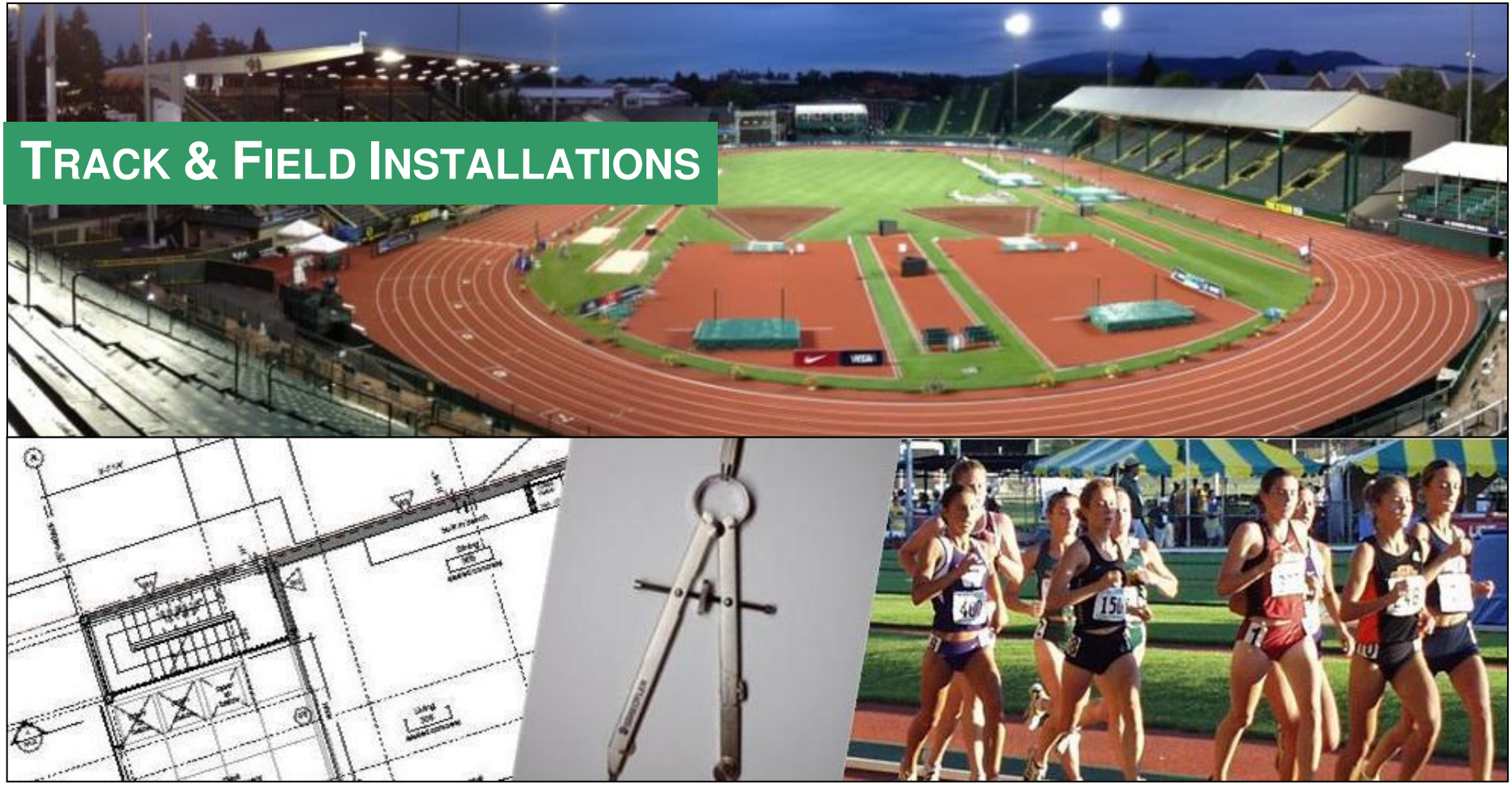
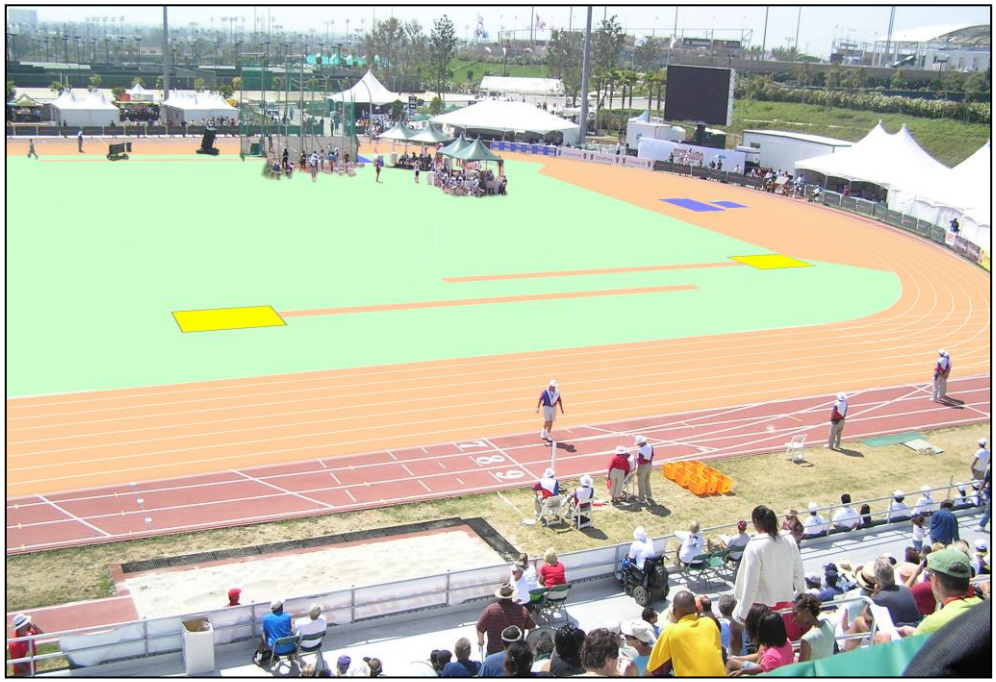
FinishLynx Timing System Installation Guide for Sports Builders and Architects

