

# Model CB – Embedded References

## Typical Applications

Bridge decks and substructures, parking garages, docks and buildings

## Featuring

Long term reliability with thermodynamically stable saturated gelled Ag/AgCl element  
Cotton bag housing containing proprietary backfill compatible with concrete provides good electronic and mechanical bonding to the structure



## CB25 Standard Design

Design life - 25 yrs.; 1 yr. min. shelf life  
1 ½ in. (4 cm) dia. X 6 ½ in. (17 cm) long  
Shipping weight - 1 lb (½ kg)

## CB50 Extended Life Design

Design life - 50 yrs.; 1 yr. min. shelf life  
2 in. (5 cm) dia. X 7 ½ in. (20 cm) long  
Shipping weight – 1 ½ lb (¾ kg)

## CB15 Sub-size Design

Design life - 15 yrs.; 1 yr. min. shelf life  
2 in. (5 cm) dia. X 3 in. (20 cm) long  
Shipping weight – ½ lb (¼ kg)

## Model Designation

Specify as EDI Model CByy-AGG-zznnn  
yy = nominal design life  
zz = termination type

## Terminations

SWnnn - nnn ft. of #14 AWG HMW/PE  
2Wnnn - nnn ft. #22 AWG 2 conductor  
shielded cable plus a 3 ft. (1 m) length  
#14 AWG HMWPE for bonding to rebar

## Application Notes:

**Model CB** reference electrodes should be installed as close as possible to the rebar where measurements are to be taken. The single wire termination, **SW**, is intended for use where the lead wire goes into a conduit within a short distance of the reference location. The two wire shielded cable termination, **2W**, is intended for use where the lead wire is grouted into a saw slot or fully encased in the concrete. Shielded cable is recommended whenever there are concerns about interference effects on the reading. This can happen when the reference lead shares a conduit with a power lead or if the reference lead exceeds 10 ft (3m) in length. Refer to the installation instructions for additional information.

**electrochemical devices, inc.**

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*C Series  
Concrete  
Products*

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# Installation Instructions for Reference Electrodes Embedded in Concrete

These instructions apply to EDI Model CB-AGG, a reference electrode with a gelled silver/silver chloride (Ag/AgCl) element designed for use in reinforced concrete. Be sure to follow the correct procedures. Failure to do so can significantly shorten the life of the reference electrode.

## Installation in New Structures

Remove electrode from its protective packaging. Use plastic coated wire ties to secure reference electrode to the center of a rebar net square. This should be done not more than four hours before the concrete will be poured.

## Installation in Existing Structures

Excavate hole to required depth for proper location. Recommended minimum dimensions for the hole are 2 ½" x 2 ½" x 8" (6 cm x 6 cm x 20 cm). A layer of the original concrete should remain between the reference electrode and the rebar. Lead wires can be embedded in saw slits. The preferred location for the reference is at the center of a rebar square at the same depth as the outer rebars. Remove electrode from its protective packaging and place it in the hole. Fill the hole with portland cement patching grout.

**Caution: Do not use patching grouts containing polymer additives.**

**Two Wire Termination** - The Model CB electrode with a two-wire termination (code **2W**) has a lead wire, length as specified, and a 3 foot (1 meter) structure wire. The **lead wire** is a shielded 2-conductor #22 AWG cable. One of the two wires in this cable is designated as "**element**" and is the one connected to the sensing element in the reference electrode. The other wire is designated as "**structure**"; this wire has been shunted within the electrode housing to the structure wire. The shield should be connected to an earth ground at the test station. The #14 HMWPE **structure wire** is to be attached to a rebar by brazing or cad-welding a minimum of 18 inches (1/2 meter) away from the intended location of the reference. This joint should be coated with a suitable dielectric coating. If the structure wire has the optional steel rod termination, the rod can be arc welded to a rebar and no dielectric coating is necessary.

**Single Wire Termination** - The Model CB electrode with a single wire termination (code **SW**) has a single #14HMWPE lead wire, length as specified. This wire should not share a conduit with power leads. For elevated structures, this wire should be encased in a metal conduit. These precautions will minimize errors in potential readings due to interference.

