# V1.0.04 Geofence Function User Manual

# introduction

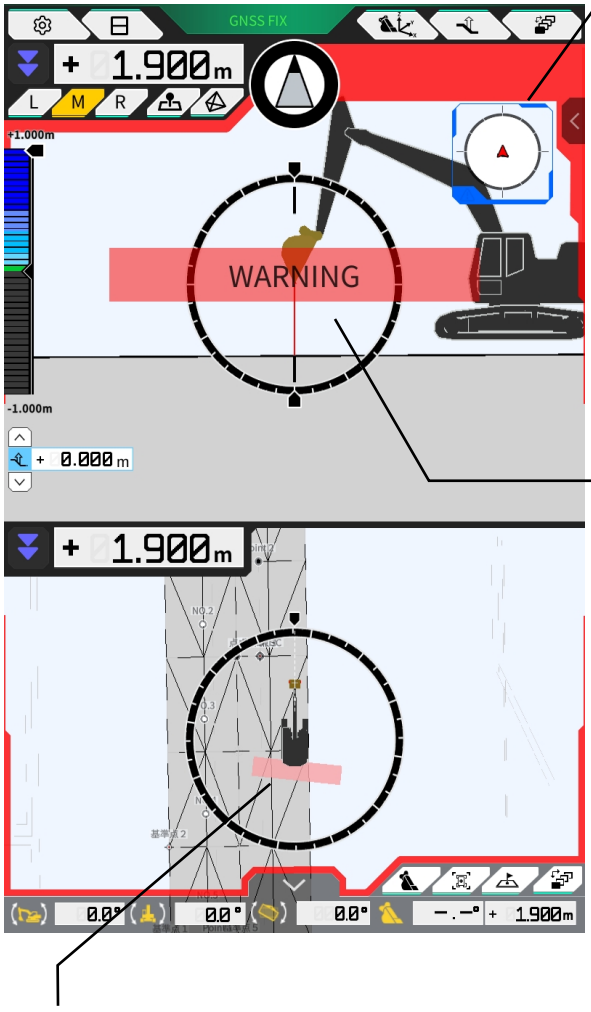
Geofence function places 3D obstacles on the design surface and alerts the user if a construction machine approaches or comes into contact with them.
This function can be used to avoid contact hazards such as buildings and piping.
（A collection of use cases will be provided in a separate document.）

**Important**
The geofence contact detection/alert notification function may not function properly depending on the environment and conditions in which it is used. Do not overconfidently use the function and make sure you understand the function and conditions of use.

※Geofence is not available for 2 Piece Boom and Swing Boom at this moment

# How to see the screen

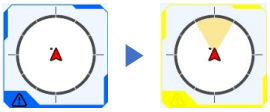
This section explains how to view the geofences displayed on the guidance screen and related alert displays.




■Rader

・The display indicates the presence of a geofence in the detection area.

・The color changes to yellow when a geofence exists within the collision detection angle.



■Alert

・When a construction machine contacts a geofence, the following pattern of screen display or audio notification is given, depending on the alert type.

・Notice ⋯ Sound only

・Attention ⋯ Yellow flashing + Sound

・Caution ⋯ Yellow flashing + Text + Sound

・Warning ⋯ Red flashing + Text + Sound

・Danger ⋯ Red flashing + Text + Sound

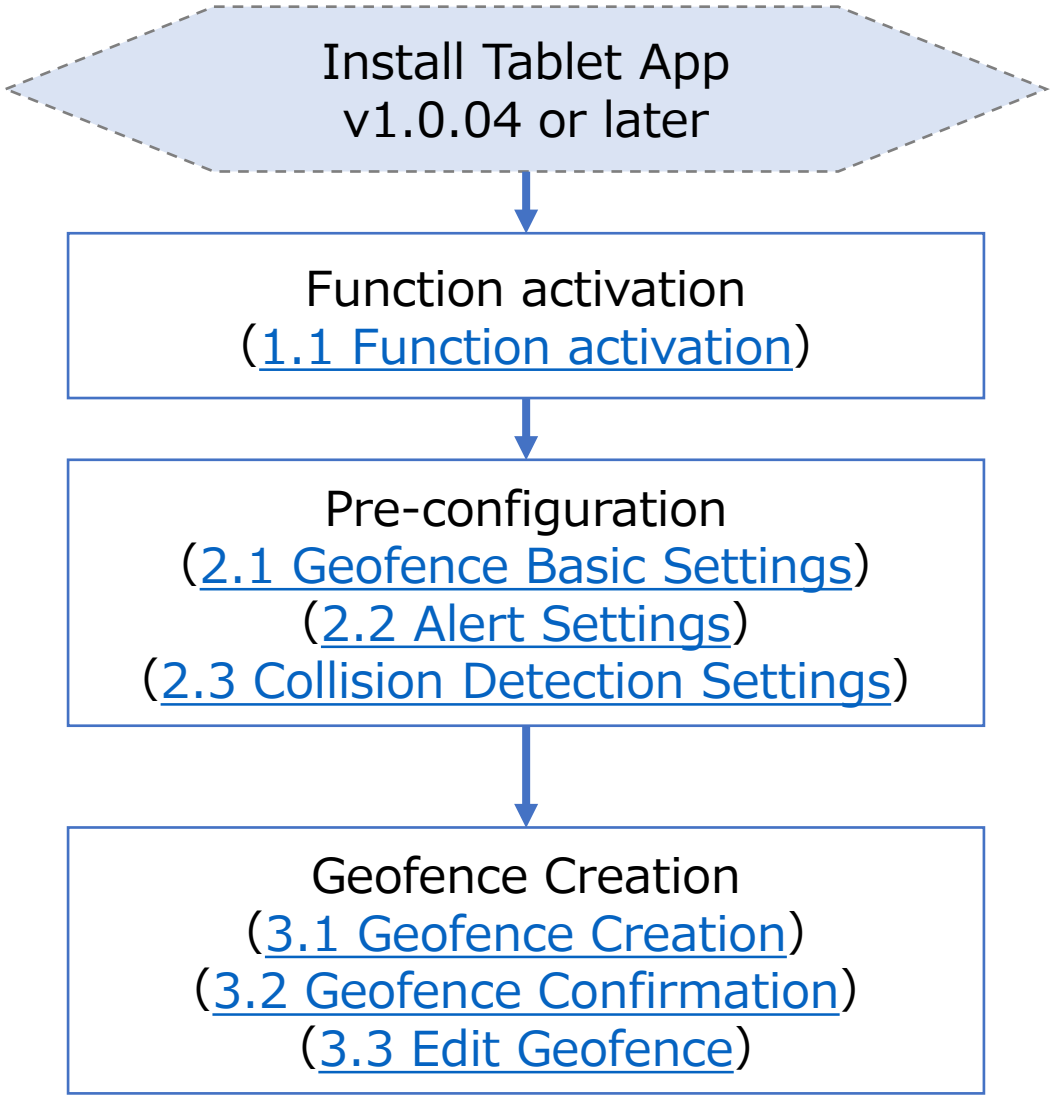
■Geofence

・Geofences are available in three types. (Wall, Circle and Line)

・ When a construction machine makes contact with a geofence, the geofence in question is highlighted.

# Workflow

You can use the geofence function in the following flow



# 01

Chapter

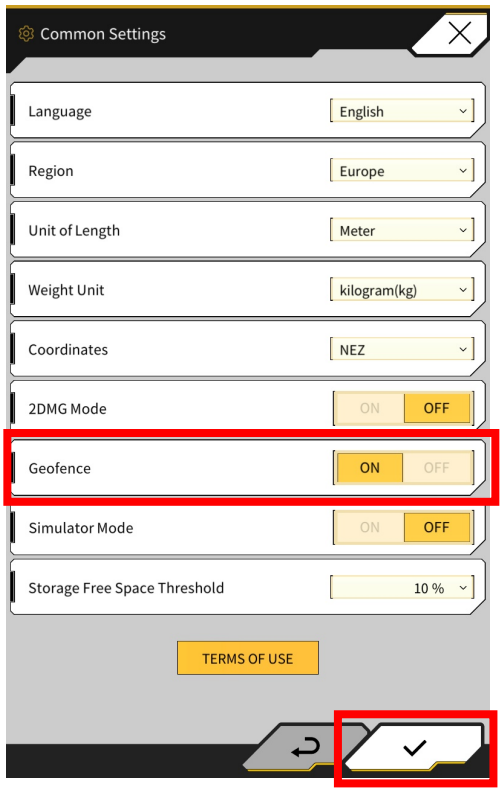
# Function activation

# 1.1 Function activation

【Attention】
The geofence function is available with the tablet app v1.0.04 or later; it cannot be used in conjunction with the 2DMG mode or the simulator mode.

Geofence can be activated in the common settings.

