Ellen Fullman
Long String Instrument
Technical Requirements

• **Minimum length is 16 meters (53 ft). Ideal is 20 meters or more.** (Longer string length = lower frequency range.) **Doesn't work outdoors. No carpet.**

• The type of installation rigging is adapted to the architecture of the room. Framing can be installed by:
  • bolting into walls
  • nylon tie-down belts or cable around columns
  • bolting into floors, or
  • self-supporting counter-weighted frame (requires **1800 lbs. (800 kilos) per side** sandbag weights (Double the weight of the pull-out load.)

• The following pages show general info: more specific plans will be drawn up after receiving floorplan and photos from the presenter.

• Ellen travels with the resonator boxes, tuning blocks and string. Wood support framing is constructed on site and included in venue costs.

• The thin and fragile wires are each tensioned to about 20 lbs. (10 kilo.) Total pull-out load is about 440 lbs. per resonator, 880 total (400 kilo.) If a wire breaks it falls to the floor and has never caused an injury.

• **One or two technicians** required to construct framework and set-up

• **Extended access to space** – 3-4 long days fine-tuning and rehearsing. About 30 hours of Ellen's time is required for Ellen to prepare the installation and rehearse.

• **Good work lights.** Ideally, lighting instruments are installed directly over the pathway of strings before the strings are installed. Smooth coverage and levels should be set so that performer is able to see the strings over the entire length of the installation.

• **Sound reinforcement system:** Four high quality speakers: d&b, L-Acoustics, Meyer Sound or equivalent placed in the corners and rotated for diffusion. 15 inch woofers or subwoofers are preferred for cello range. Sound technician required for performance.

• **Backline** (see signal flow chart)

• **Denatured alcohol for rosin:** 1 cup needed.

• **Shipping** – Ellen travels with two standard weight and size checked bags. Venue is responsible for one excess baggage charge each way.

• **Hospitality** – Easy access to healthy meals with lots of fresh vegetables, also, good coffee :-) Lodging: easy access to venue, walking distance is preferred.

**IDEAL INSTALLATION SEQUENCE:**

• **Before Artist's Arrival**  Hardware materials purchased and framing constructed if possible. Use heavy duty lumber and heavy duty hardware.

• **Day 1**  Move-in of support structure and attachment into walls or floors while lighting instruments are installed and roughly focused. Resonators installed, tuning blocks attached to framing and strings tensioned, rosin applied to strings that dries overnight.

• **Day 2**  Tensioning strings and tuning, lighting focused, sound system installed, end of day: another coating of rosin applied.

• **Day 3**  All day access to space, installation settling in, rehearsals

• **Day 4**  Performance can be scheduled

• **Strike – One hour (with help) – all touring components packed into luggage**
Backline:
- 3 short mic stands with booms
- 2 XLRs from resonators to sound tech
- 2 jumper length XLRs
- 4 speakers daisy-chained diagonally
  L to L and R to R. Rotate for diffusion.
- No cable run under string pathway.
- If available: subwoofers
- One short mic stand is used for
  hurdy gurdy motor on LSI –
  also need power to this.
- Fullman will bring laptop, interface and
  microphones. Laptop hosts reverb,
  Altiverb convolution plate hosted in
  Ableton Live.
### Resonator and tuning block mounting

Two 2x6s are securely mounted on wall to withstand 880 lbs. pull-out. Longer lumber is OK if needed to reach studs. Screws to attach resonators and tuning blocks are provided by artist. Counter-sink all screws.

### Overview of installation alignment

It is important that the two ends of the installation are squared and centered. The tuning block side is less wide than the resonator side because the strings are more closely spaced.
Long String Instrument Installation
framing secured to floor or with nylon tie-down belts

Use 2 x 6 lumber. Countersink all screws. For floor mounting, 3 cables on each stand are suspended diagonally down to a plywood floor plate (see below). Eyebolts (not screws) are mounted at a 37 inch height and centered on post. Frame is also screwed to floor. A top plate is added to tuning block stand to reduce warping.

Floorplates and pre-assembled industrial strength cables and eyebolts can be shipped in advance in North America.

Materials List
7) 2 x 6 x 8
3.5 inch heavy duty screws

Cut List
2) 64”  3) 43.5”  3) 45”  1) 48”  3) 36”

plywood floor plate (should have 3 eyebolts)
Long String Instrument Installation

Weighted Stands

Profile of assembled stand

Counter weight tray (make 2)

Materials List
18) 2x6x8
2 sheets 3/4 inch plywood

Use heavy duty screws, at least 3.5" long, for framing. Into plywood 1.5" screws are OK. Countersink all screws. Clean floor under tray and put a rubber carpet pad (Ikea) under it to add friction. Fill tray with 1,800 lbs. weight! Posts of stands fit into slots of tray framing. (Photo shows a different design – drawn plan uses less lumber and gives a foot longer string length to lower the tuning of the instrument.)

2x6 Cut List:
4) 93" 3) 48" 2) 64" 2) 45" 4) 42.75" 4) 36.25"

Profile of assembled stand

Counter weight tray (make 2)

Materials List
18) 2x6x8
2 sheets 3/4 inch plywood

Use heavy duty screws, at least 3.5" long, for framing. Into plywood 1.5" screws are OK. Countersink all screws. Clean floor under tray and put a rubber carpet pad (Ikea) under it to add friction. Fill tray with 1,800 lbs. weight! Posts of stands fit into slots of tray framing. (Photo shows a different design – drawn plan uses less lumber and gives a foot longer string length to lower the tuning of the instrument.)

2x6 Cut List:
4) 93" 3) 48" 2) 64" 2) 45" 4) 42.75" 4) 36.25"
The intention of the design is to create highlights on the strings that float in darkness. Unlit, the fine wires are nearly invisible. Lighting instruments are ideal, track lighting is ok. It is important to light the entire length of the installation brightly enough for the performers to be able to see the wires and to read music. Levels are set as an installation, no cues.

- ETC Source 4 Profile 575w 25-50 degrees or equivalent.
- A 20 m (70 ft.) long area can be covered by 6 instrument pairs at 6m (20 ft.) height.
- Cut light sharp along outside edges of string pathway (dotted line), then add frost.
- Hotspots of profiles alternate with each other; adjusted as smoothly as possible. Use Roscoe frost 114, or equivalent.