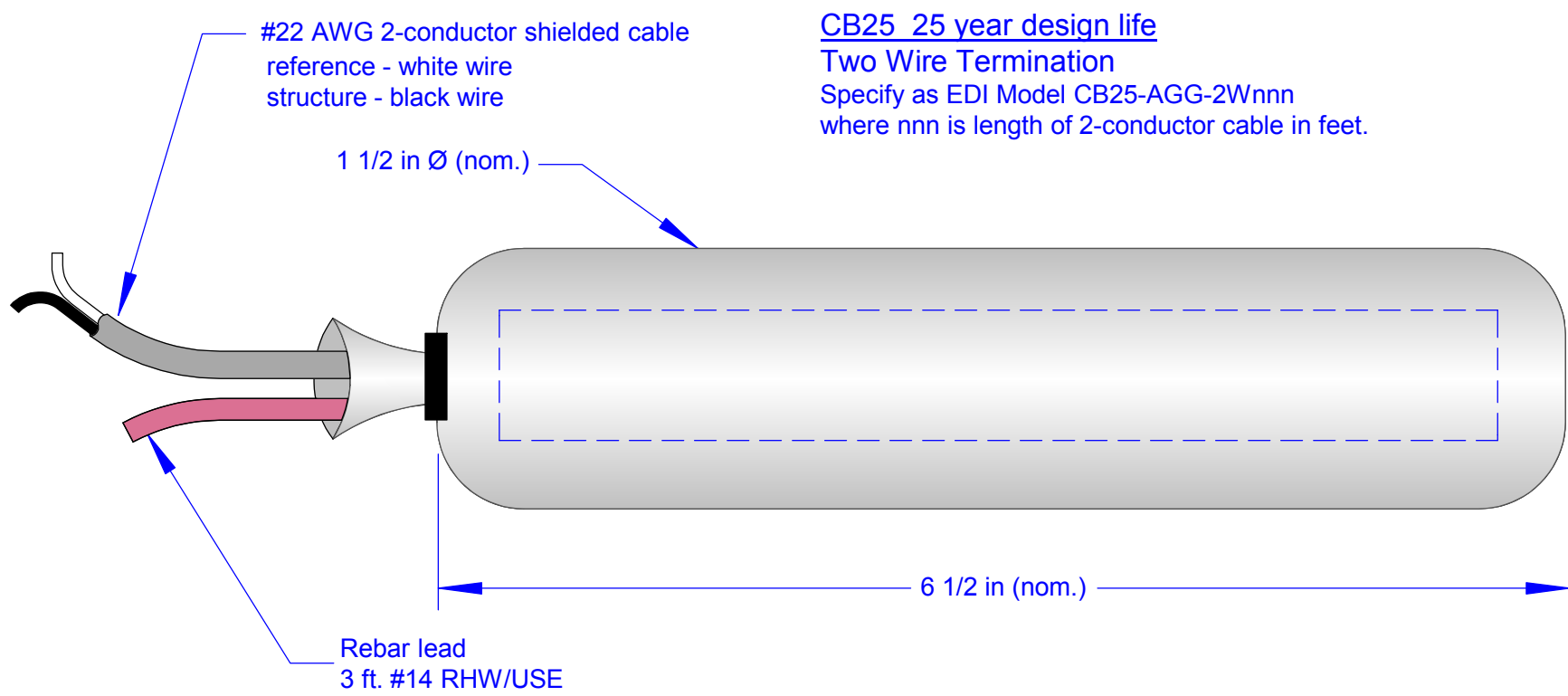


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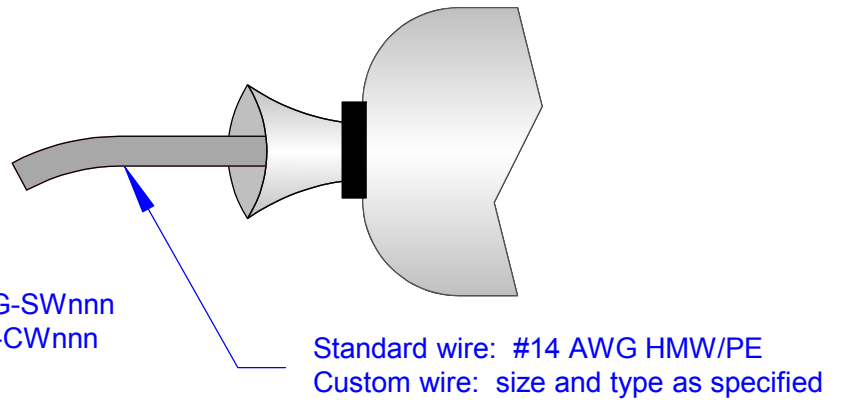
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CB25 25 year design life  
Two Wire Termination  
 Specify as EDI Model CB25-AGG-2Wnnn  
