

City of Joliet As-Built GIS – GPS Training Documentation



Spring 2024



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1. Getting Started

1.1 Contractor Device Requirements:

A dedicated mobile device supplied by the contractor is required for Digital Utility Data Collection section 01.32.53 of the contract documents.

As mentioned in the Digital Utility Data Collection section (1) GPS unit per contract will be provided by the city to the contractor. Contractor will provide a \$5,000 refundable deposit upon pickup of GPS which will be refunded in its entirety upon equipment returning in working order.

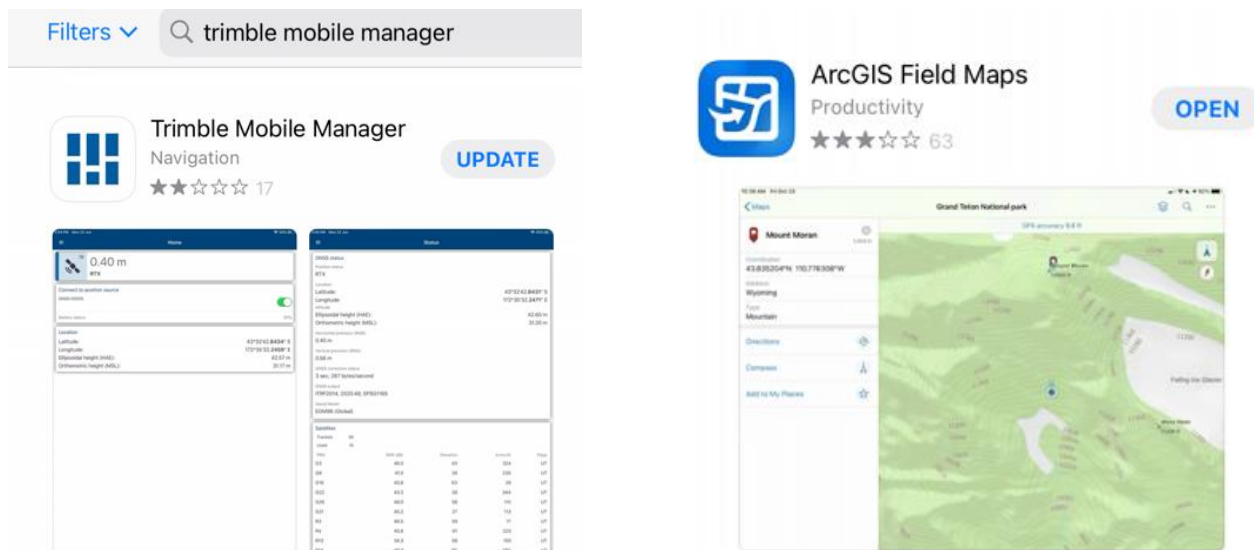
For the contractor to provide real-time connectivity a dedicated mobile device with cell connectivity capable of running the latest version of IOS will be needed.

This device does not have to be a tablet, however having a device that has more screen space is much more desirable and leads to less data entry mistakes in the field.

This mobile device will need to have email capabilities with the field users having access to the account. This capability will be used for username-password communication for account resets and other in the field trouble shooting needs via Face Time Screen share. The field user will need to have access to download apps, and update apps on the mobile device. Depending how the device was setup access to Apple ID and PW may be needed.

1.2 Software install:

The following apps need to be installed on the dedicated mobile device.



1.2 Software install (Continued):

Once software is installed you will be able to open and log into Field maps using the COJ supplied username and password.

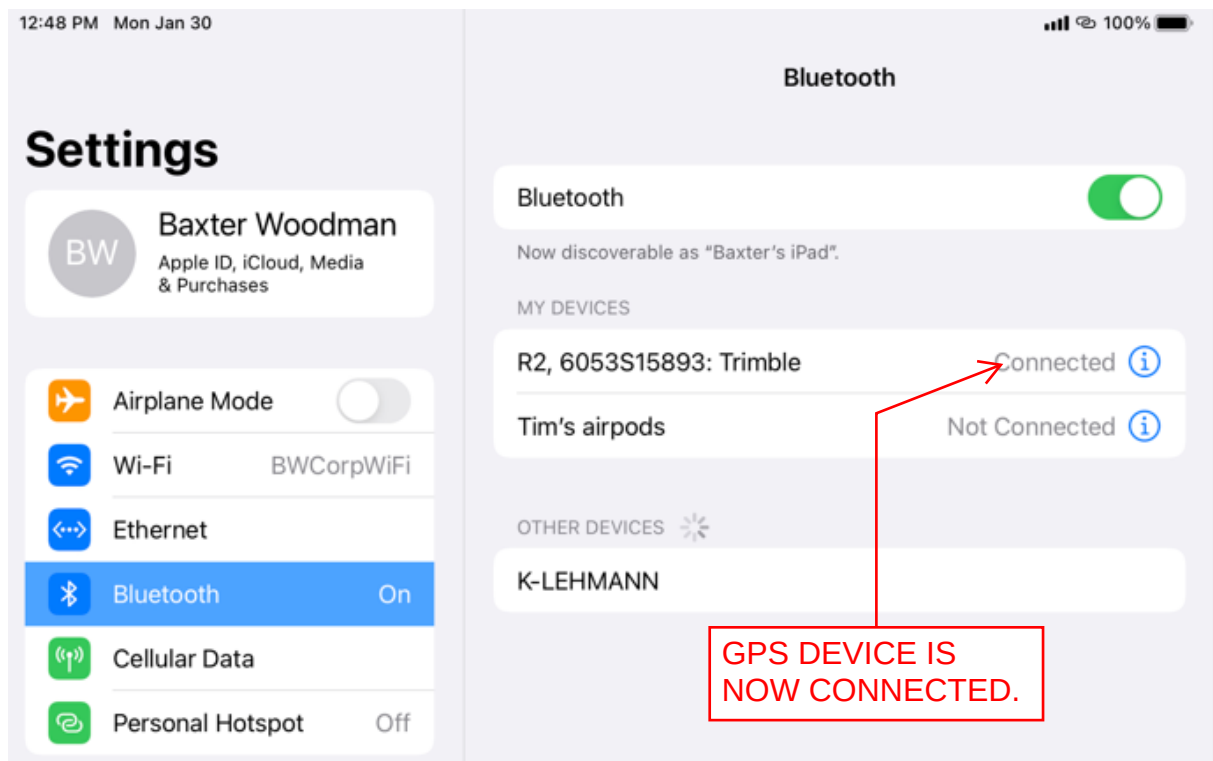
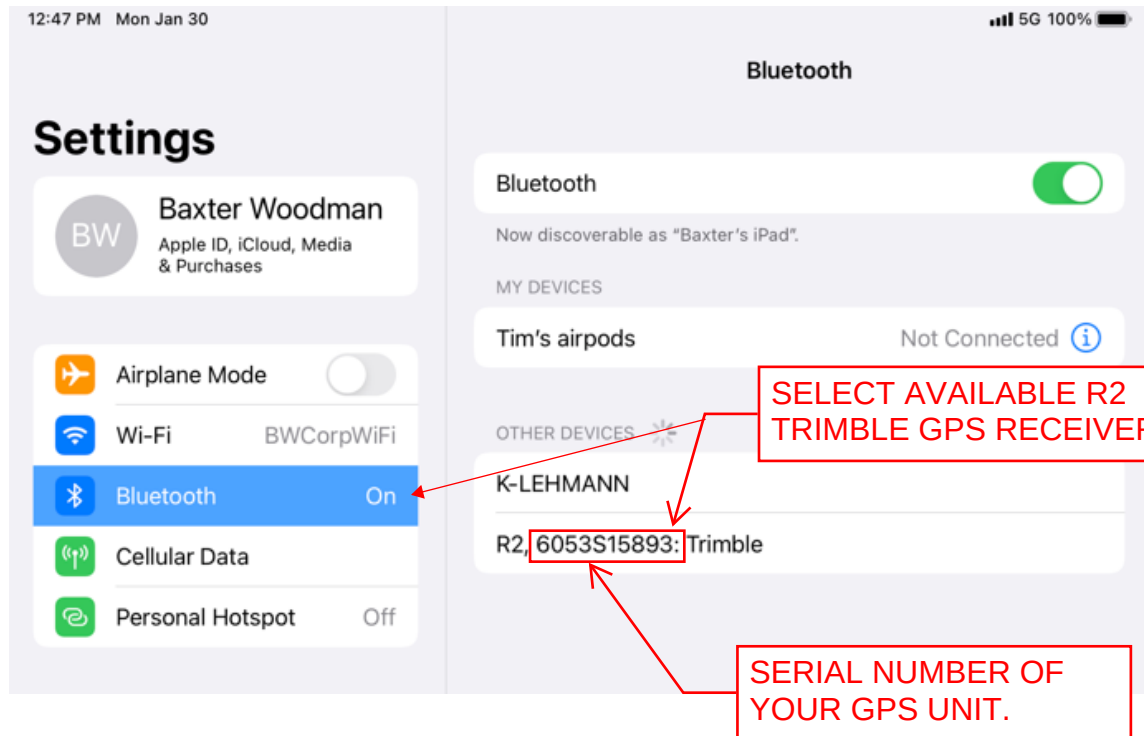
To open and use Trimble Mobile manager you will **not** need a UN an PW to use TMM with COJ provided GPS (R2) equipment.