An Introduction to the Technical Aspects of Fully Automatic Timing Installations for Track & Field Facilities



Venues with custom FinishLynx installations include: University of Oregon, University of Arkansas, & Harvard

Infrastructure Guide for FinishLynx Photo-Finish Cameras and Fully Automatic Timing Systems



All cables and connectors are industry standard and can be installed by most licensed electrical contractors.

Power-Over-Ethernet – Modern FinishLynx (Vision) photo-finish cameras run on Power-over-Ethernet and we recommend providing adequate Ethernet access to the infield, press box, finish lines, and anywhere else a camera may be placed.

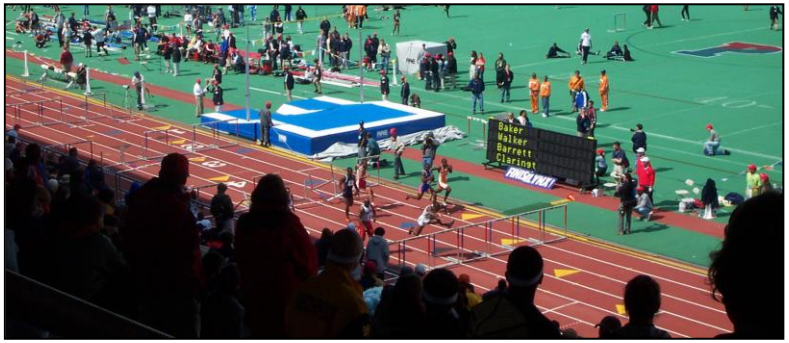
The start cable is shielded 3-conductor cable.

- Connectors are XLR-3
- The pin assignments are:
  - **Pin 1** = ground (black wire)
  - **Pin 2** = 12V DC (white wire)
  - **Pin 3** = data (red wire)

External weatherproofing can be achieved by using industry standard components

All in-ground conduits are industry standard 50mm (minimum) using 45° or 90° sweep elbows

Why Incorporate FinishLynx In Your Stadium Design?



The goal of this document is to help architects, contractors, and builders incorporate modern technology infrastructure into their sports stadiums and provide a framework for adding professional timing and results systems like FinishLynx. FinishLynx timing systems provide IAAF-approved photo-finish results and are the gold standard in sports timing technology.