1. Launching the tablet app
2. Tap ⚙
3. Turn ON “Geofence”
4. Tap ✓ (save settings)

# 02

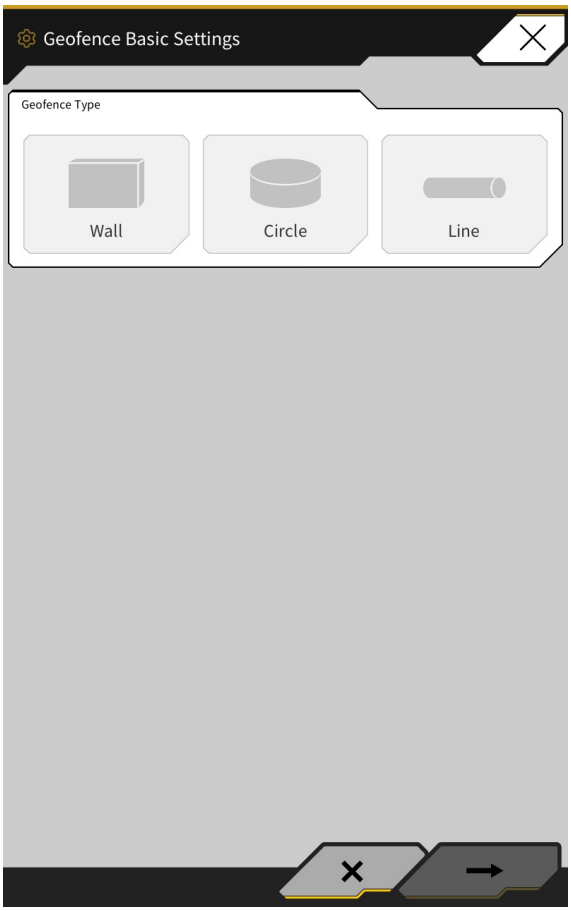
Chapter

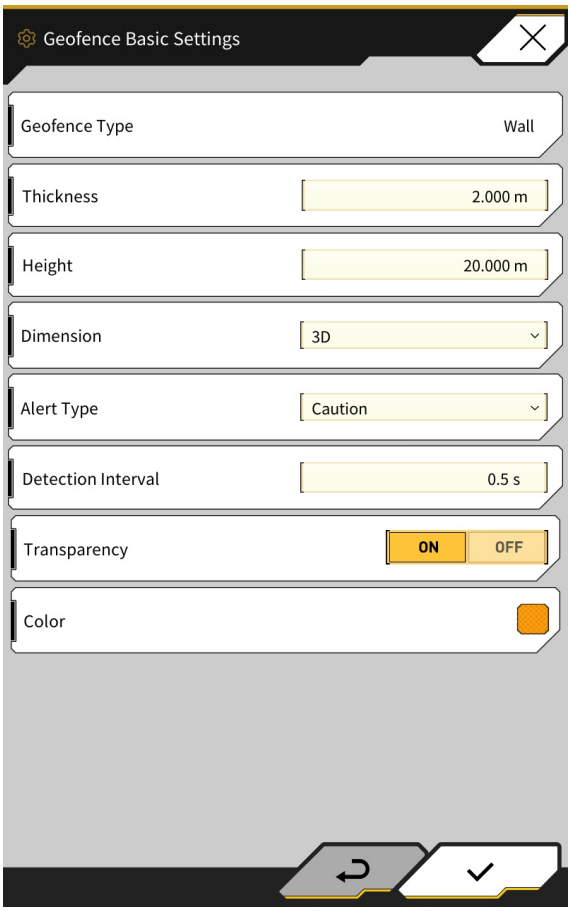
# Pre-configuration

# 2.1 Geofence Basic Settings

Each of the three types (Wall, Circle, and Line) can be set and will be reflected in the default parameters for geofence creation(Each parameter can be changed at the time of creation).

1. Launch Machine Guidance Screen
2. ⚙Menu
3. Geofence Settings
4. Geofence Basic Settings

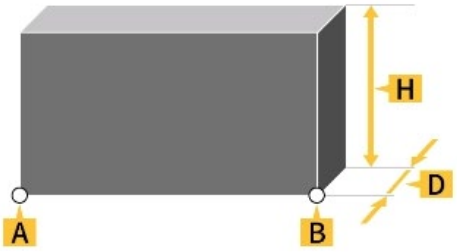


# 2.1 Geofence Basic Settings

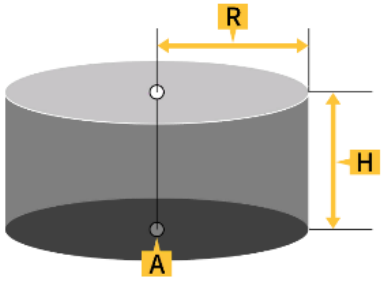
EARTHBRAIN

## ■Wall




・Used for buildings, fences, etc.
・3D object created by two points A and B, depth D, and height H.
・Alert type is "Construction equipment contact (3D)" only.

## ■Circle




・Used for reference points, danger areas, etc.
・3D or 2D object created by point A, radius R, and height H.
・Alert type: “Construction equipment in contact (3D)” or “Construction equipment entering/exiting geofence (2D).

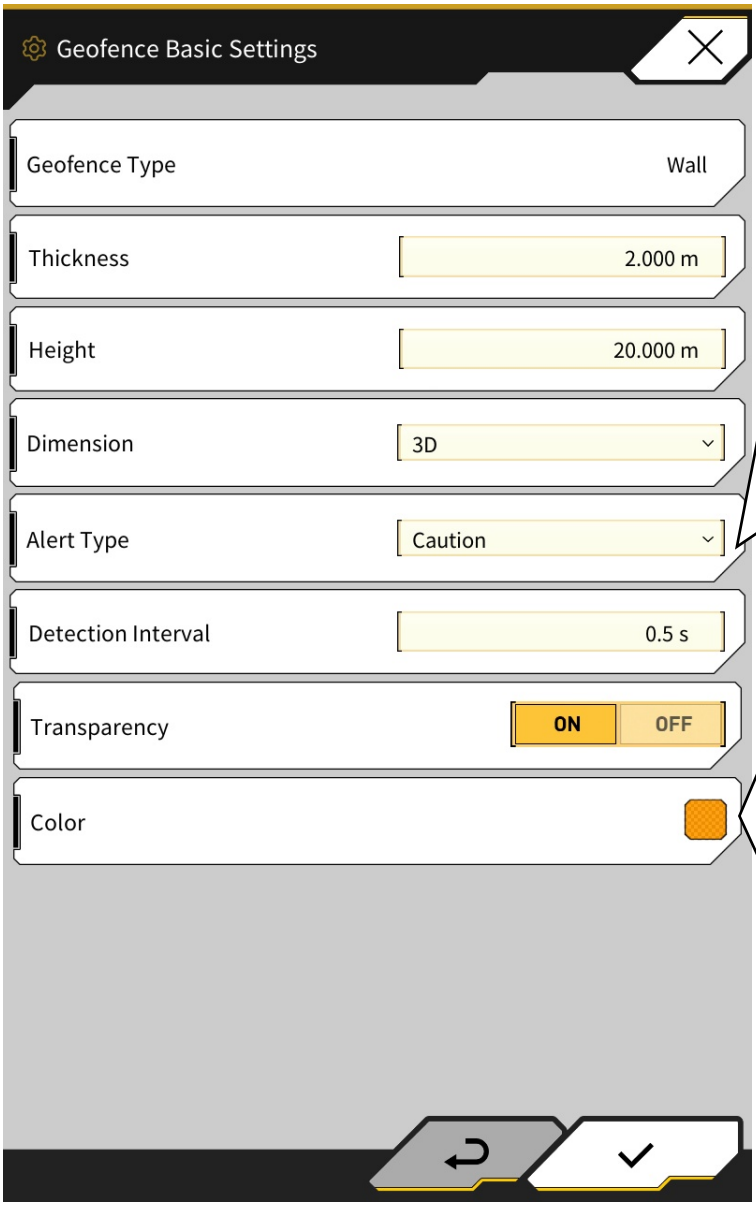
## ■Line

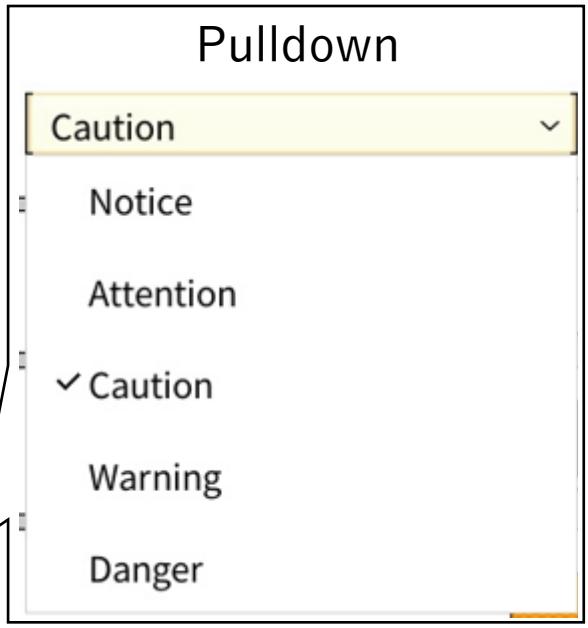

・Used for waterways, power lines, etc.
・3D object created by two points A and B and a radius of R.
・Alert type is "Construction equipment contact (3D)" only.

# 2.1.1 Wall Type Settings

The following items can be configured.

- Thickness
- Height
- Alert Type （5 types）
- Detection Interval
- Transparency　ON/OFF
- Color

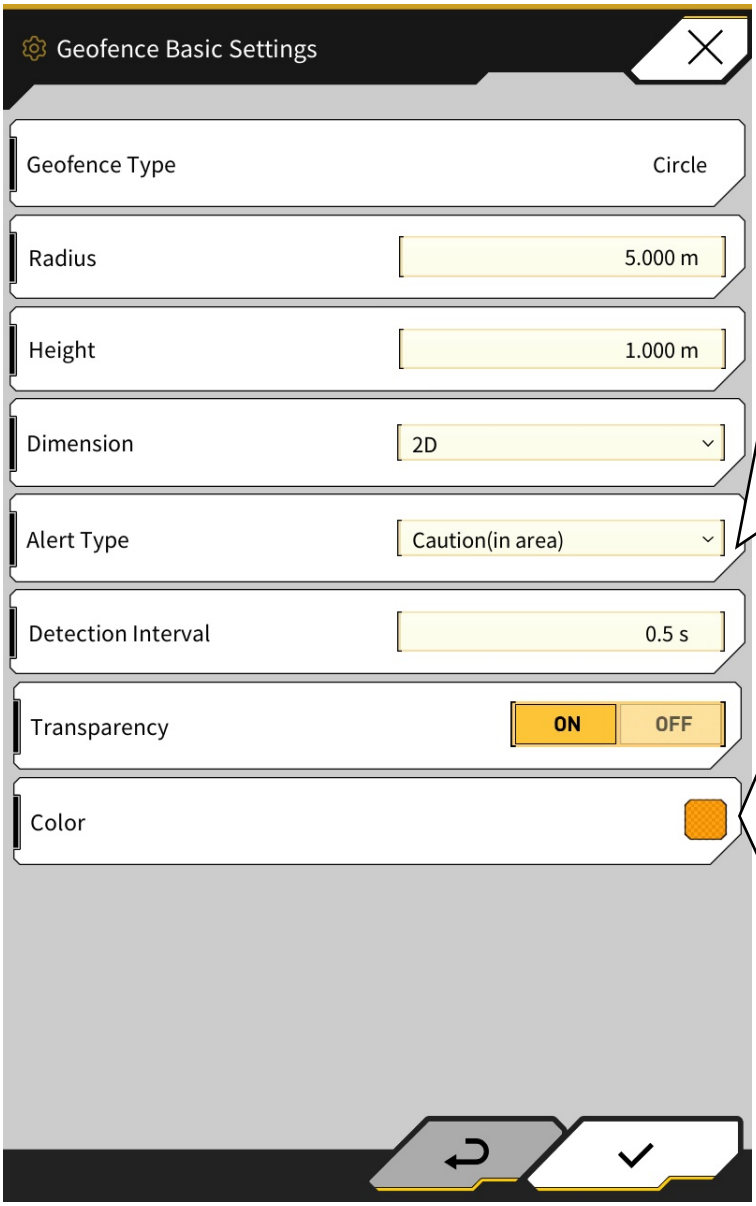


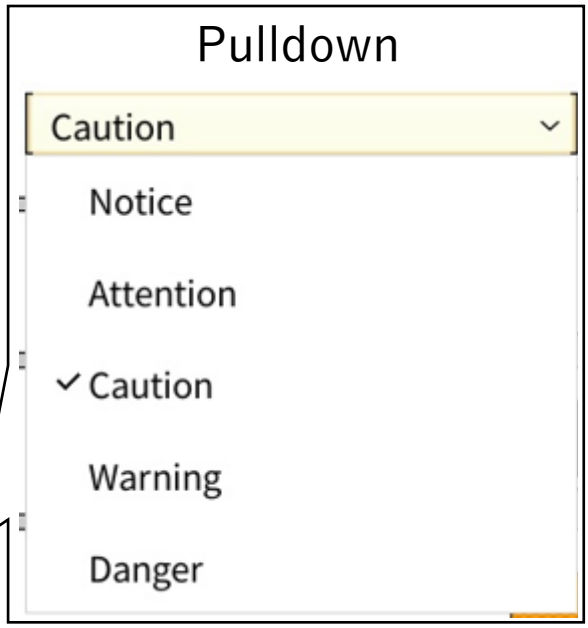




# 2.1.2 Circle Type Settings

The following items can be configured.

