-racks, are routed according to Figure 4-3 and Figure 4-4.

Refer to Figure 4-1 to locate the exact CB header location for the particular slot where the cable is to be installed.

5 m cables are installed under the floor.

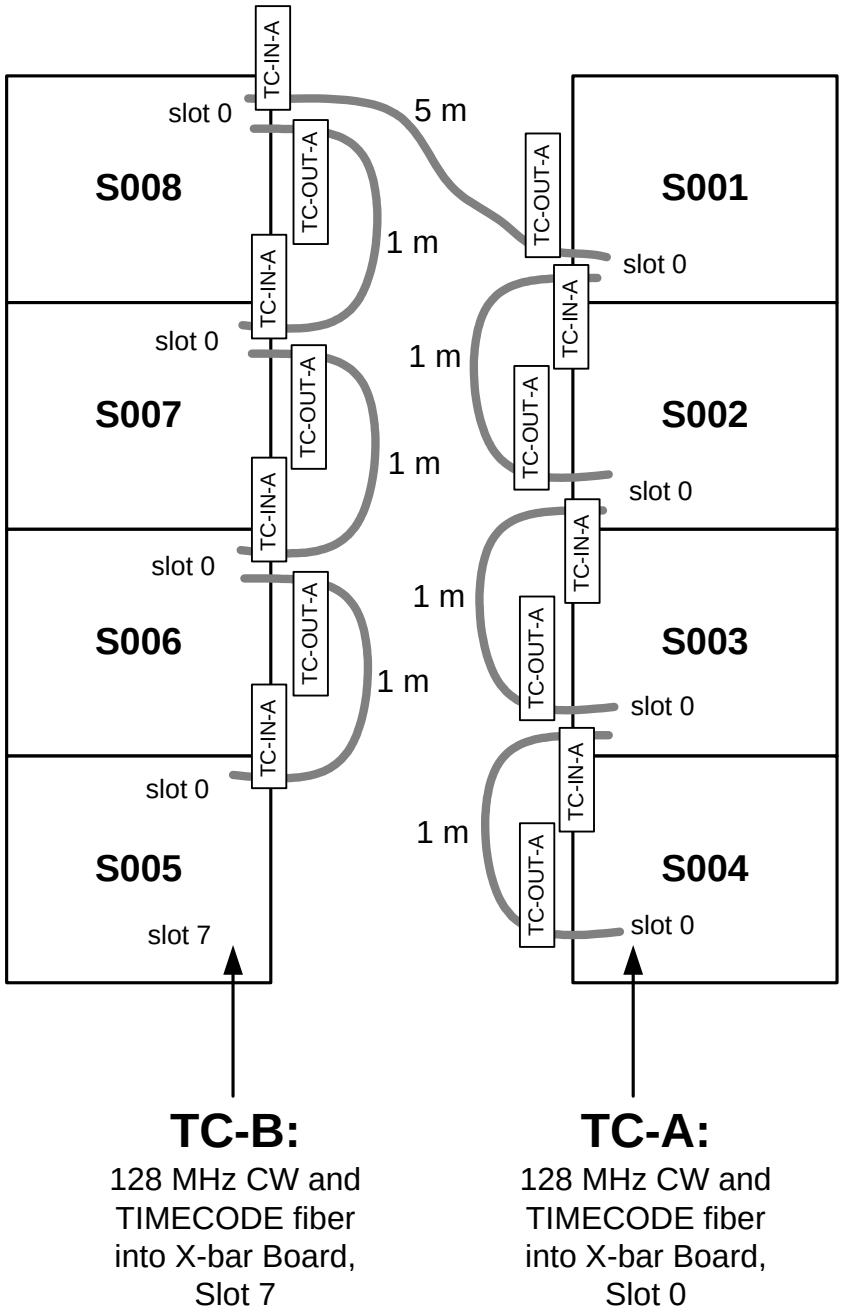

Figure 4-3 TIMECODE-A rack-to-rack cable distribution.