Once you're able to log into Field Maps and have installed the Trimble Mobile manager App you can proceed to section 1.3.

1.3 CONNECTING GPS AND CONFIGURATION

STEP 1

Go to mobile device **Settings**, turn on **Bluetooth** and connect to GPS receiver.



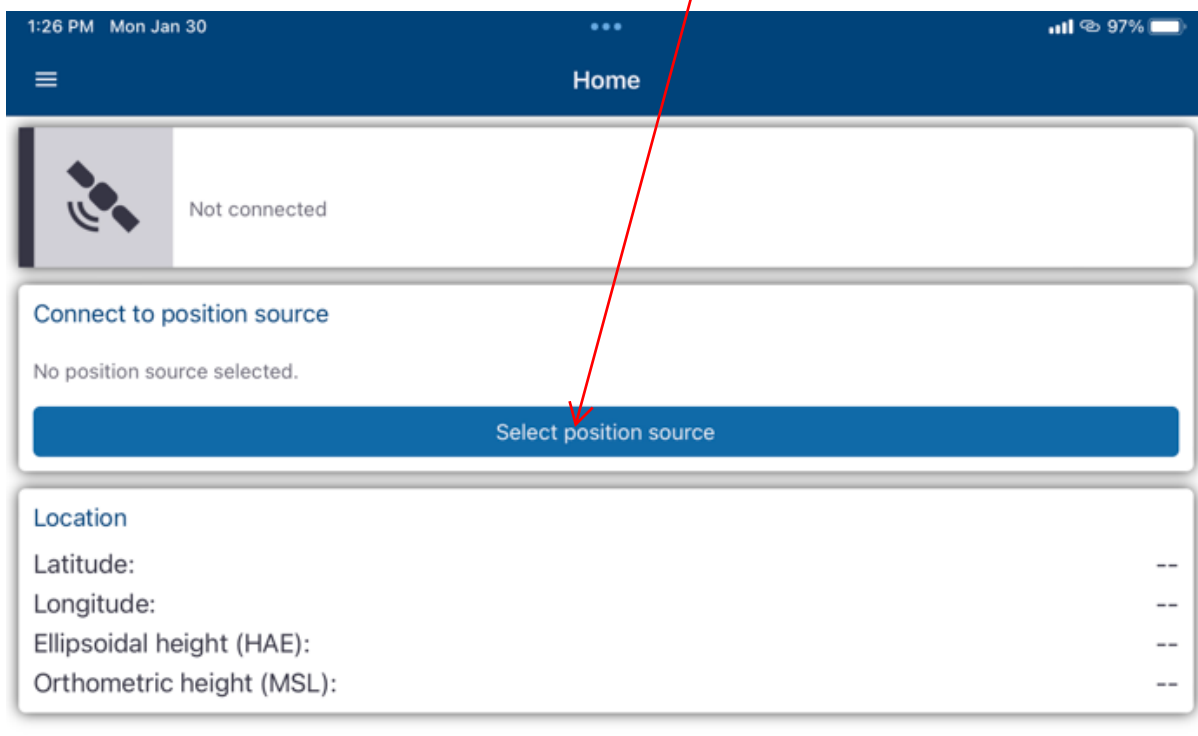
1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

STEP 2

Start **Trimble Mobile Manager** application and configure settings as outlined below.



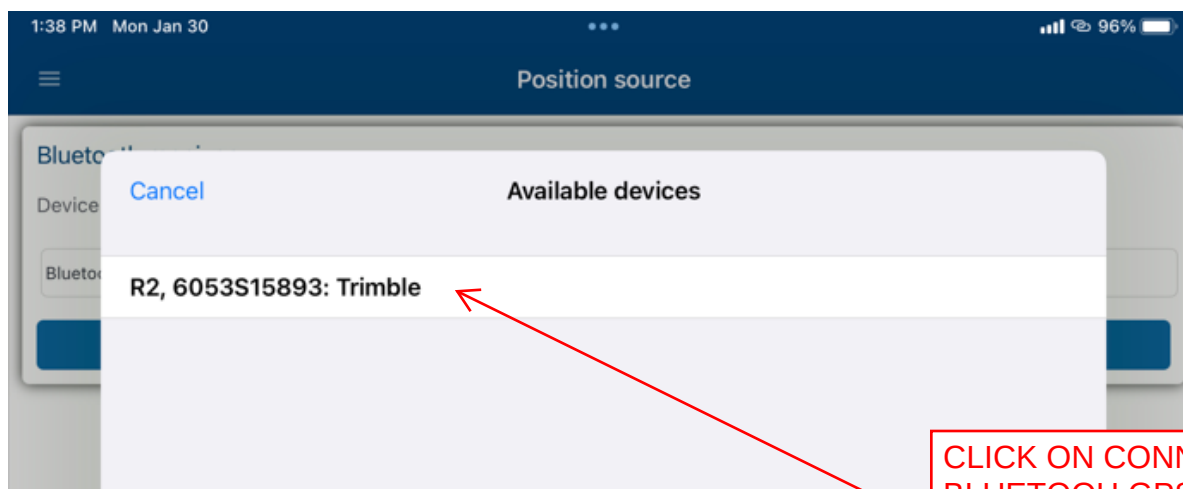
CLICK ON SELECT
POSITION SOURCE AND
THEN LIST CONNECTED
DEVICES.