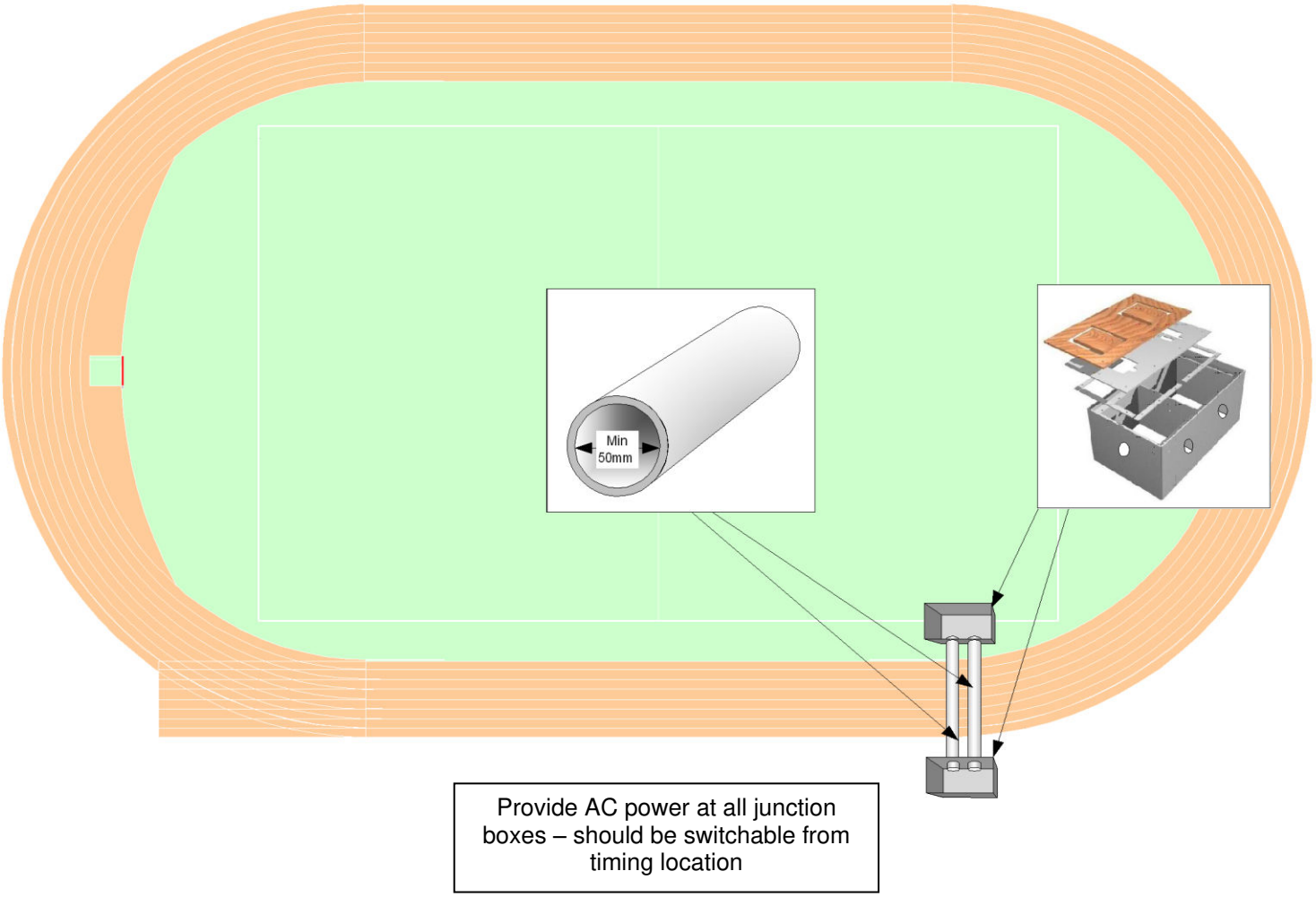
Every quality athletics facility can expect to host at least a few meets per year that incorporate fully automatic timing, so the timing and results infrastructure should always be included in new constructions. Many stadium bids will include FinishLynx fully automatic timing systems, but those that don't should provide the appropriate space, power, and conduit to install a Lynx system to be installed after completion.

This infrastructure is frequently already in place, but it is not always in the optimal position or designed with adequate redundancy. Many schools are forced to adapt their timing system's setup due to infrastructure designed solely for football. With a small amount of foresight and minimal additional costs, every track facility can be designed to mesh with the needs of a football or soccer stadium.