- Radius
- Height
- 2D/3D
- Alert Type（2D：10 types　3D：5 types）
- Detection Interval
- Transparency　ON/OFF
- Color

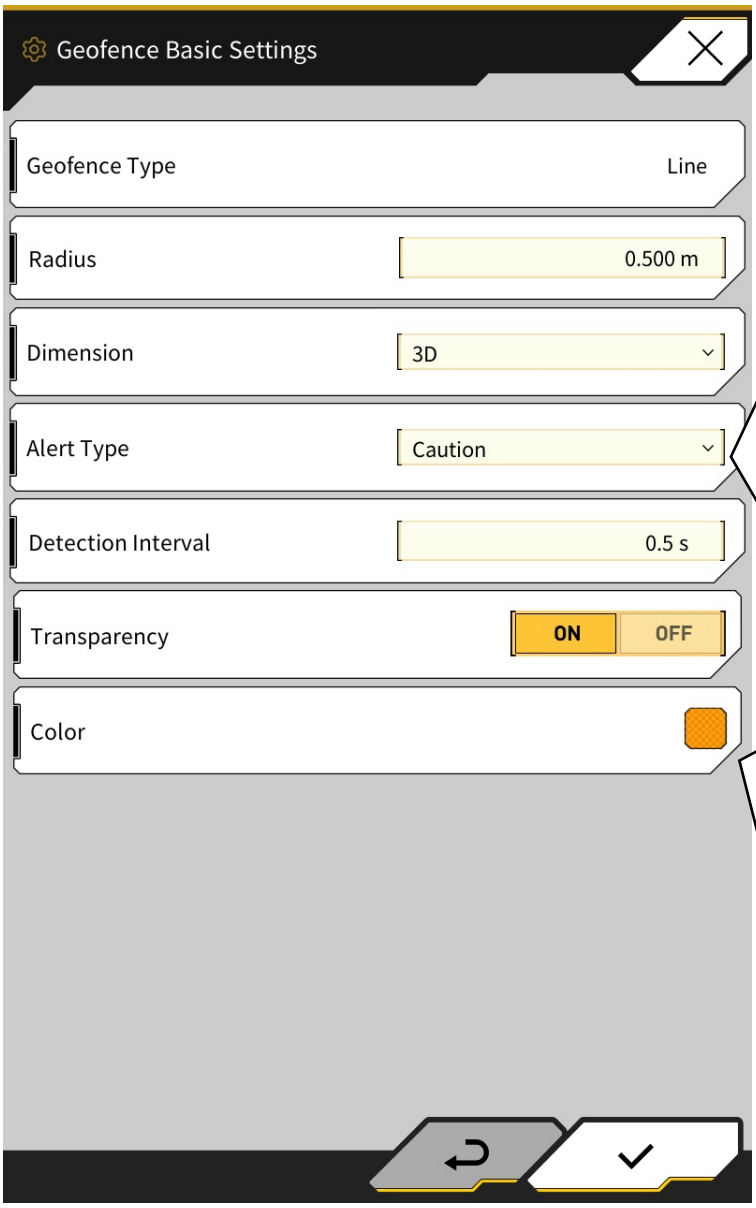


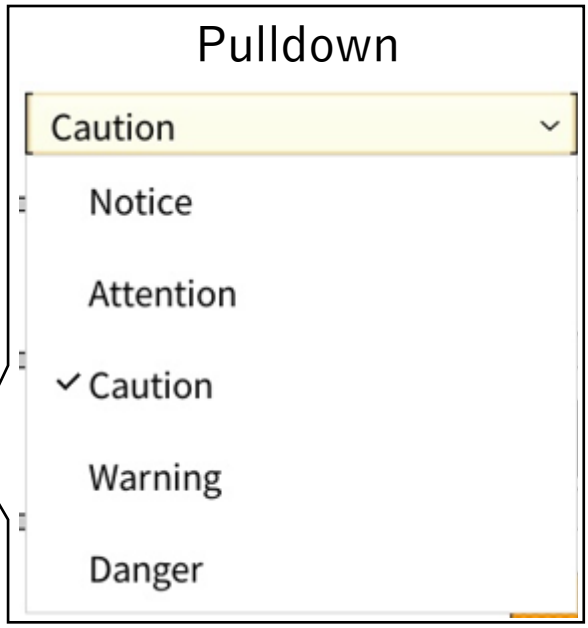




# 2.1.3 Line Type Settings

The following items can be configured.

- Radius
- Alert Type （5 types）
- Detection Interval
- Transparency ON/OFF
- Color

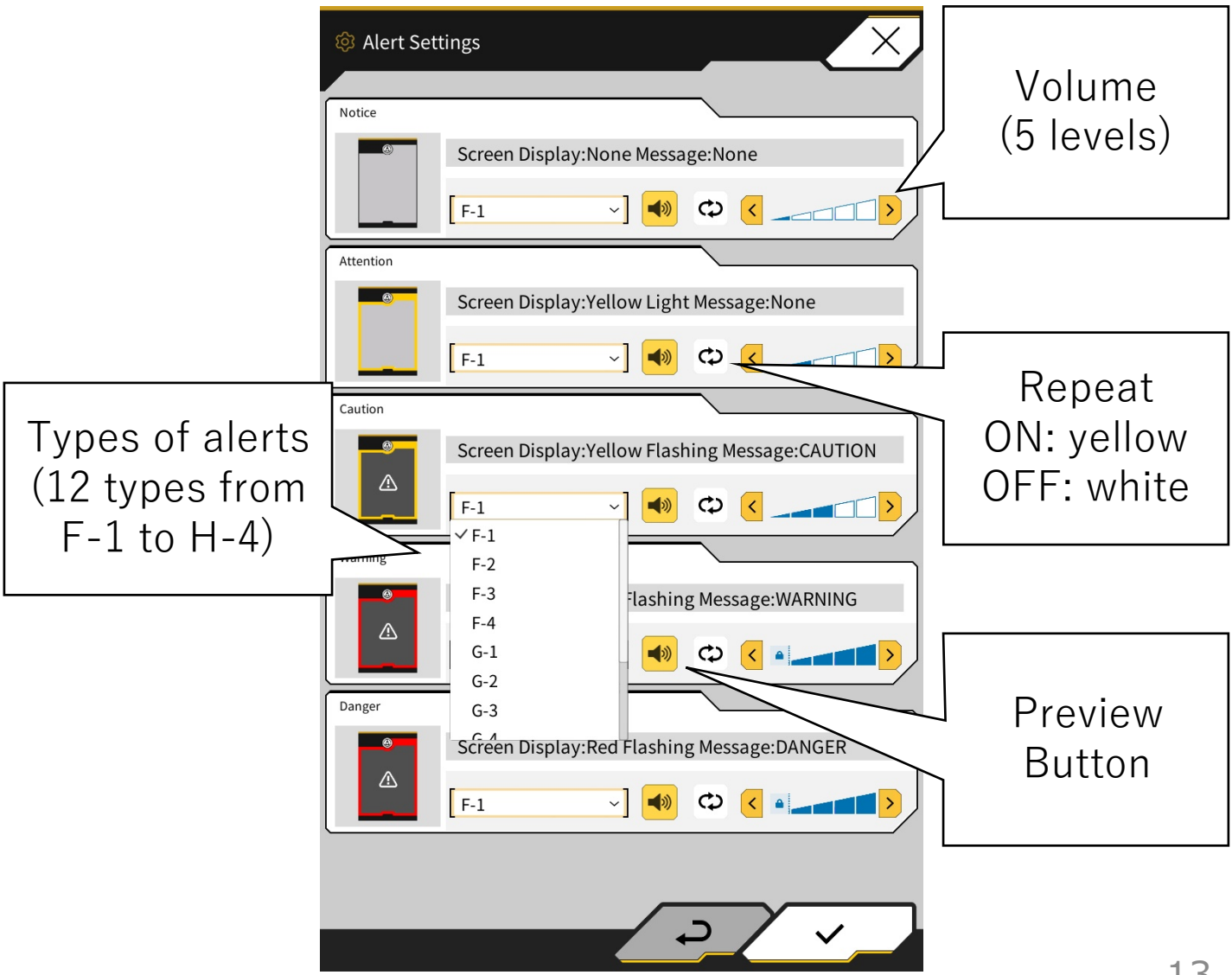



# 2.2 Alert Settings

For each of the five types of alerts set for geofences, you can set the type of alert, volume, and whether or not it repeats.