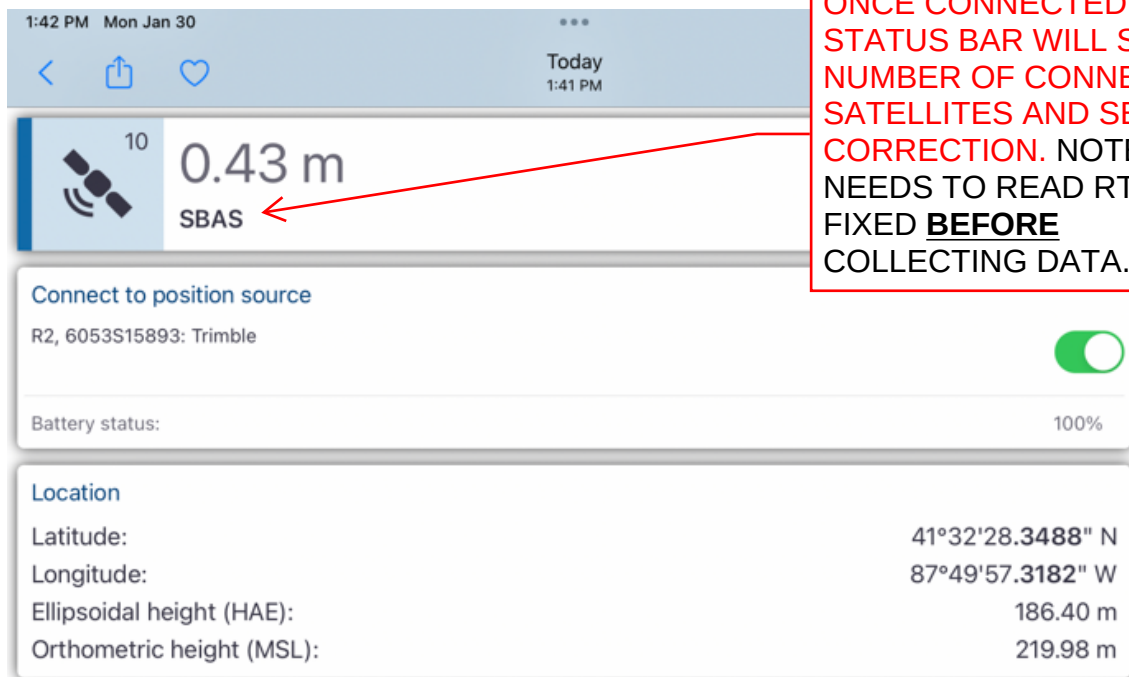
1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

STEP 3

Set position source to bluetooth GPS device. Use steps provided below.



CLICK ON CONNECTED BLUETOOTH GPS DEVICE R2 (SERIAL NUMBER)



ONCE CONNECTED STATUS BAR WILL SHOW NUMBER OF CONNECTED SATELLITES AND SBAS CORRECTION. NOTE: THIS NEEDS TO READ RTK FIXED **BEFORE** COLLECTING DATA.

1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

STEP 4

Click on menu bars and open **GNSS Configuration** tab and set the following GPS network settings. In addition open **Application Settings** under menu bar and apply settings as shown below.

****FOR KARA NETWORK OPTION 1**

MENU BARS

1:53 PM Mon Jan 30 93%

GNSS configuration

GNSS correction source

GNSS correction source: Custom local

Server parameters

Protocol: NTRIP

Server URL: Rtk.karaco.com

Port: 12051

Mount point name: JOLIET-RTCM3-MSM5 OR BOLINGBROOK-RTCM3.1-MSM5-

GNSS source reference frame: Auto

Server account

Username: JOLIETGIS (CASE SENSITIVE)

Password: 031423

GNSS output

Detection mode: Auto

Geoid: GEOID18 (Conus)

Same for all options

1:54 PM Mon Jan 30 92%

Application Settings

Units

Distance: US Survey Feet

1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

NOTE:

In some situations network mount points will need to be switched due to network outages, terrain, or logistics that can hinder accurate GPS corrections from a particular base station. If you are seeing issues with GPS accuracy, you may need to change the port and mount point location. The following options provide these settings.

****FOR KARA NETWORK OPTION 2**

1:53 PM Mon Jan 30 93%

GNSS configuration

GNSS correction source

GNSS correction source: Custom local

Server parameters

Protocol: NTRIP

Server URL: Rtk.karaco.com

Port: 12054

Mount point name: BOLLINGBROOK-RTCM3.1-MSM5

GNSS source reference frame: Auto

Server account

Username: JOLIETGIS (CASE SENSITIVE)

Password: 031423

OR

1:53 PM Mon Jan 30 93%

GNSS configuration

GNSS correction source

GNSS correction source: Custom local

Server parameters

Protocol: NTRIP

Server URL: Rtk.karaco.com

Port: 12055

Mount point name: BOLLINGBROOK-RTCM3.1 OR SPS-BOLLINGBROOK

GNSS source reference frame: Auto

Server account

Username: JOLIETGIS (CASE SENSITIVE)

Password: 031423

1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

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NOTE:

If your project location has challenging GPS circumstances and the previous free network solutions are not providing acceptable accuracy the COJ has a "paid for" GPS network correction source. THE INFO PROVIDED BELOW IS A "ONE" PER USER NAME CORRECTION. CONTRACTORS NEEDING TO USE THIS NETWORK WILL HAVE TO GET PERMISSION PRIOR TO USE.

****FOR TRIMBLE VRS NETWORK OPTION 3**

1:53 PM Mon Jan 30 93%

GNSS configuration

GNSS correction source

GNSS correction source: Custom local

Server parameters

Protocol: NTRIP

Server URL: Vrsnow.us

Port: 2101

Mount point name: 2011_TVN_CMR_X_GPS_GLO

GNSS source reference frame: Auto

Server account

Username: iljoliet1 OR iljoliet2

Password: Contact Technical Support (See section 5 of this document)