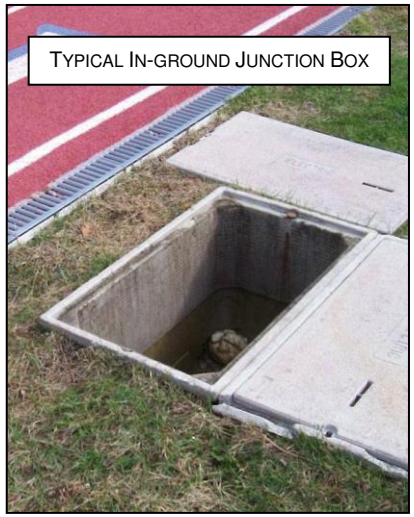
This document aims to put knowledge at the architect's fingertips, and serves to educate you on what questions to ask the athletic director and coaches, as well as what recommendations to make when it comes to designing the track to be timing system ready. Thankfully, the basic infrastructure is essentially the same, whether you are designing a six-lane middle school facility or providing a venue suitable for the biggest track and field meets in the country.

Entry-Level (Multi-Use) Infrastructure

Figure 1



Entry-Level (Multi-Use) Infrastructure



TYPICAL IN-GROUND JUNCTION BOX

A pair of junction boxes – similar to the ones shown on this page – located inside and outside the track near the track's finish line and connected by 2" conduit are the bare minimum for a track facility (See Figure 1). However, it should be noted that in a situation where it is not possible to place conduits under the track, in a refurbishment situation for example, it is possible to install a totally wireless infrastructure. Contact Lynx and talk to our Technical Staff if your project demands this solution. As you will see from Figure 1, the infrastructure requirements for a basic timing system at an entry-level track facility are very simple:

- A pair of junction boxes located inside and outside the track close to the finish line
- An Ethernet cable running through the conduit under the track, connecting the primary EtherLynx finish-line camera with the FinishLynx computer.
- AC power or Power-over-Ethernet connection for the FinishLynx camera and accessories. Older FinishLynx cameras require AC power during operation. Modern FinishLynx (Vision) cameras run on Power-over-Ethernet, but will require AC power when using a wireless adapter add-on. It is preferable to have power both inside and outside the track to allow for future expansion to a two-camera system.

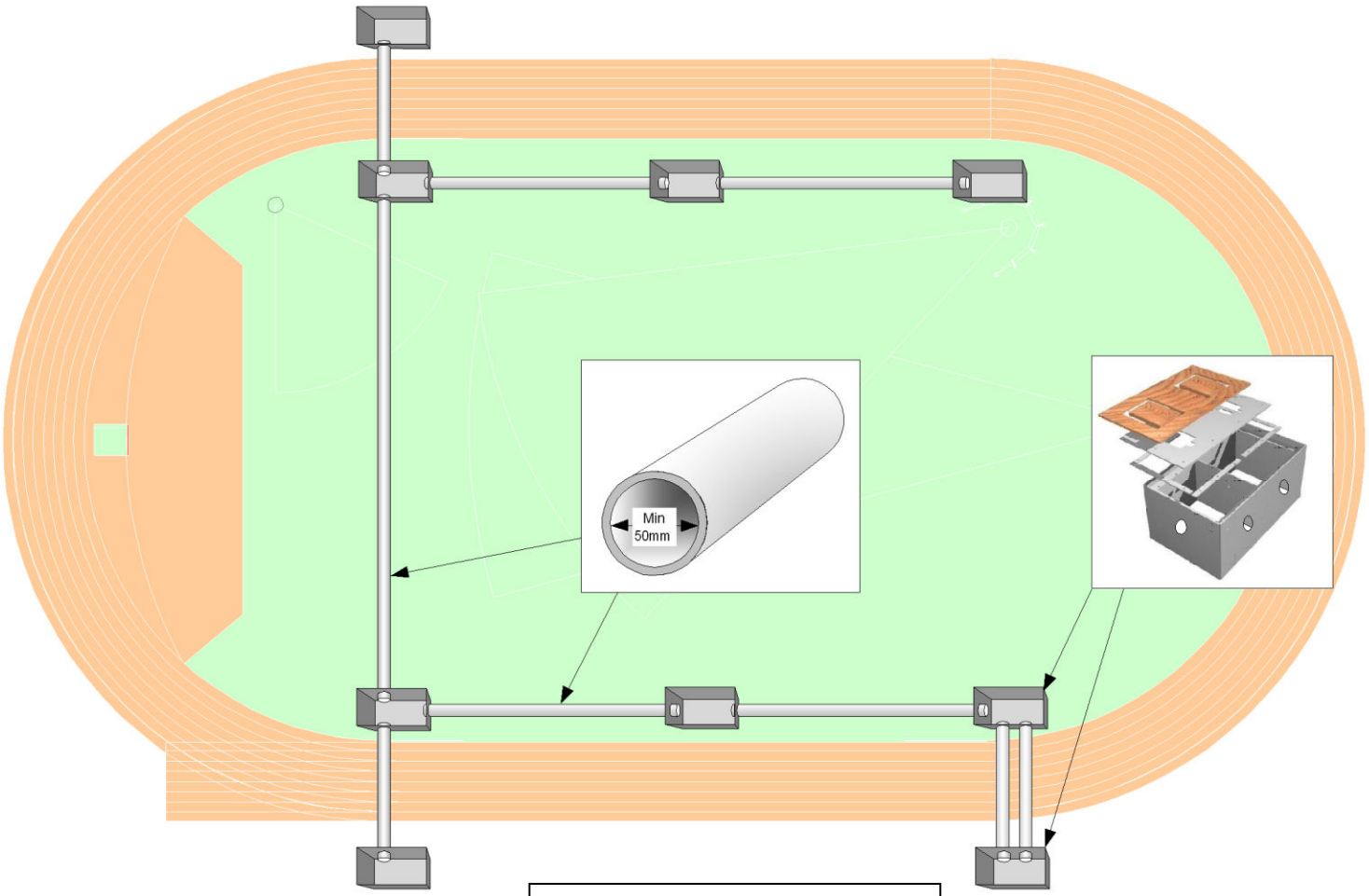
Junction boxes are made by a variety of manufacturers, including Gill's VersaCom Boxes, Sportsfield Specialties ComBox units, and Christy Concrete's Electrical Boxes. A typical in-ground junction box is installed with either a drainage pipe at the bottom or with an open bottom that drains to the substrate layer of the track.