1. Launch Machine Guidance Screen
2. ⚙Menu
3. Geofence Settings
4. Alert Settings

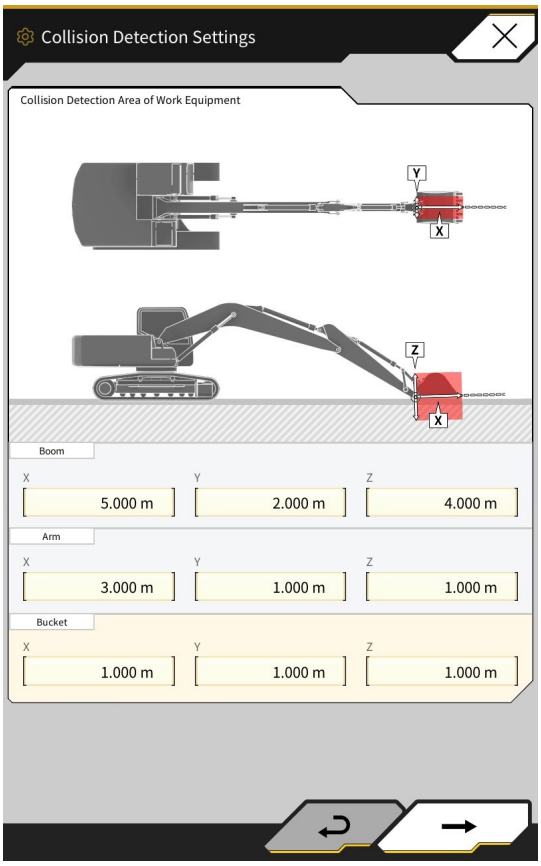


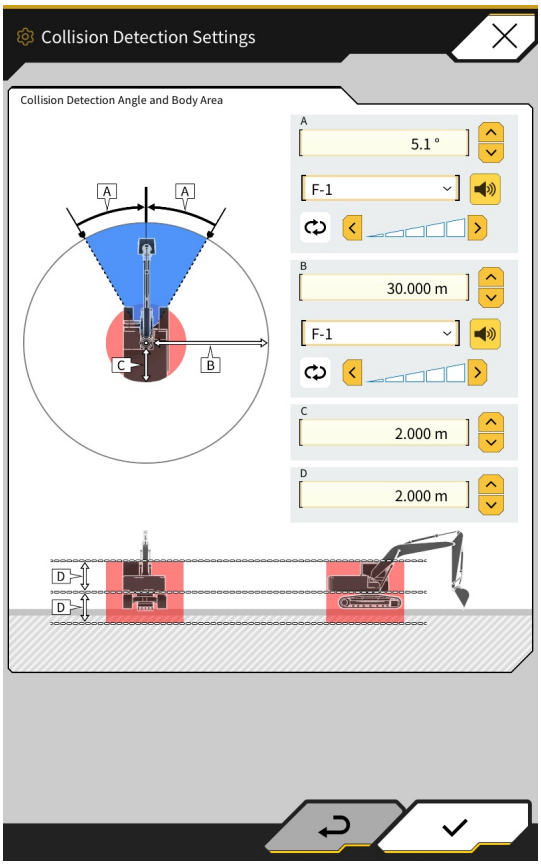
# 2.3 Collision Detection Settings

The collision detection settings are used to detect proximity and contact with geofences. The following two settings can be changed in the collision detection settings. Depending on the conditions of use and other factors, you can set a larger value for detection with more leeway.

1. Collision Detection Area of Work Equipment

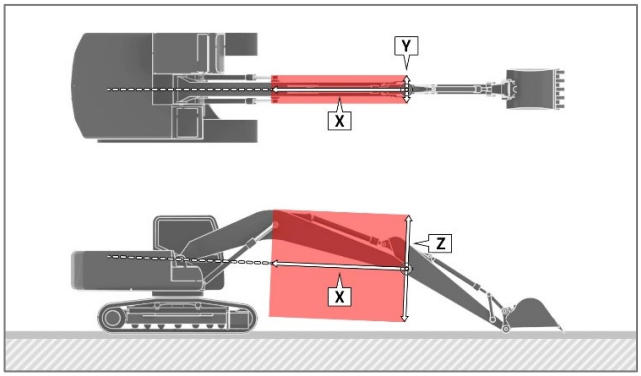
2. Collision Detection Angle and Body Area



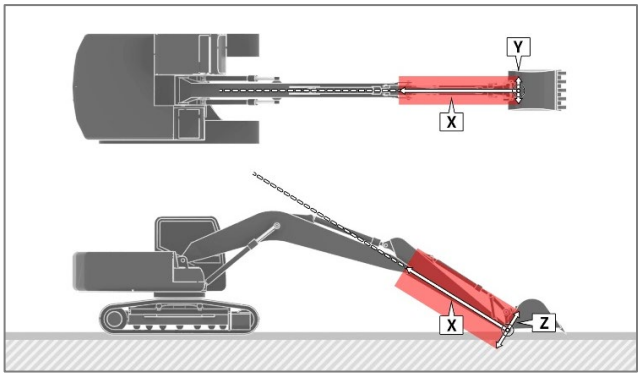



# 2.3.1 Collision Detection Area of Work Equipment

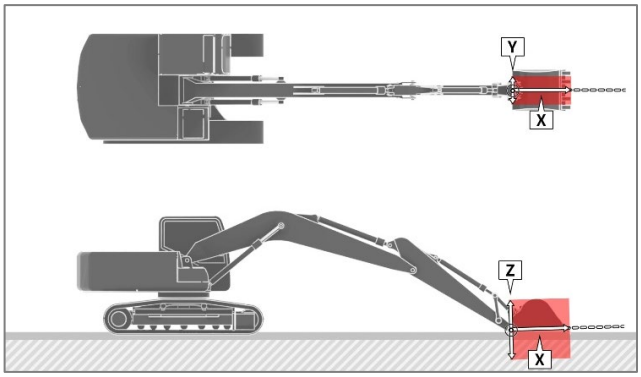
Set the area that will be alerted when the work equipment contacts the geofence. Measure and enter XYZ values for the boom, arm, and bucket, respectively.




1. Enter the values for the shape of the boom. In particular, the Z value must be entered in consideration of the geometry.




2. Enter the values for the shape of the arm.

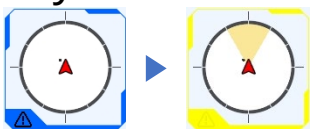



3. Enter the values for the shape of the bucket.

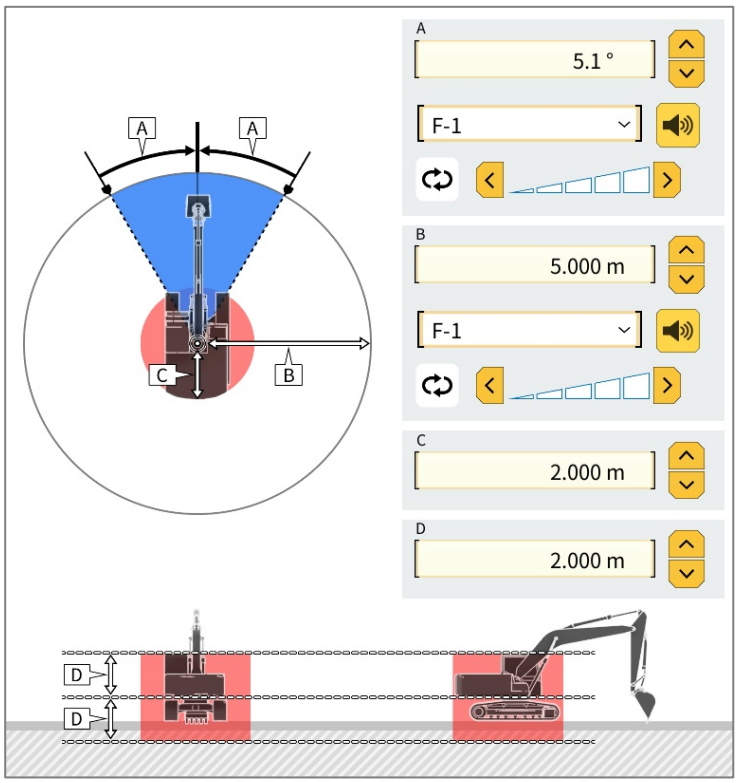
# 2.3.2 Collision Detection Angle and Body Area

Sets the area to detect when a construction machine is approaching a geofence, the area to notify when there is a risk of contact with a geofence when turning, and the area to be alerted when the vehicle body contacts a geofence.

A. You can set the angle of contact with the geofence when turning. If there is a geofence within the detection area, the radar will change to yellow in the guidance screen.



B. You can set the radius within which geofences are detected. If there is a geofence within the radius, the radar will be displayed on the guidance screen.

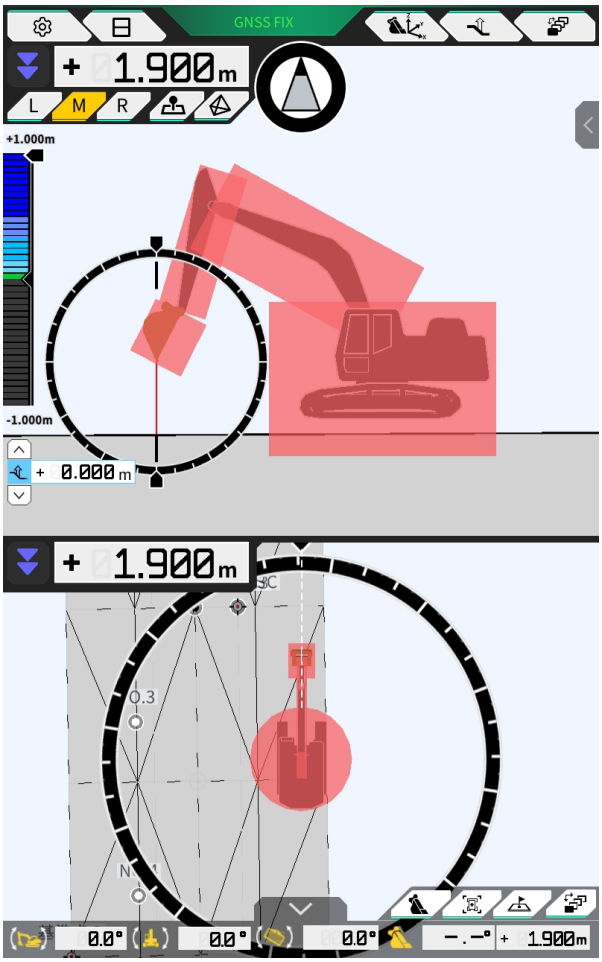



C. The contact radius of the vehicle can be set.
D. The contact height of the vehicle can be set.

# 2.3.3 Check Detection Area

To check the detection area set in 2.3.1 and 2.3.2 on the guidance screen, turn on the "Detection Area Display Mode" according to the following procedure.

1. Tap Menu (⚙) on the Guidance screen
2. Tap Guidance Settings
3. Tap Application Settings
4. Turn on "Detection Area Display Mode" for Geofence
5. Tap the ✓ in the lower right corner to save settings




※The size, shape, etc. of the displayed car body differs from the actual car body. Be sure to make settings based on actual measurements.

Also, once the detection area has been confirmed, “Detection Area Display Mode” should basically be set to OFF.