GNSS output

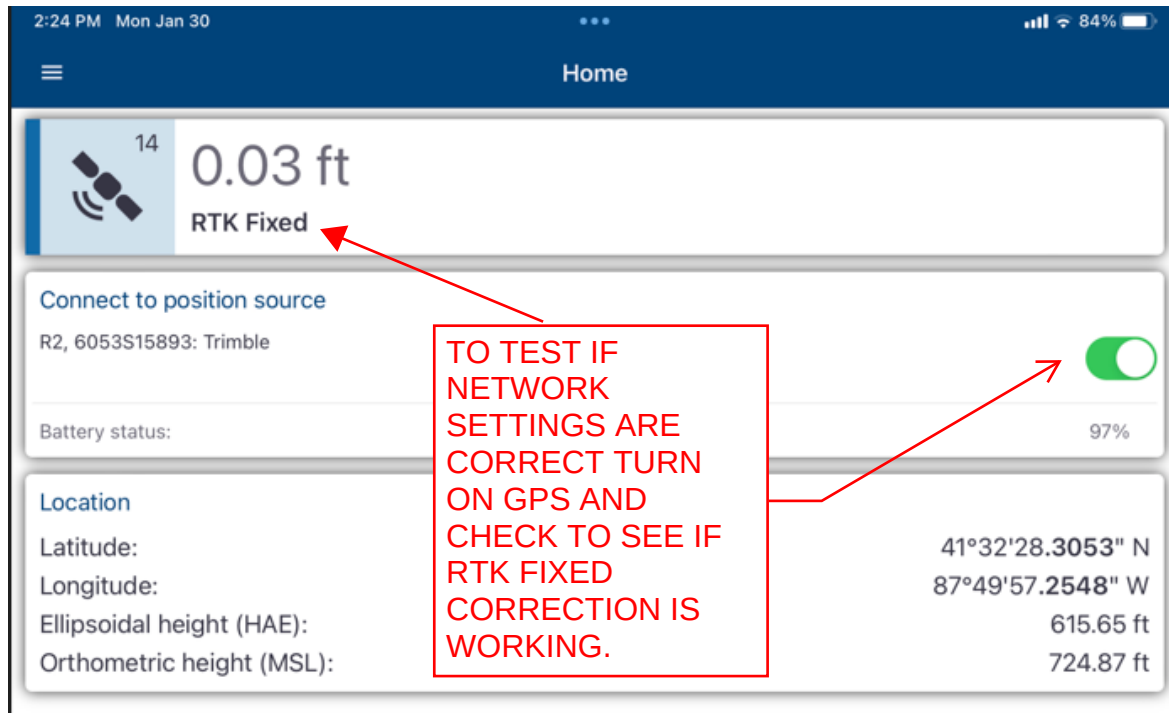
Detection mode: Auto

Geoid: GEOID18 (Conus)

1.3 CONNECTING GPS AND CONFIGURATION (CONTINUED)

STEP 5

Test GPS network settings by following the procedures below .



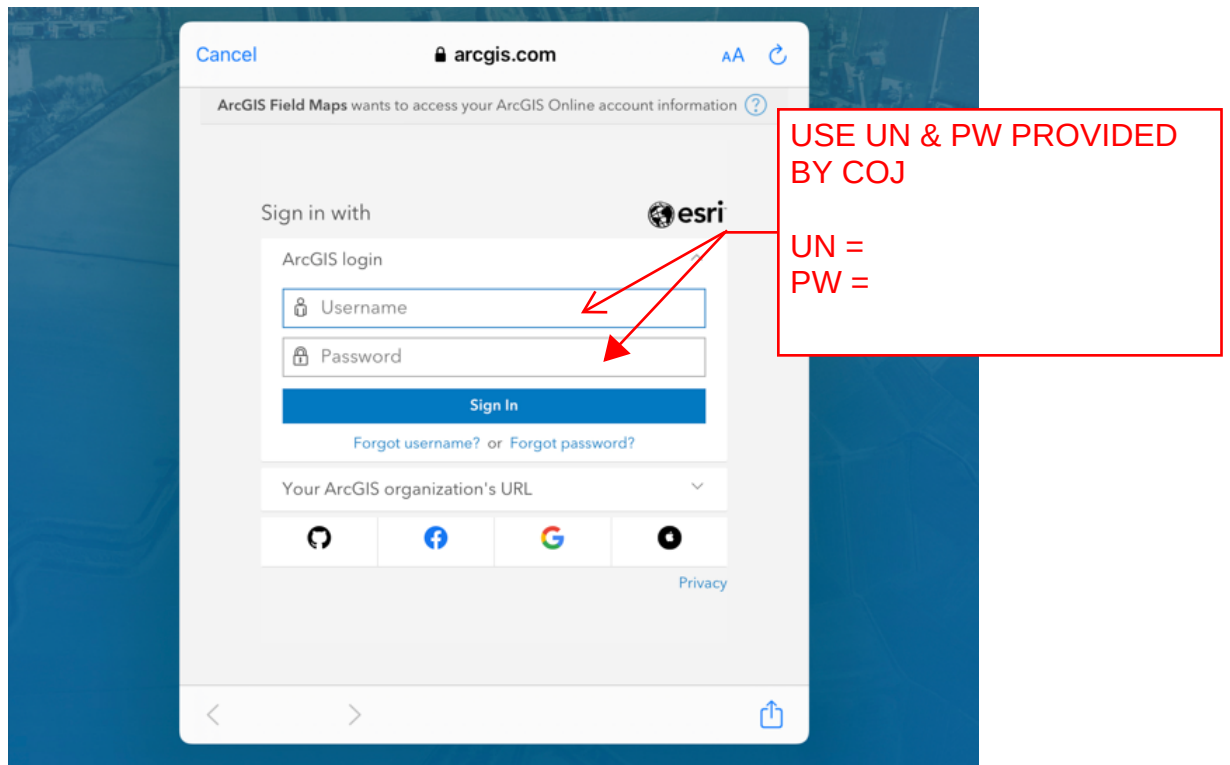
This completes TMM setup. You can now close TMM application. Once these settings are correct you will not have to launch TMM to use Field Maps. Field Maps will automatically launch TMM and run it in the background when Field Maps is started. **NOTE when Field Maps uses TMM app it DOES NOT TURN ON the GREEN GPS slide bar. DO NOT turn on the green slide bar when Field Maps is using TMM data. In addition the data shown in the top banner (RTK Fixed # satellites etc. will now be found in the GPS banner in Field Maps app.**

1.4 FIELD MAPS USER, AND MAP PROFILE SETUP

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STEP 1

Start Field Maps Application. Log into AGOL using the steps provided below. UN & PW will be provided to you by the COJ



1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

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Maps

Search

Select User Icon

STEP 2

Once you are in Field Maps select User Icon in upper left hand corner and select PROVIDER to add the attached R2 GPS as a location Provider.