When connecting the junction boxes via conduits under the track, it is done most commonly with 2" PVC pipe and two 45-degree elbows (or a sweep elbow) on each end. It is best to have at least three of these conduits at or near the finish line connecting the junction boxes inside and the outside the track. This will provide an adequate level of redundancy and room for expansion. One half of each box will be used for power cables, and the others will be for communication wires. If possible, these conduits should be capped and watertight. It is important that if fiber-optic cable is ever run under the track, the conduit should not have a sharp 90-degree elbow on either end. Fiber-optic cabling requires a more gradual "sweep elbow" so that the fiber-optics don't break when they are pulled through.

TYPICAL ABOVE-GROUND JUNCTION BOX

Advanced Infrastructure

Figure 2



Provide AC power at all junction boxes – should be switchable from timing location

Advanced Infrastructure

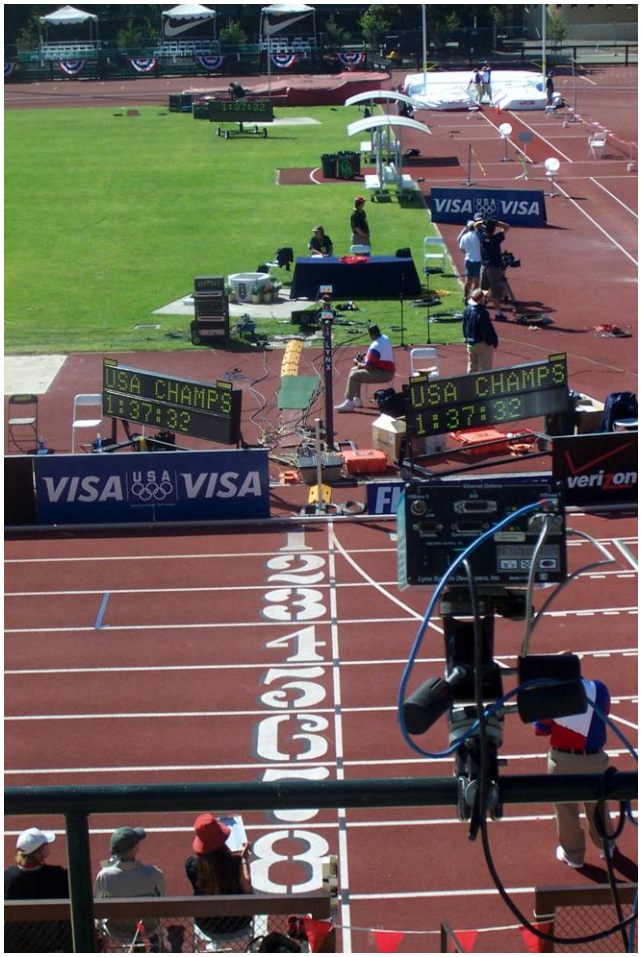
If you are planning to install a fully automatic timing system in a multi-purpose facility, there will need to be a few more sets of boxes. A sample layout is shown in Figure 2. For a cabling diagram we will need to see a proposed layout for your specific installation – call for more information.