# 03

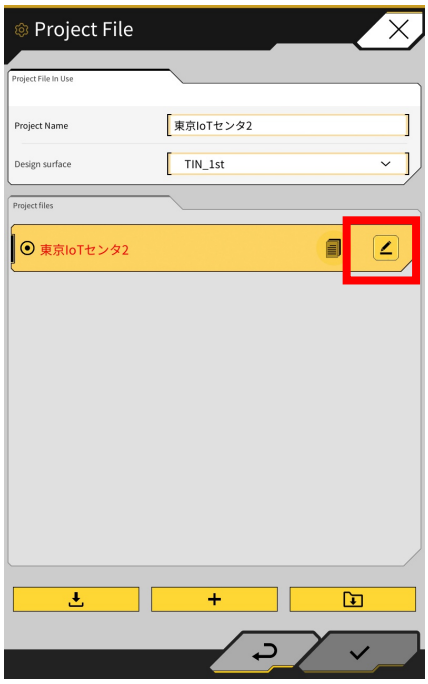
Chapter

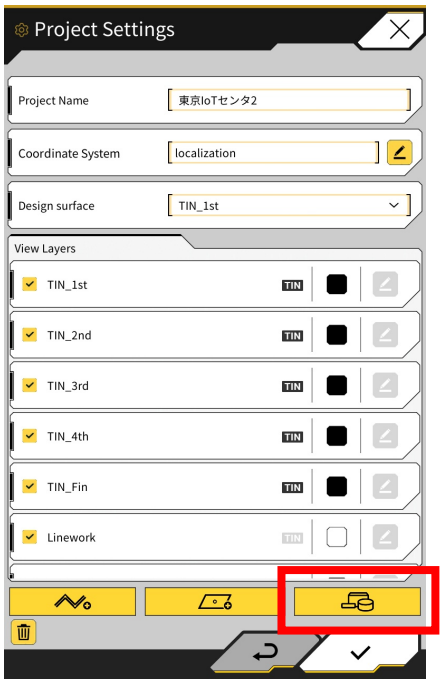
# Geofence Creation

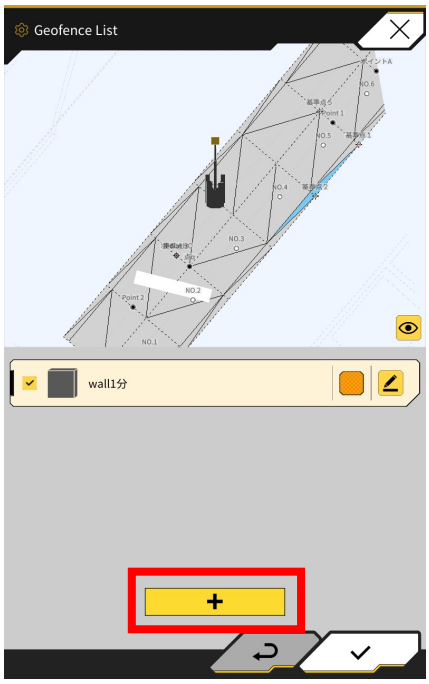
# 3.1 Geofence Creation

Create a geofence and place it on the design data.

1. Machine Guidance Menu > Project File
2. Tap  on Project File
3. Tap 
4. Tap  on Geofence List screen
5. Go to the Create New Geofence screen

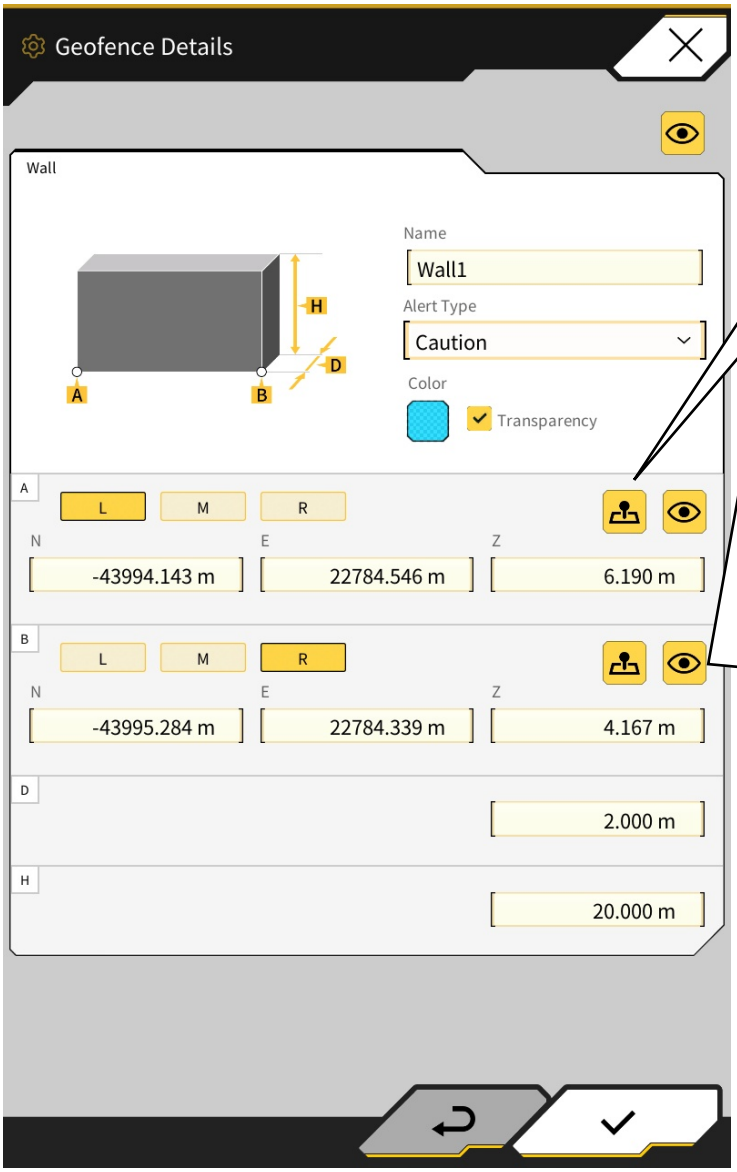


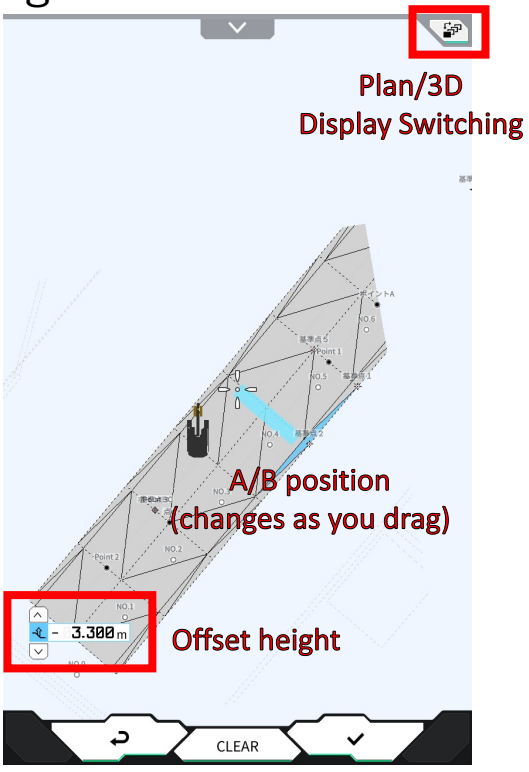
# 3.1.1 Wall Type Creation

1. Create New Geofence Screen Select Wall and press ✓
2. Enter Name
3. Set each parameter and press ✓ to save

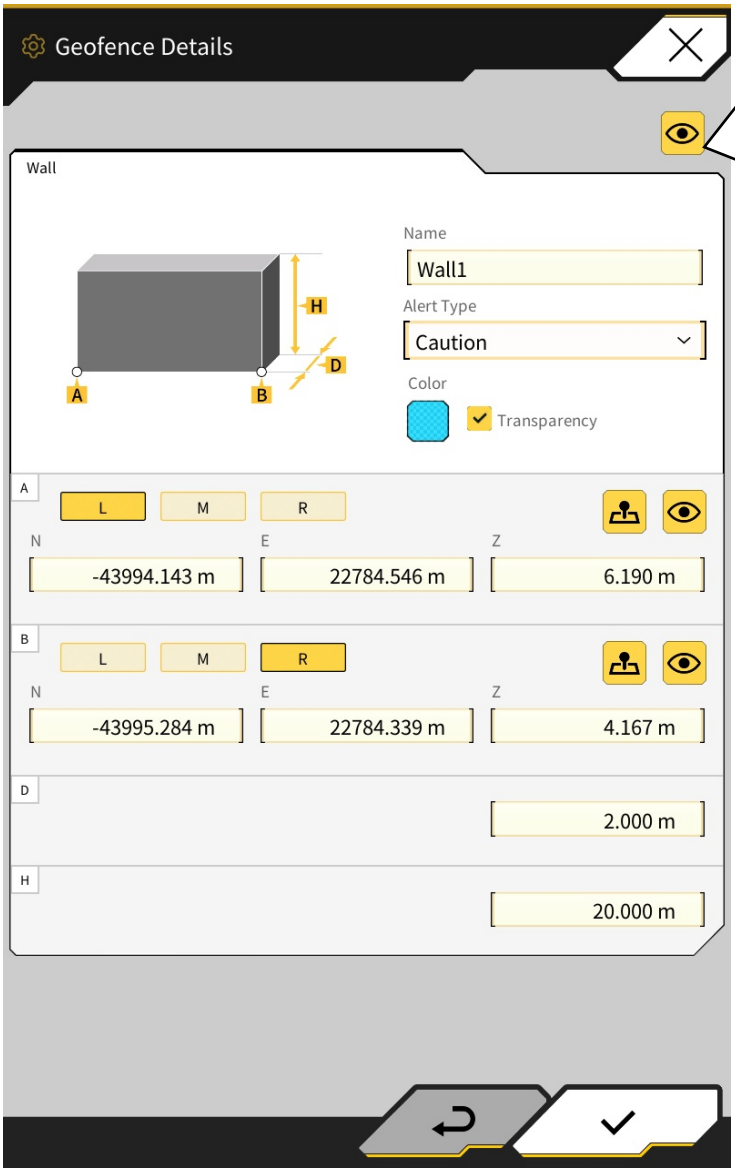



Select L M R and tap to enter the cutting edge coordinates.