Profile

Done

Tim Bette
tbettebw

Collection Settings

LOCATION

Provider Integrated >

Profile Default >

Location Alerts >

GENERAL

Units >

Directions Always Ask >

Auto-Sync ☒

Select Provider to add Provider

Select Add Provider

< Back

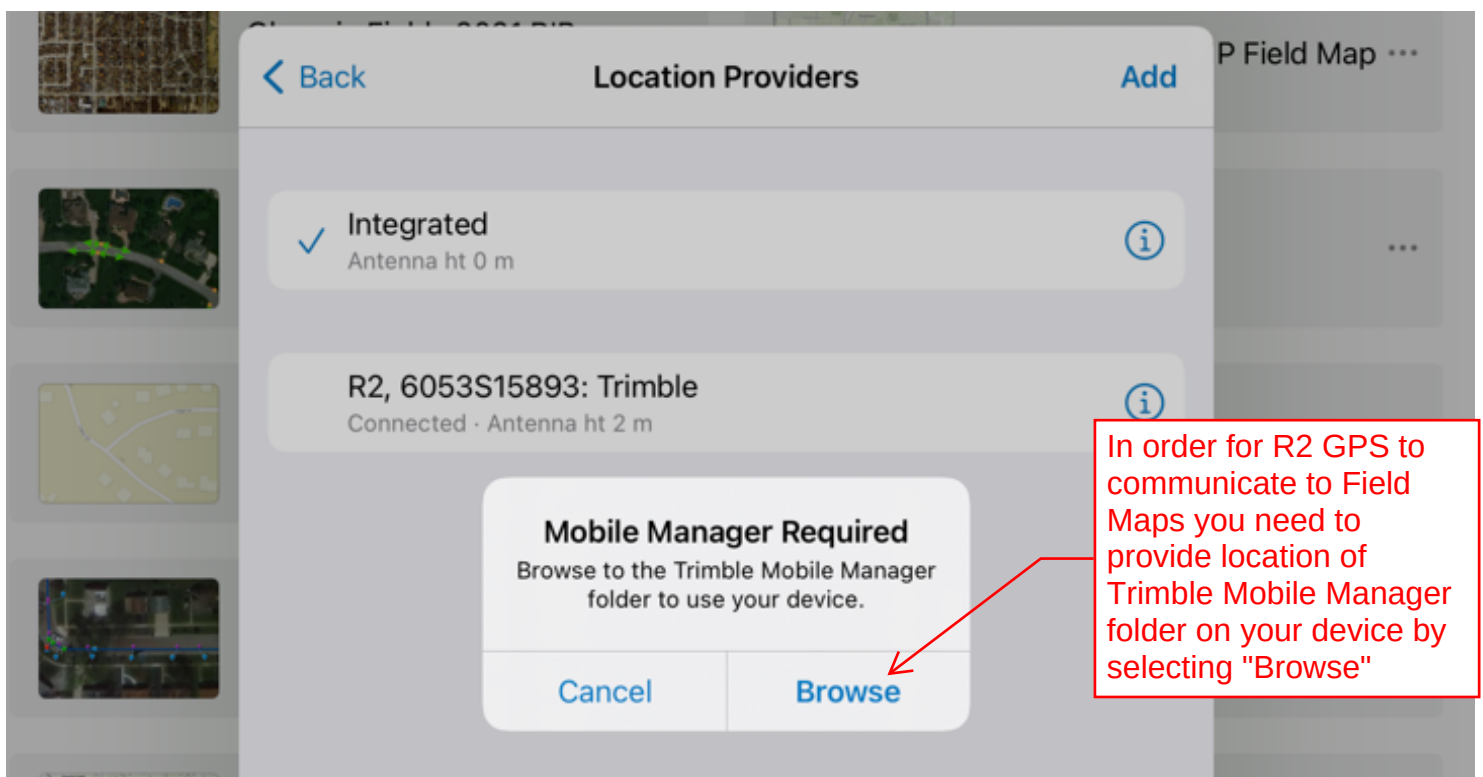
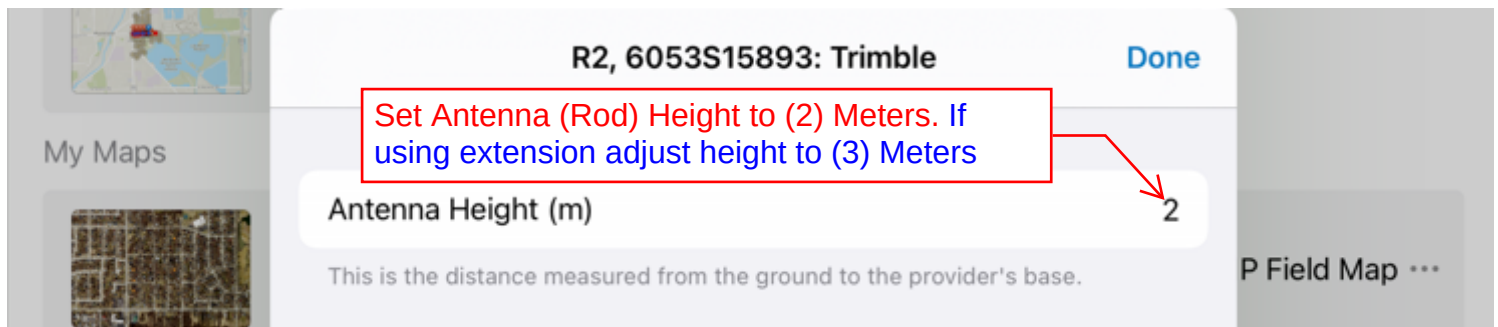
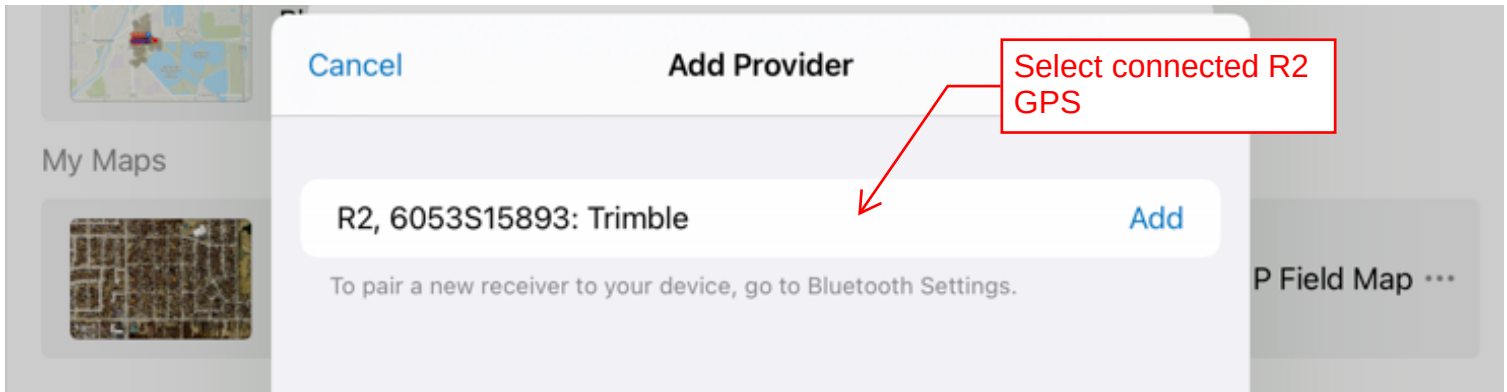
Location Providers

