

Accessible Pedestrian Signals (APS)



Ethiopian Center for Disability and Development (ECDD)

Terms of Reference to Promote and pilot Audible Traffic Signals in Addis Ababa and Tactile Marks underneath

I. BACKGROUND

Ethiopian Center for Disability and Development (ECDD) is an Ethiopian Development Organization established in 2005 and reregistered by the Authority for Civil Society Organizations as Ethiopian Development Civil Society Organization with Certificate № 0321 under Proclamation № 1113/2019. ECDD is working with other organizations to promote and facilitate the inclusion of persons with disabilities and disability issues in mainstream service delivery and development programs envisioning an Inclusive Ethiopia where persons with disabilities exercise the same rights and have access to the same services and opportunities enjoyed by other citizens. ECDD envisions an inclusive Ethiopia, where children, youth, and adults with disabilities, regardless of gender or kind of disability, as well as their parents and families, enjoy the same rights and have access to the same health, educational, and social services, training, and work opportunities enjoyed by other citizens.

Introduction

As part of the Advancing Disability Voices, Rights Advocacy, and National Coordination in Ethiopia (ADVANCE) Project, ECDD wants to deploy a service provider “Audible Traffic Signals in Addis Ababa and Tactile Marks Underneath”. Thus, ECDD working in collaboration with the Addis Abeba Traffic Management Agency is looking for a qualified and interested provider to provide the below-mentioned devices along with the audio signals.

Duties of the Provider:

The primary technique that pedestrians who have visual disabilities use to cross streets at signalized crossings is to initiate their crossing when they hear the traffic in front of them stop and the traffic alongside them begin to move, corresponding to the onset of the green interval.

Accessible Pedestrian Signals shall comply with Caltrans Standard Plans Type B specifications and shall be yellow in color. The APS unit shall be connected to a power and control unit mounted inside its associated pedestrian signal housing using a 4-wire cable. The sign plate shall generally conform to the 2006 California Manual on Uniform Traffic Control Devices, MUTCD Sign Code standard, and shall have the street name in Amharic and English. The APS unit shall have special voice message capabilities that support Unicode. The pushbutton itself shall have the following characteristics: made from cast aluminum and hard nickel plated; vandal resistant; ADA compliant; vibrotactile with a raised directional arrow; and diameter of at least 2”.

A red LED indication shall stay on until the walk cycle to indicate the push button has been activated by a pedestrian. The station shall be provided with a weather-proof speaker from which all sounds and tones will emanate, and the speaker shall be protected by a vandal-resistant screen. The button shall emit a brief “tick” each time the push button is operated. In addition, the station shall have the capability of emitting the following tones/sounds:

- Locating tone at 880 Hz plus harmonic, 0.1-second duration, 1-second interval during pedestrian clearance, and don't walk interval.
- Cuckoo sound at 1250 Hz and 1000 Hz, 0.6-second duration, 1.8-second interval, during walk intervals only.
- Chirp sound from 2700 Hz to 1700 Hz, 0.2 second duration, 1 second interval, during walk intervals only.



emission of a constant acoustic signal to indicate the reservation made by a blind person, with a length of maximum 5s and frequency of 2Khz. The tone of the impulse of the acoustic device is similar to a ring, with frequency modulation that can be set at 10 Hz or 20 Hz (in compliance with CEI 214-7 par.

Pedestrian Acoustic Crosswalk Signals Device Parameter	
Input voltage	85-265VAC, 50 /60Hz
Operating current	40-600mA
Working temperature	-40°C ~ 80°C
Housing Material	Cold-rolled Iron with outdoor painting

From the accessibility point of view, the following requirements should be fulfilled:

- Each pushbutton should activate both the walk interval and the accessible pedestrian signals.
- Regarding the location, each accessible pedestrian pushbutton should be provided with the following features:
 - A pushbutton locator tones.
 - A tactile arrow
- Accessible pedestrian signals should have both audible and vibrotactile walk indications. The vibrotactile indication communicates to pedestrians who are deaf-blind that the WALK interval is in effect and may provide confirmation of the WALK interval to pedestrians who are visually impaired at a particularly noisy intersection.
- Vibrotactile walk indications should be provided by a tactile arrow on the pushbutton that vibrates during the walk interval.
- Pushbuttons should indicate using tactile arrows which crosswalk signal is actuated by each pushbutton. Tactile arrows should be located on the

pushbutton, have high visual contrast (light on dark or dark on light), and shall be aligned parallel to the direction of travel on the associated crosswalk.

- An accessible pedestrian pushbutton should incorporate a locator tone.
- Pushbutton locator tones should have a duration of 0.15 seconds or less and should repeat at 1-second intervals.
- Pushbutton locator tones should be intensity responsive to ambient sound, and be audible 6 to 12 feet from the pushbutton.