 where nnn is length of 2-conductor cable in feet.

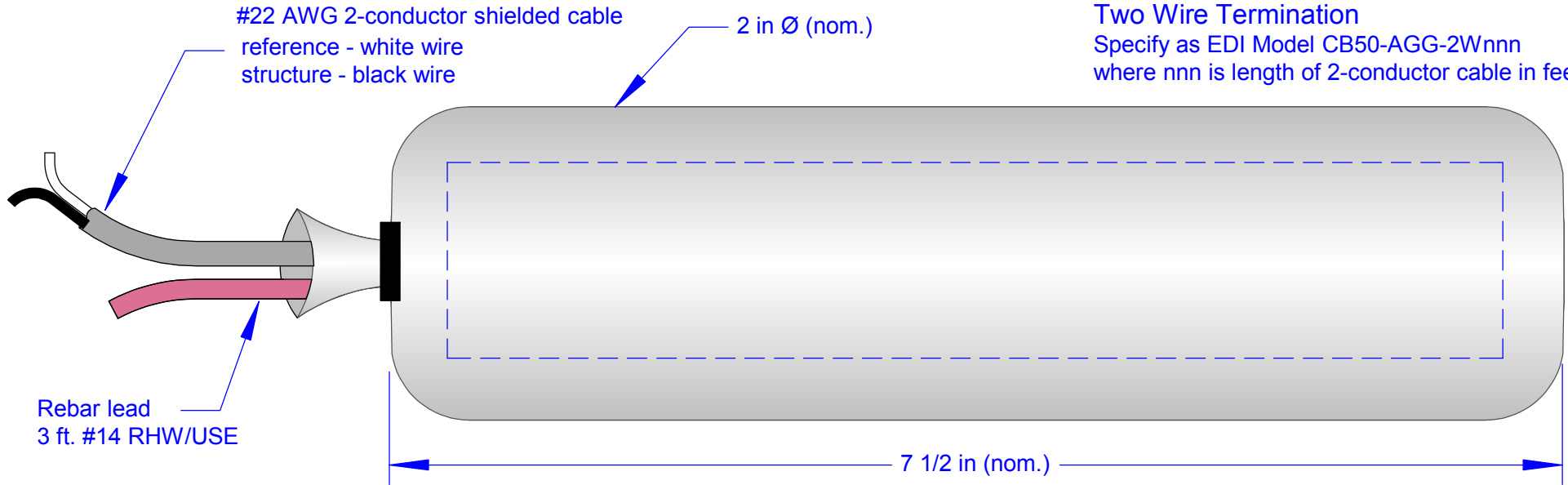
Single Wire Terminations  
 Standard: Specify as EDI Model CB25-AGG-SWnnn  
 Custom: Specify as EDI Model CB25-AGG-CWnnn  
 where nnn is length of lead wire in feet.