Add

✓ Integrated
Antenna ht 0 m



1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

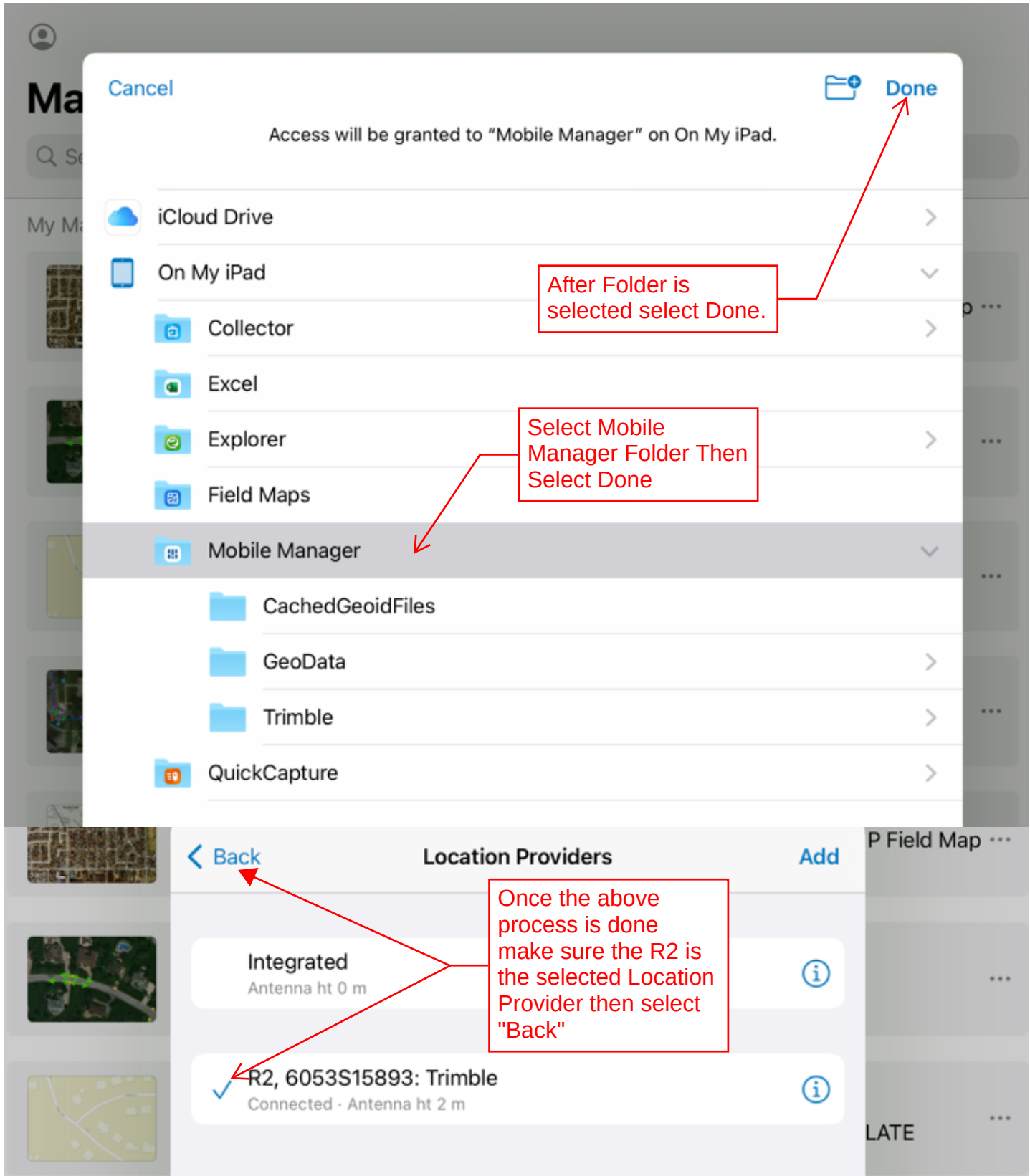


1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

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STEP 3

Select Mobile Manager folder "On My iPad" and select Done.
NOTE: This step has to be done AFTER Trimble Mobile Manager has been installed.