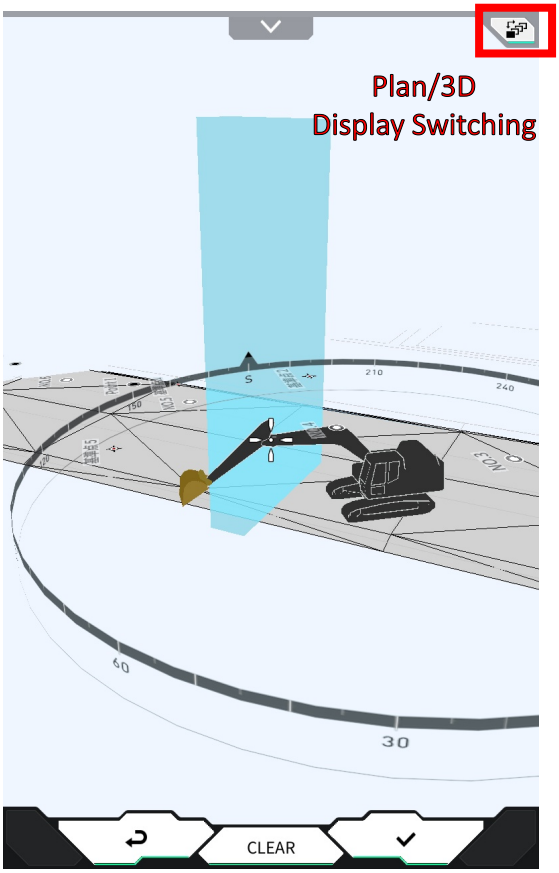
Tap after entering the coordinates of A and B to adjust the points on the design surface.



# 3.1.1 Wall Type Creation

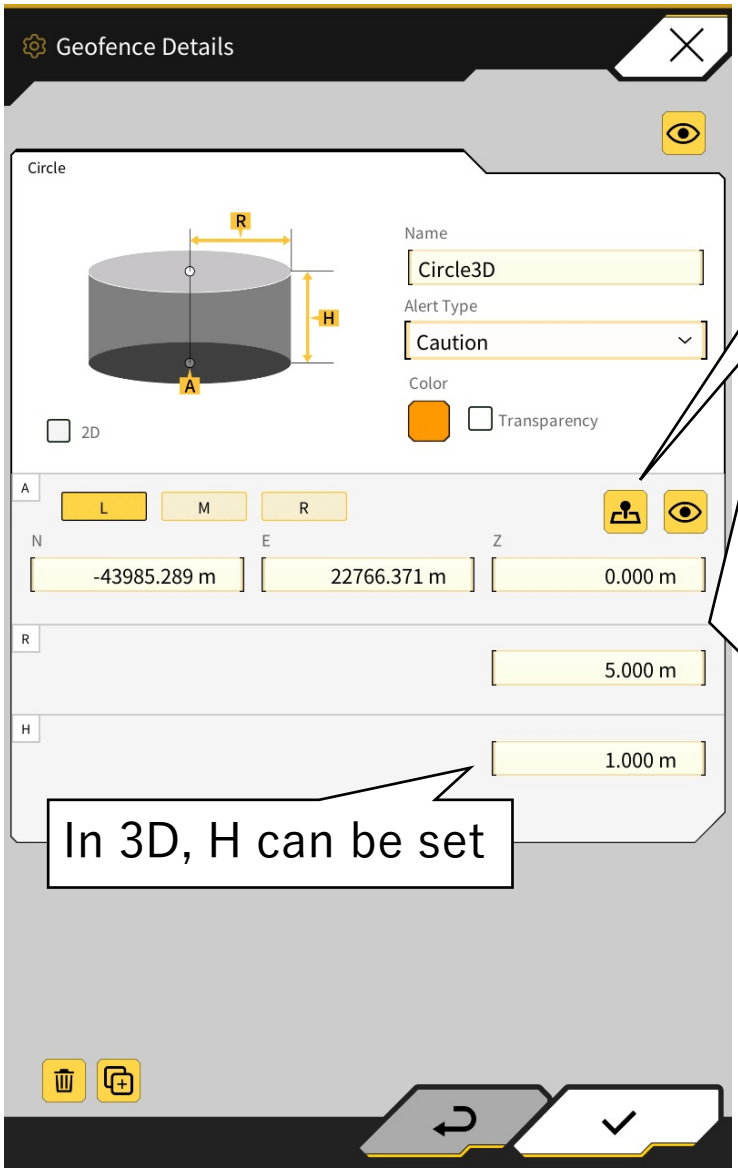



Tap 👁 after entering each values to check the geofence on the design surface.



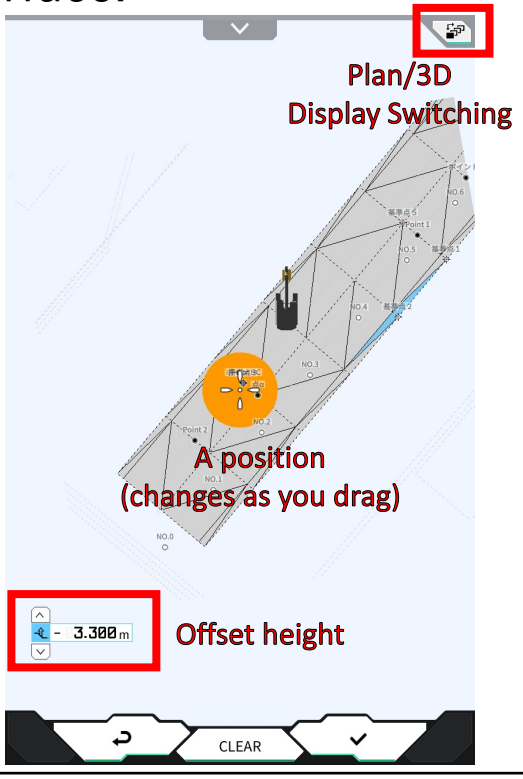
# 3.1.2 Circle Type Creation

1. Create New Geofence Screen Select Circle and press ✓
2. Enter Name
3. Set each parameter and press ✓ to save



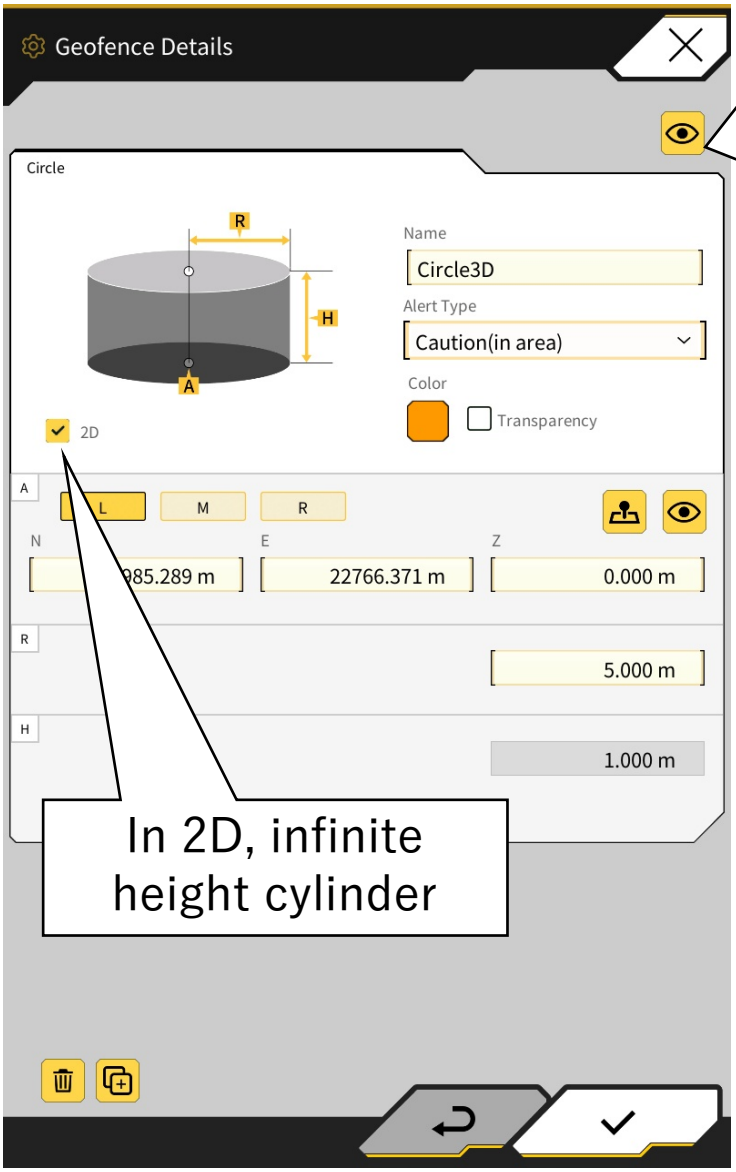

Select L M R and tap to enter the cutting edge coordinates.

Tap after entering the coordinates of A to adjust the points on the design surface.

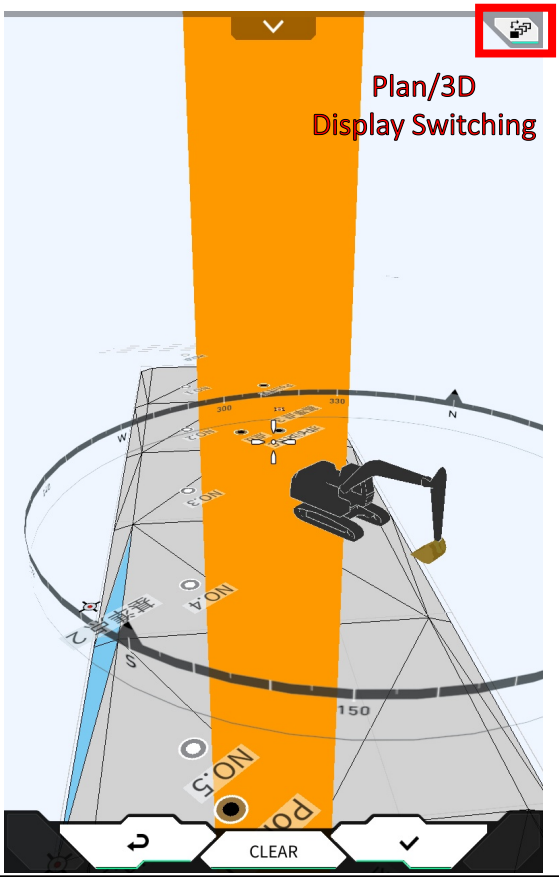


# 3.1.2 Circle Type Creation

If 2D is ticked, the height H cannot be entered and the alert type can be selected "construction equipment in contact(in area)" or "construction equipment out of area from within geofence(out of area)".