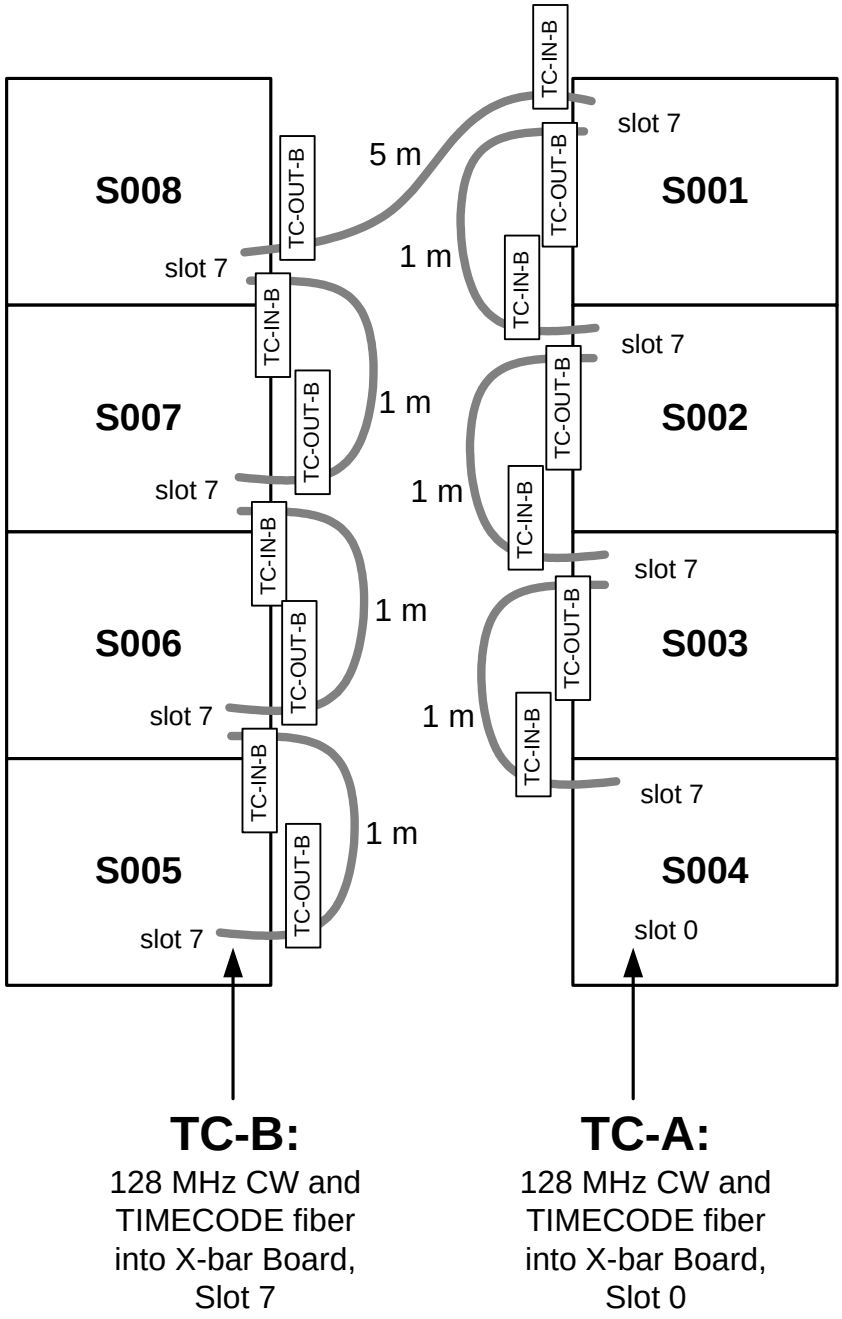

Figure 4-4 TIMECODE-B rack-to-rack cable distribution.