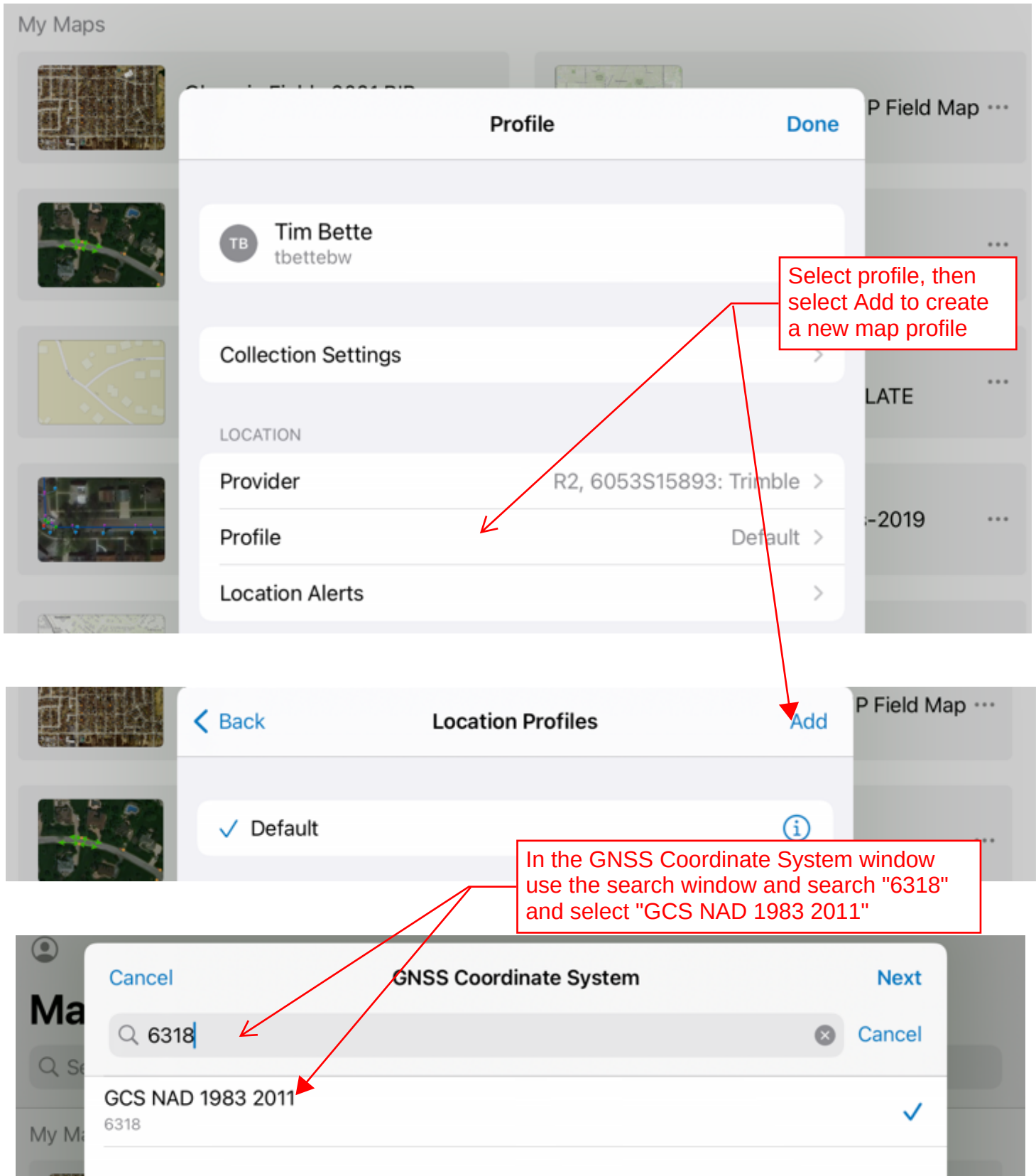


1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

16

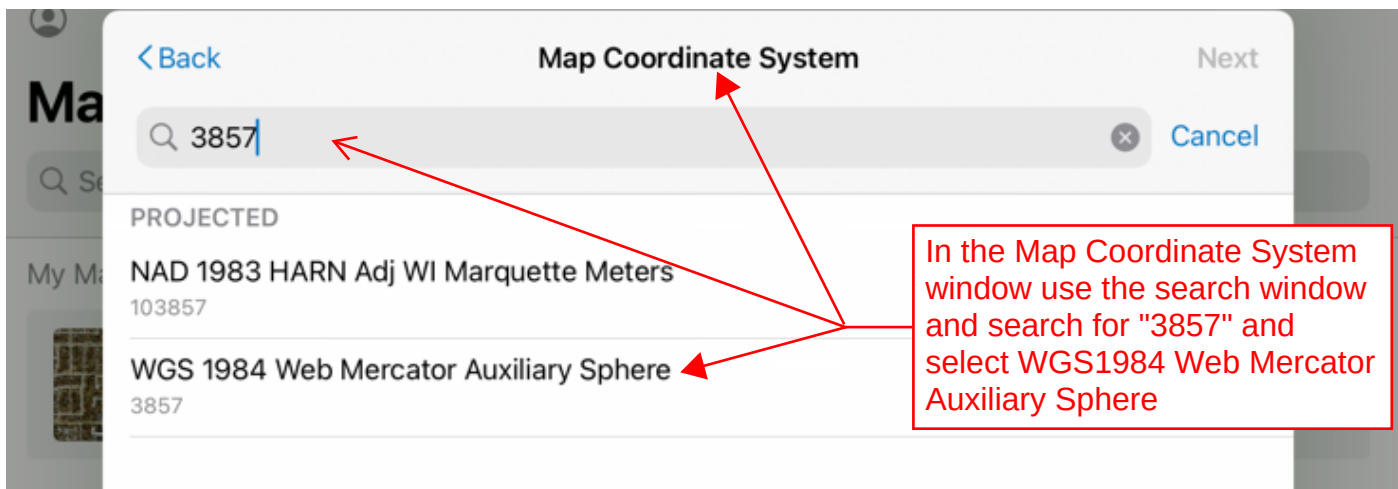
STEP 4

Create Profile in Field Maps using the following steps. **NOTE:** this profile and Location provider setup is **USER specific**. Select Profile and add a profile named "Joliet NAD83" with the following settings.



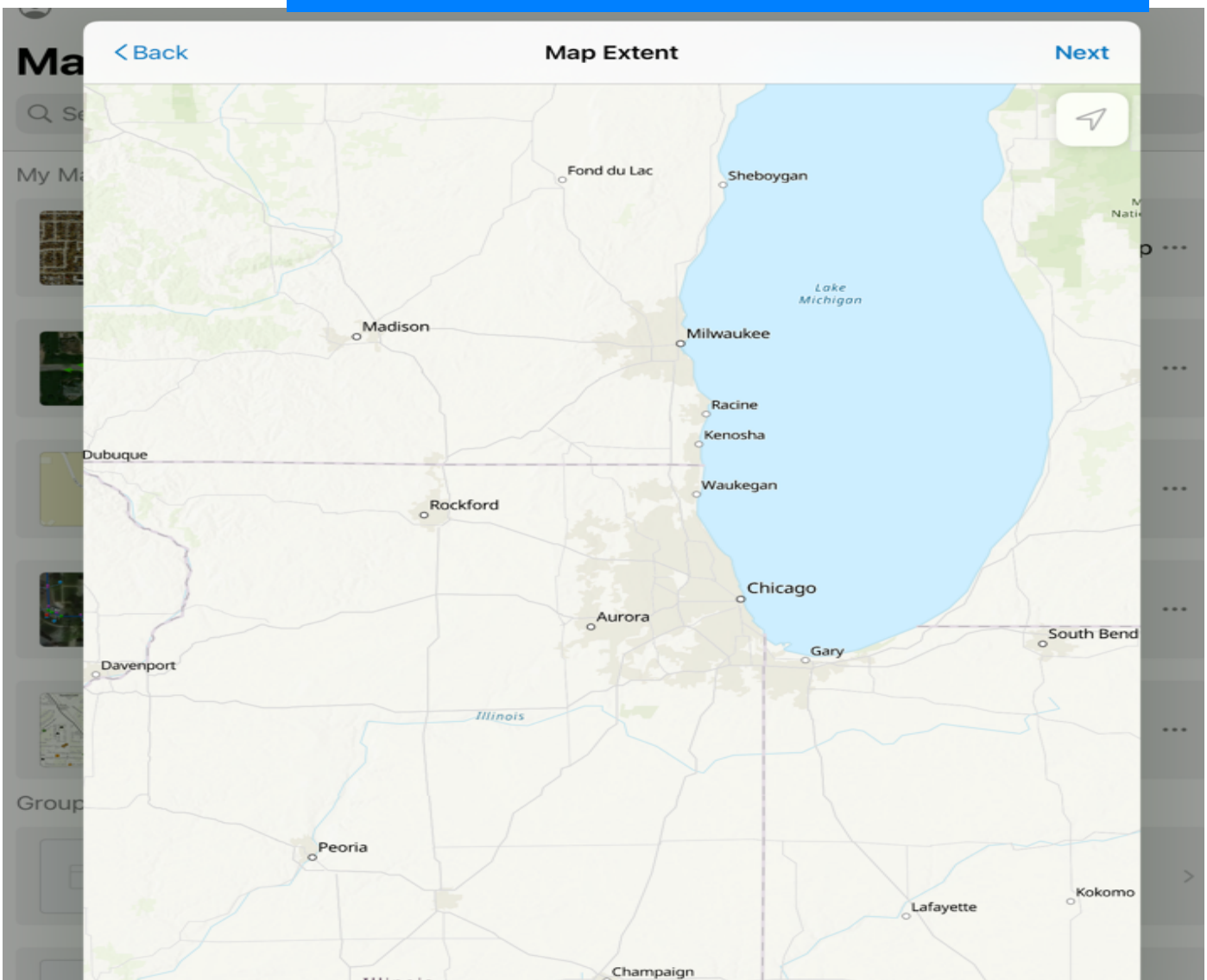
1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