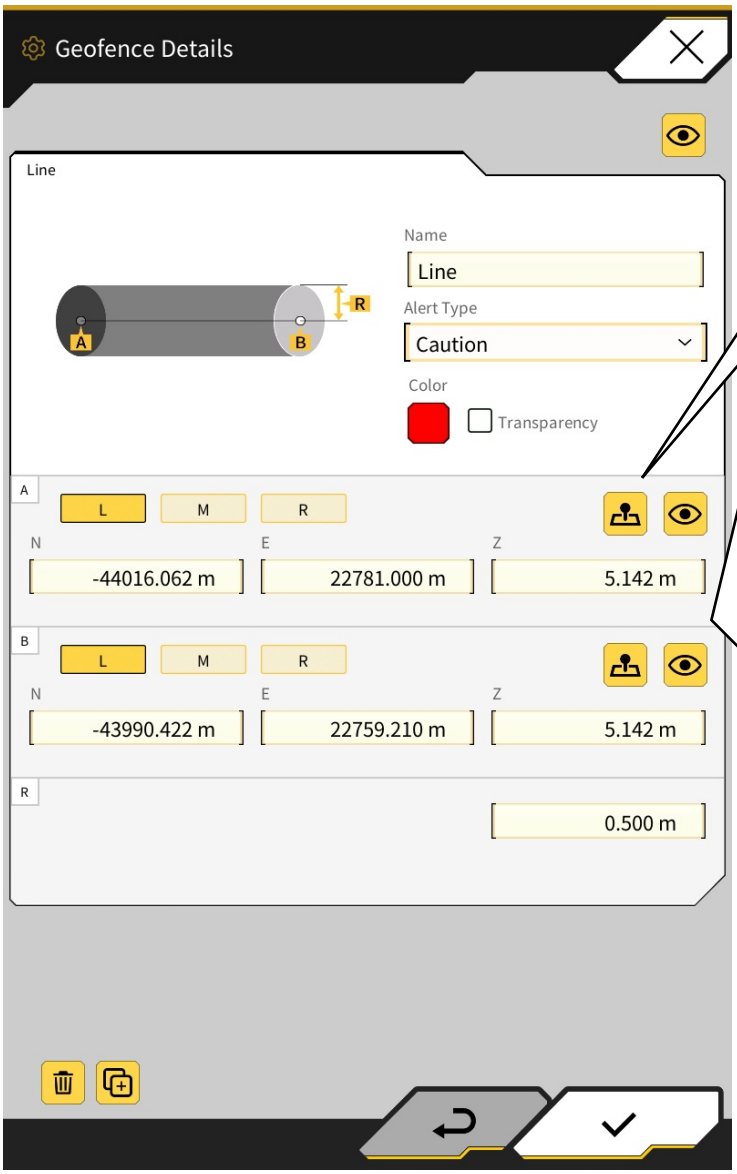



Tap after entering each values to check the geofence on the design surface.



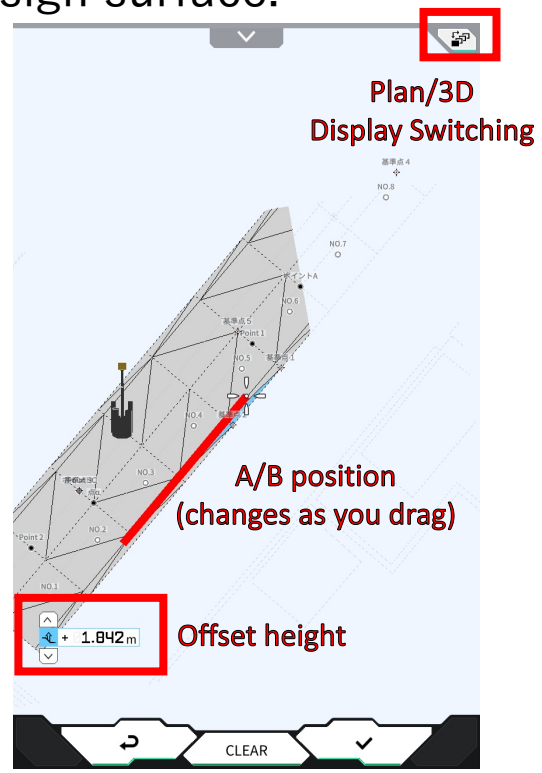
# 3.1.3 Line Type Creation

1. Create New Geofence Screen Select Line and press ✓
2. Enter Name
3. Set each parameter and press ✓ to save

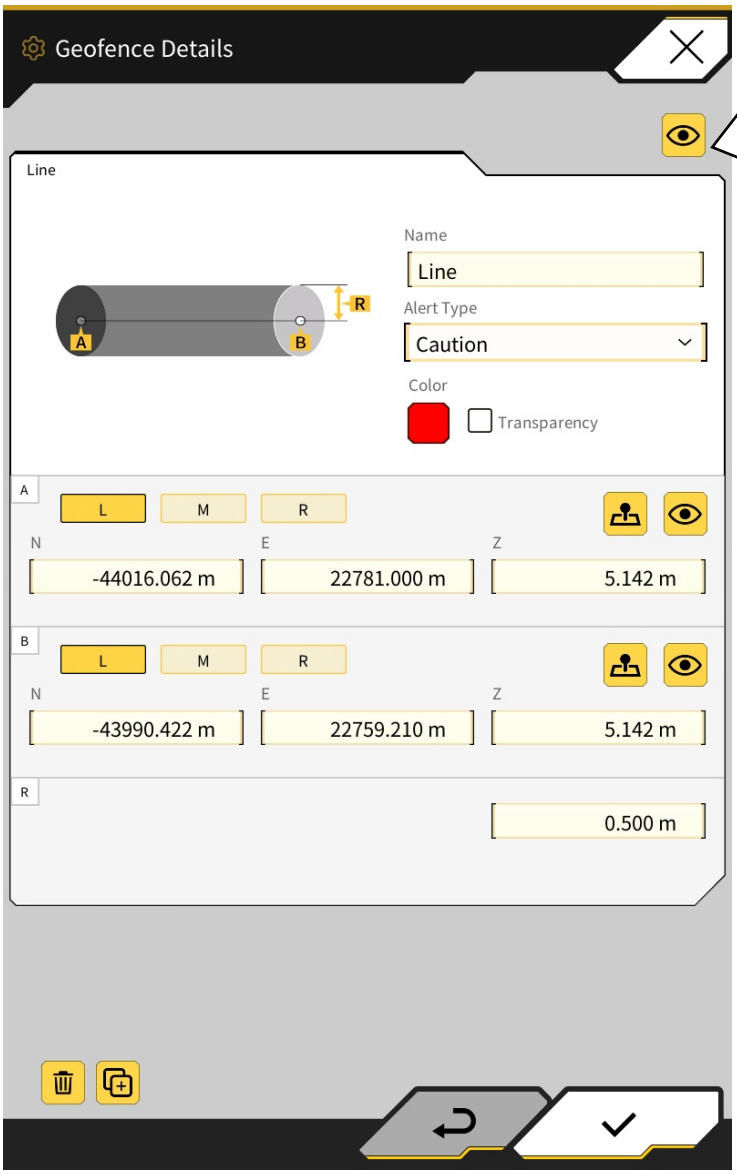



Select L M R and tap to enter the cutting edge coordinates.

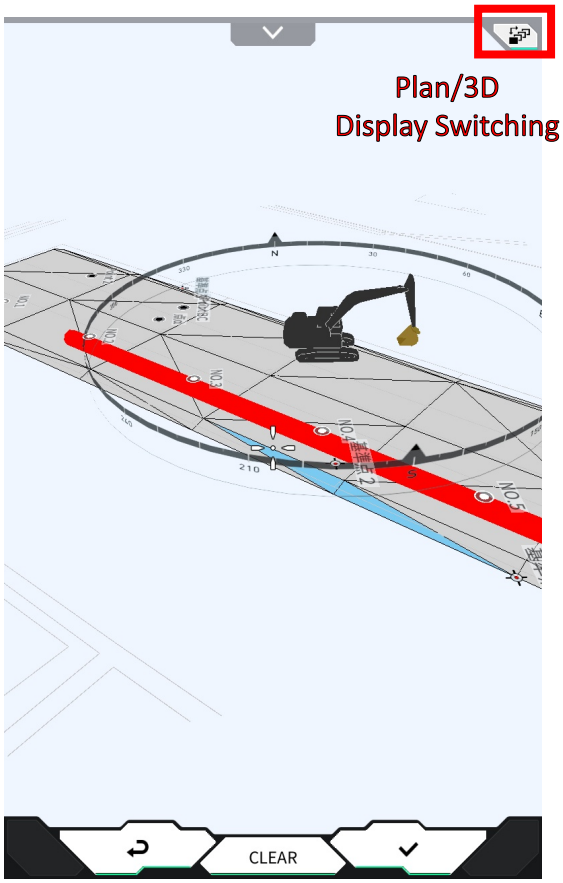
Tap after entering the coordinates of A and B to adjust the points on the design surface.



# 3.1.3 Line Type Creation



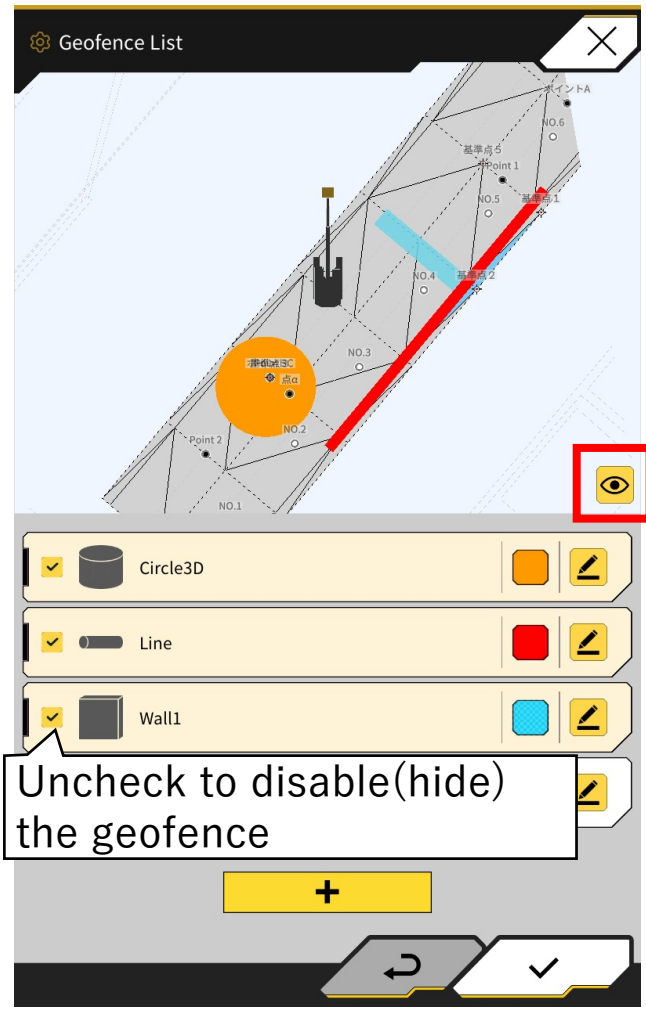

Tap after entering each values to check the geofence on the design surface.