- First, many institutions require the flexibility to be able to reverse the direction of the 100 and 200-meter dashes to avoid headwinds. This will entail another set of junction boxes at every position where a race would finish.

- Most large facilities run their starting gun cable underground to keep it away from competitors' spikes. If your customer prefers this, you will need three additional long conduit runs and junction boxes at the inside of the beginning of each straightaway. The first conduit should run from the main infield junction box at the finish line along the straightaway to the beginning of the 100-meter dash. The second conduit will run from the 100-meter start under the infield to the beginning of the 200-meter start. The third conduit will run from the 200-meter start to the 1500-meter start. It is important that the electrical contractor in charge of installing this wiring splices both a male and a female XLR connector at each infield junction box location so the starter can plug into this system.

- Many multi-purpose track/soccer/football facilities have junction boxes with power and communication conduits on the infield at the mid-point of both straight-aways, with conduit running to the press box or coach's boxes from the corresponding junction boxes on the outside of the track. In a track and field situation, these junction boxes can be used to provide power for wind speed gauges, and a data connection to the EtherLynx camera for the wind speed information.

- Finally, if the facility has standalone play clocks or scoreboards, the positioning for these should be taken into account with regards to conduits, power, and wiring as well.



Choose One of Our 6 Complete Athletics Timing Packages

1. Competition Package IAAF-Approved Single Camera Color Photo-Finish System with motorized zoom lens.	**3. Championship Package** IAAF-Approved Single-Camera Photo-Finish System with Remote Control Features, IdentiLynx video camera, LED Display, and Ultrasonic Wind Gauge.	**5. Grand Prix Package** IAAF-Approved Two-Camera, Fully Independent, Photo-Finish Timing System, with Remote Control Features, advanced camera add-ons, ResulTV display software, Wireless Results Infrastructure, Dual wireless start systems, IdentiLynx video camera, Wind Gauge, and LED video display.
2. Competition Elite Package IAAF-Approved Single Camera Color Photo-Finish System with Remote Control features and Wireless Start System.	**4. Championship Elite Package** IAAF-Approved Two-Camera Photo-Finish System with Remote Control Features, IdentiLynx video camera, LED Display, Wind Gauge, and advanced camera features.	**6. Grand Prix Elite Package** IAAF-Approved Two-Camera, Fully Independent, Photo-Finish Timing System, with Remote Control Features, advanced camera add-ons, ResulTV display software, Wireless Results Infrastructure, Dual wireless start systems, IdentiLynx video camera, Wind Gauge, and 6 LED displays for elite-level timing and results.

Checklist

- ❑ Power on both sides of the finish line
- ❑ Ethernet access to finish lines, infield, and press box
- ❑ Minimum 50mm diameter conduits
- ❑ Adequate drainage for junction boxes
- ❑ Redundant conduits to allow for expansion
  - ❑ (Advanced Install) Conduits and junction boxes for XLR starter cable
  - ❑ (Advanced Install) Sweep elbows for fiber-optic cables
  - ❑ (Advanced Install) Conduit and junction box for wind gauge
  - ❑ (Advanced Install) Junction boxes at end of alternate straightaway

Cable Specifications

- Start Signal Cable – Belden 9533
- Start Signal Connectors - 3 pin XLR
- Ethernet Network Cable Options
  - Industry Standard Cat 5 (T568A/B RJ45)
  - Industry Standard Fiber Optic with applicable Transceivers

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If you have any questions, please contact the Lynx sales team and we will be happy to assist you.

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All Other Countries: intlsales@finishlynx.com