CB50 50 year design life

Two Wire Termination

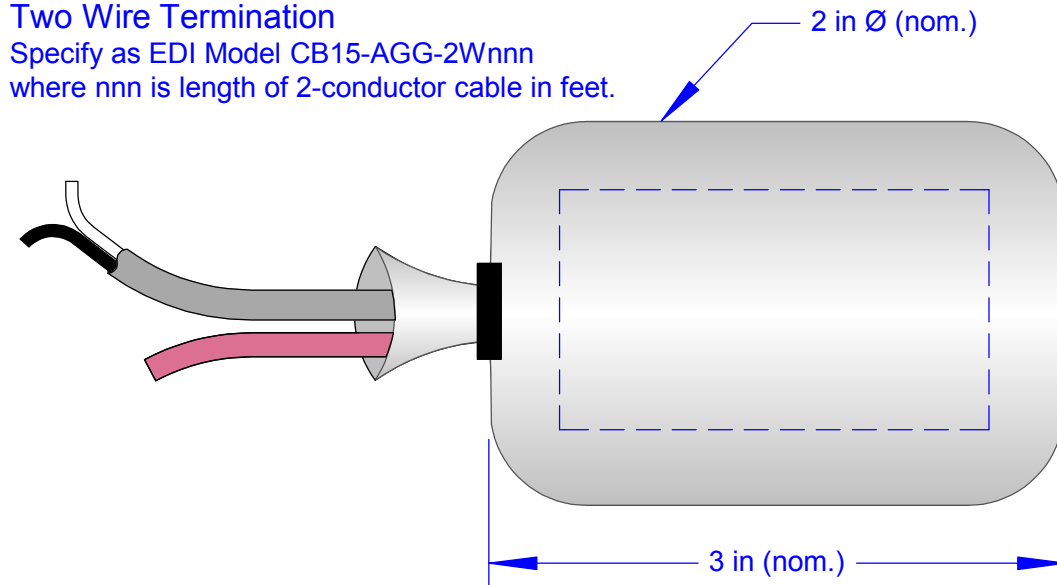
Specify as EDI Model CB50-AGG-2Wnnn  
where nnn is length of 2-conductor cable in feet.



CB15 15 year design life

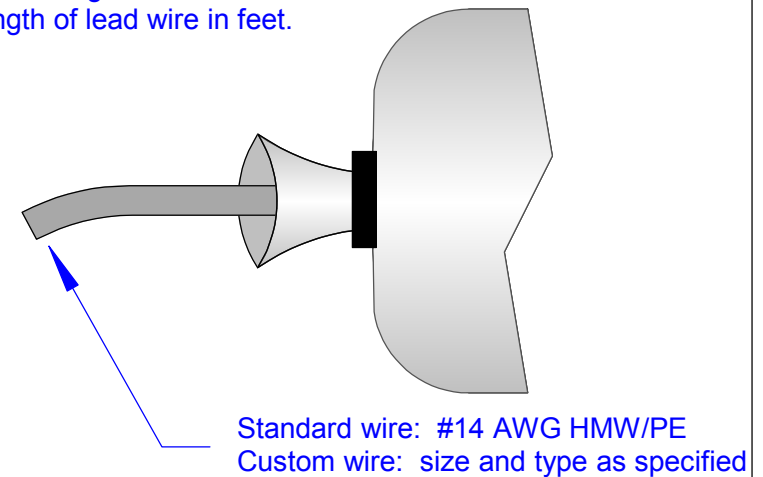
Two Wire Termination

Specify as EDI Model CB15-AGG-2Wnnn  
where nnn is length of 2-conductor cable in feet.