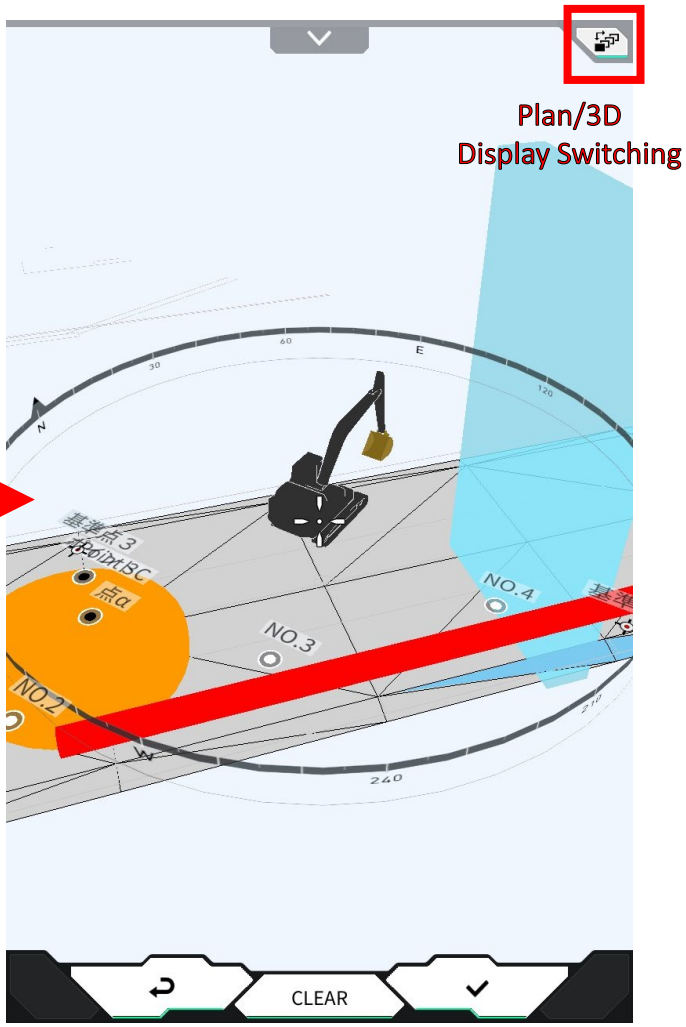


# 3.2 Geofence Confirmation

The Geofence List screen allows you to check the type, name, color, location, and enable/disable settings for the list of geofences you have created.

(Project File > to List)
(Tap to 3.3 Edit Geofence)



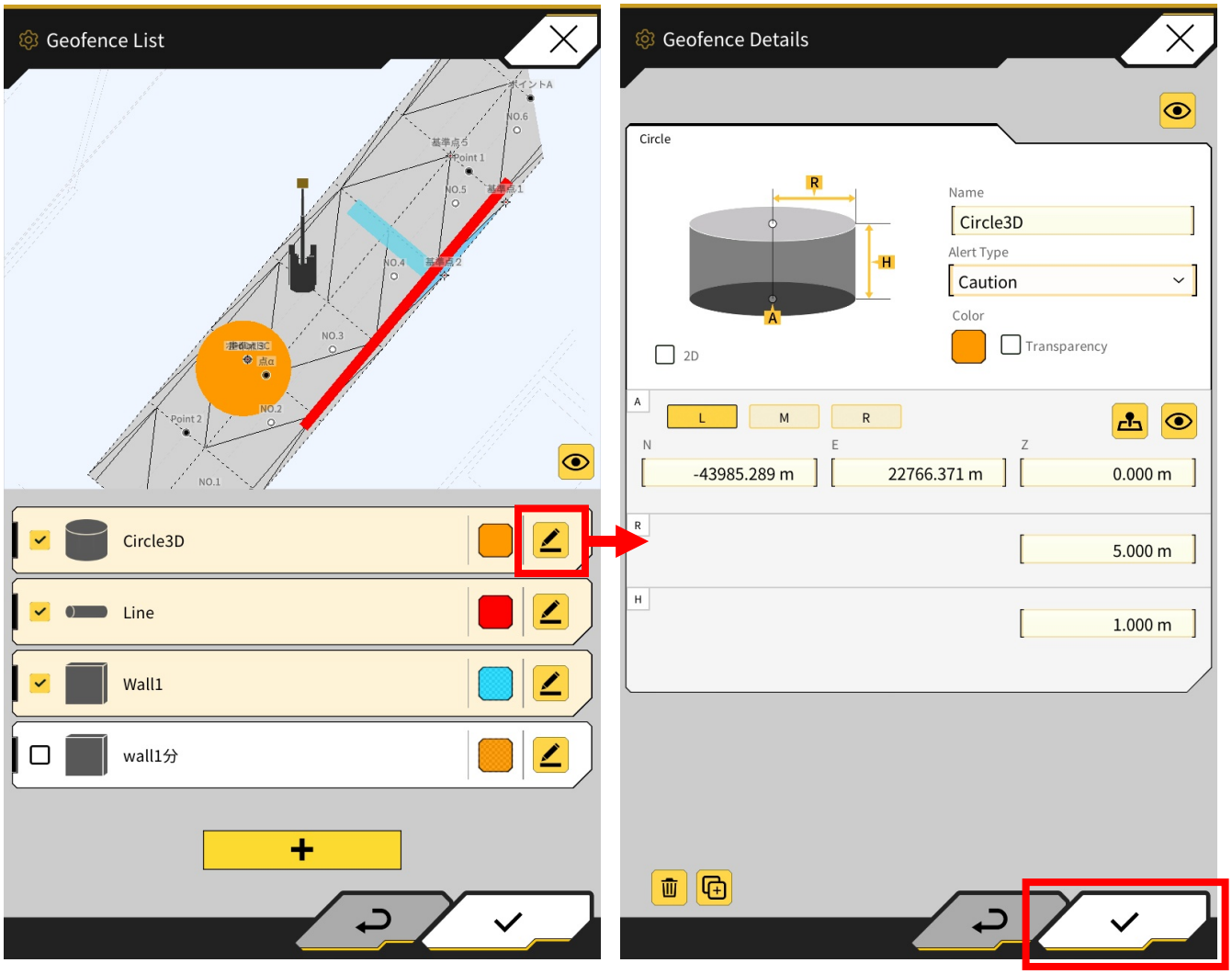



# 3.3 Edit Geofence

Geofence Details screen allows you to edit, delete, or copy for a geofence that has already been created.

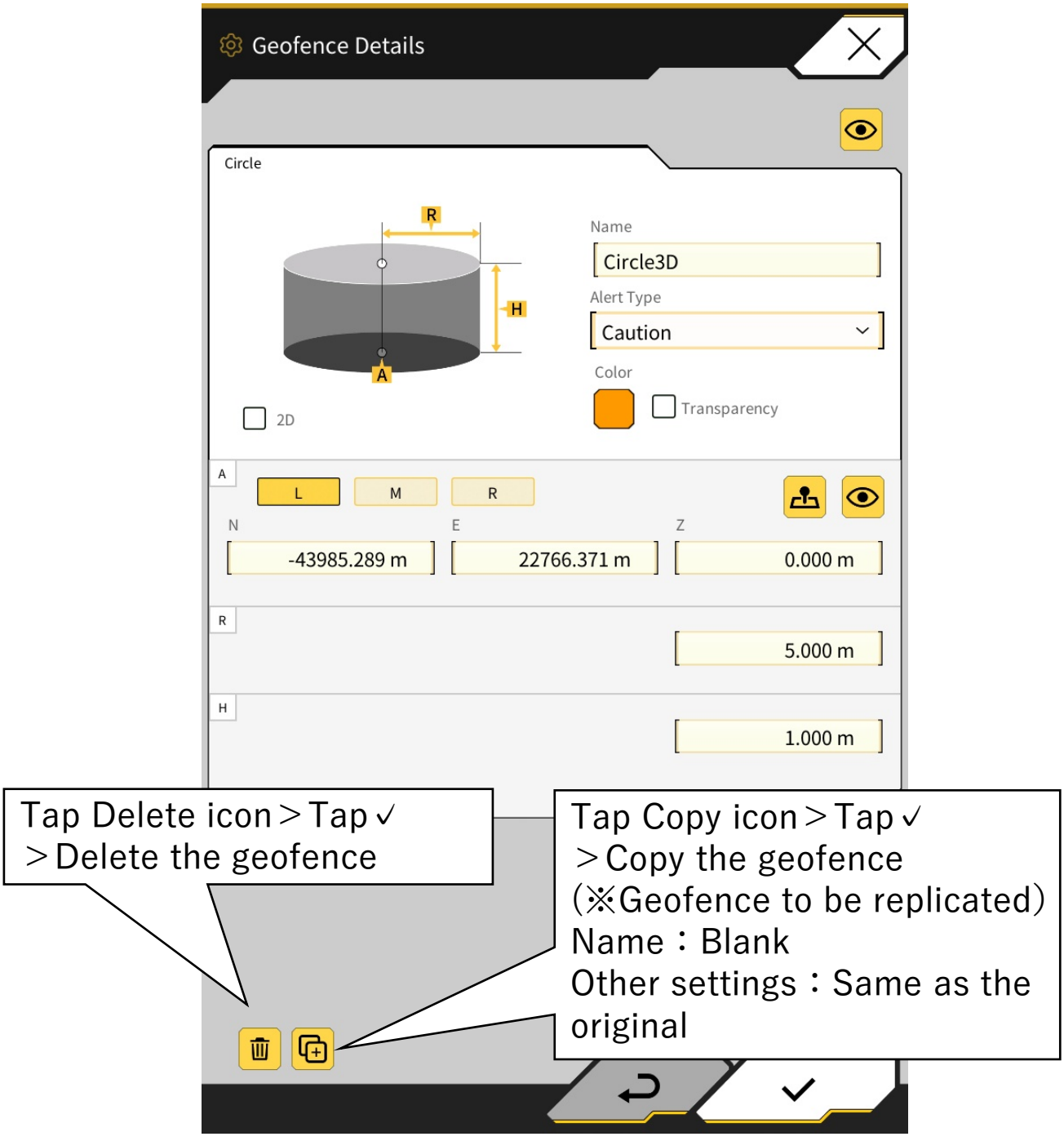
## Change Settings

1. Project File > Tap to Geofence List
2. Tap on the target geofence and go to Geofence Details screen
3. Set each parameter and tap ✓



# 3.3 Edit Geofence

Delete/Copy　　Delete icon：　　Copy icon：



# Contact information

**Inquiries about products and defects:**

EARTHBRAIN Co., Ltd.
Support site inquiries :
Europe
US
Australia
Asia