Acoustic Pedestrian Device (Blind clock)

- Multi-operation period with built-in high-precision clock chip, free from interruption of power-down mode and less than 2.5-minute yearly operation error.
- Connected to the control box for instant parameter adjustment
- Adopting a highly efficient CLASS D power amplifier circuit
- Available to adjust the volume among 81 grades by control box and when the volume is 0, the power amplifier will work in silence without any noise.
- Able to pre-store different settings and then send them to be received at the same time.
- Connected to the control box by USB interface and easy to set up;
- With guide-way design and convenient installation.

Accessible Pedestrian Pushbutton station shall have voice message capabilities.

Accessible Pedestrian Pushbutton Station and Signs shall have the following features:

Locating Tone

- More than 5 walk sounds that shall be field-selectable
- More than 3 pedestrian clearance sound choices shall be field-selectable
- A direction of travel shall be standard with extended push

- An information message shall be standard with extended push Vibro-tactile walk phase indication

The audible sounds emitted by the Accessible Pedestrian Pushbutton Station and Signs shall have the following properties:

- All audible sounds shall emanate from the push button station.
- All audible sounds from push button stations shall be synchronized.
- Each audible feature shall have independently-adjustable minimum and maximum volume levels
- All audible signal level shall automatically adjust for ambient noise levels.
- The ability to mute sounds at all crosswalks except activated crosswalks.

Accessible Pedestrian Pushbutton systems shall meet the following requirements:

- The system shall have user-selectable multiple language capabilities
- The system shall be able to play an emergency pre-emption message
- The system shall be able to self-test its buttons and report any faults to the traffic controller.

Voice prompt message can be customized.

Acoustic device for blind people (DNV) is formed by two parts:

1. Acoustic device (DNV/03) that provides the sound emission of green light, made up of:
 - sensor for detecting background noise
 - microprocessor logic for processing the noise
 - sound transducer for the emission of green light sound
2. Pedestrian crossing reservation device (PLS/03) has the following features:
 - Pushbutton for pedestrian reservation
 - Luminous sign of confirmation for pedestrian reservation
 - Pushbutton for blind pedestrian reservation
 - Acoustic signal of confirmation for blind pedestrian confirmation

Directional arrow indicating the direction and type of pedestrian crossing for blind people.

At each emission, the level of sound pressure automatically adapts to the background noise, overcoming it of 5 dB, never decreasing below 30 dBA.

Maximum value can be set through internal jumper according to the area of installation, as indicated by Law nr. 447 of 26/10/1995 and relevant Decree of Ministry Council of 14/11/1997.

- Housing in polycarbonate originally pulp colored, UV stabilized, self-extinguishing
- Protection Degree IP55 as defined by CEI 214-7 par. 6.1.
- Universal system for fastening on poles, through rotating fixing arm easy to install, also on existing supports for poles Ø 102 mm and on octagonal section poles. Power supply:
- Devices are powered directly from the traffic lights they are linked to; the emission circuit of the acoustic signal is powered through the power supply of green and amber lamps (CEI norm 214-7 par. 6.3) Safety features:
- No sound is emitted in case of installation flashing or switched down (norm CEI 214-7 par. 7.2).

Duration of the work

The service shall be completed within three weeks from the signing of the agreement.

Mode of payment:

The fee for the service will be made in three phases; the first phase of the payment will be 30% upon the signing of an agreement between ECDD and the service provider. The second 30% is upon the installation of the devices with the necessary messages and signals for use by persons with visual impairment. The third installment is 40% of the agreed amount upon the approval of the quality of the work by ECDD and Addis Abeba Traffic Management Agency.

The following are the requirements:

- A company which is legally registered under the Ethiopian business law,
- A company that has renewed its business license,
- A company which has a good reputation with similar work.

Technical proposal will be weighed out of 70% and the financial proposal will have 30% weight.

- Competent and qualified applicants can submit their technical and financial proposal along with the profile of the consultants to the ECDD office within two weeks from the date of the announcement of this ToR on ethiojobs.net via email at tenderecdd@ecdd-ethiopia.org.
- Please use the title of the assignment 'Audible Traffic Signals in Addis Ababa and Tactile Marks underneath' as the subject of the email.
- **Disclaimer:** *ECDD is a disability-based organization that is committed to safeguarding all Children and Adults with disabilities and without disabilities. ECDD has zero tolerance for incidents of violence or abuse against children or adults, including sexual exploitation or abuse, committed by employees, volunteers, consultants, or contractors working with us. ECDD expects everyone who works for it to share this commitment by understanding and working within the ECDD Children and Adults at Risk Safeguarding Policy and related legal framework.*