Single Wire Terminations

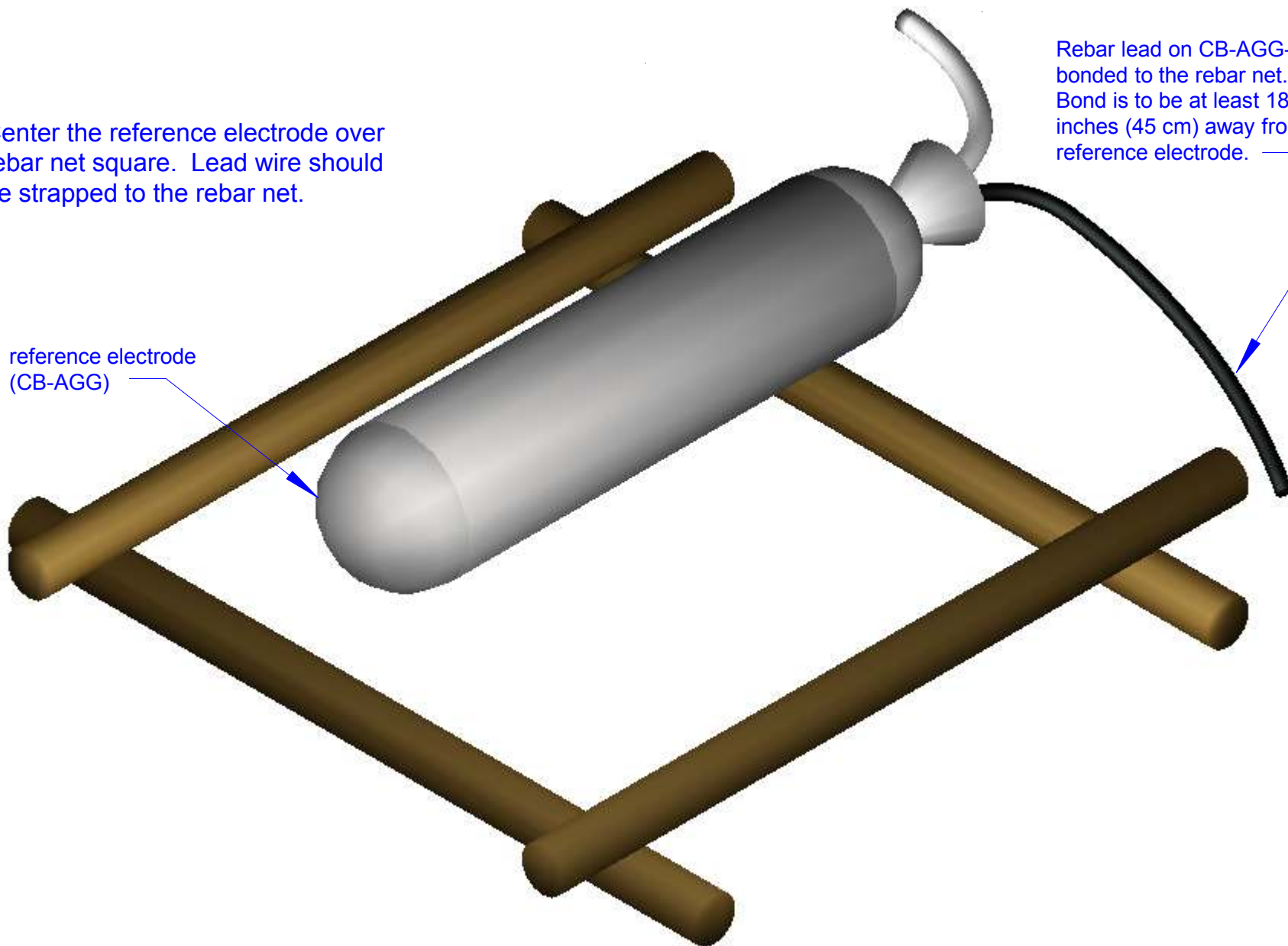
Standard: Specify as EDI Model CBxx-AGG-SWnnn  
Custom: Specify as EDI Model CBxx-AGG-CWnnn  
where xx is design life code, 15 or 50, and  
nnn is length of lead wire in feet.



Center the reference electrode over rebar net square. Lead wire should be strapped to the rebar net.

Rebar lead on CB-AGG-2W is bonded to the rebar net. Bond is to be at least 18 inches (45 cm) away from reference electrode.

reference electrode  
(CB-AGG)



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## Reference Electrode Installation

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SCALE NONE

DRAWN BY FJA

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