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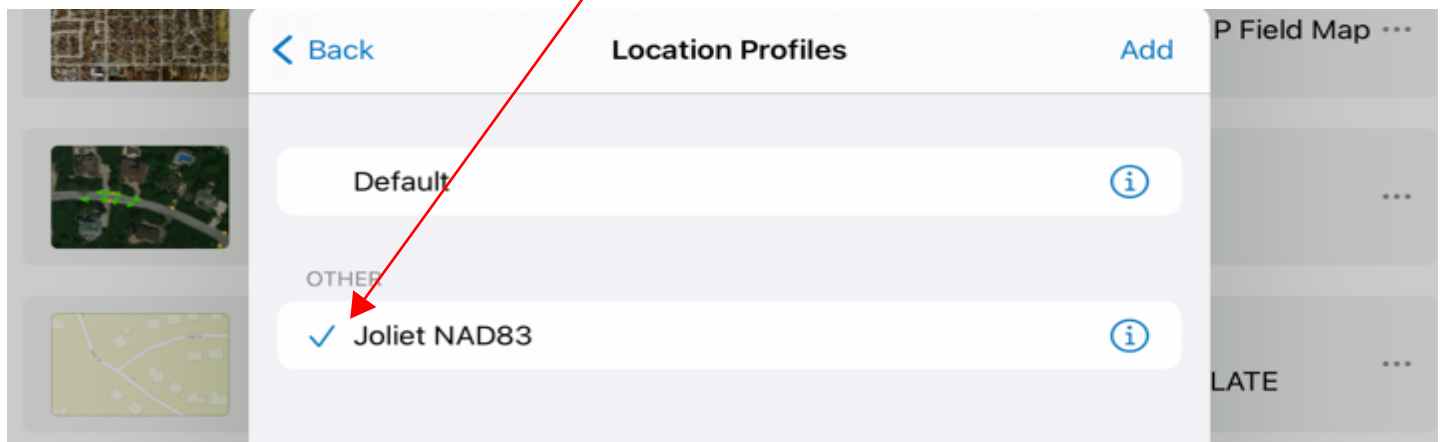
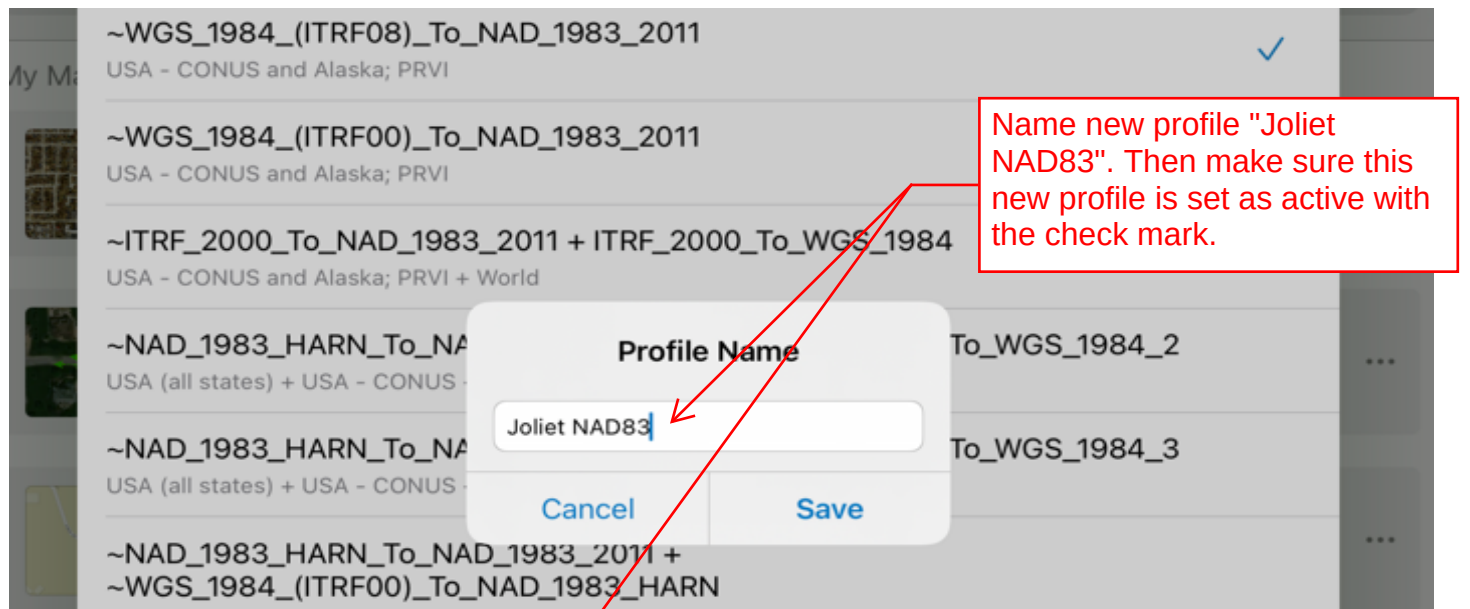
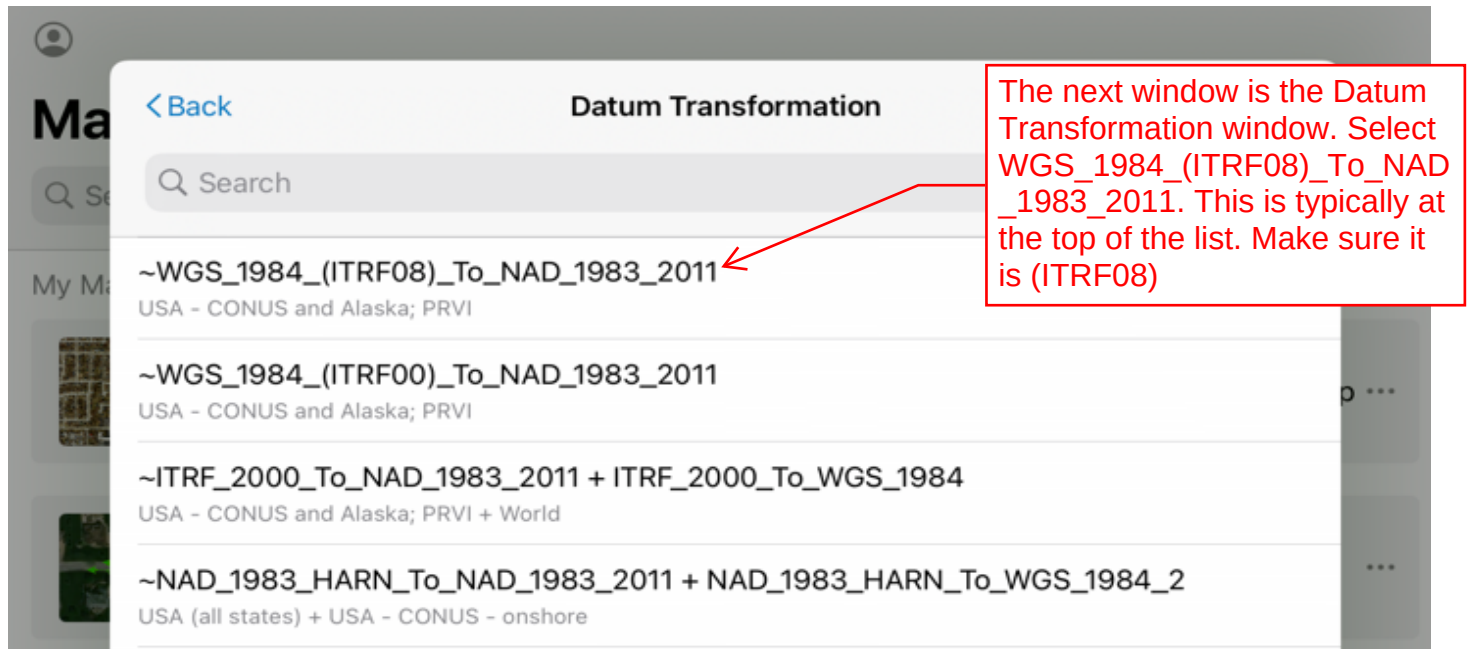
NOTE:

Once the map Coordinate System is selected the profile will ask you to provide the map extent of your data collection area. Zoom the map into the approximate view shown below (Northern Illinois)



1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

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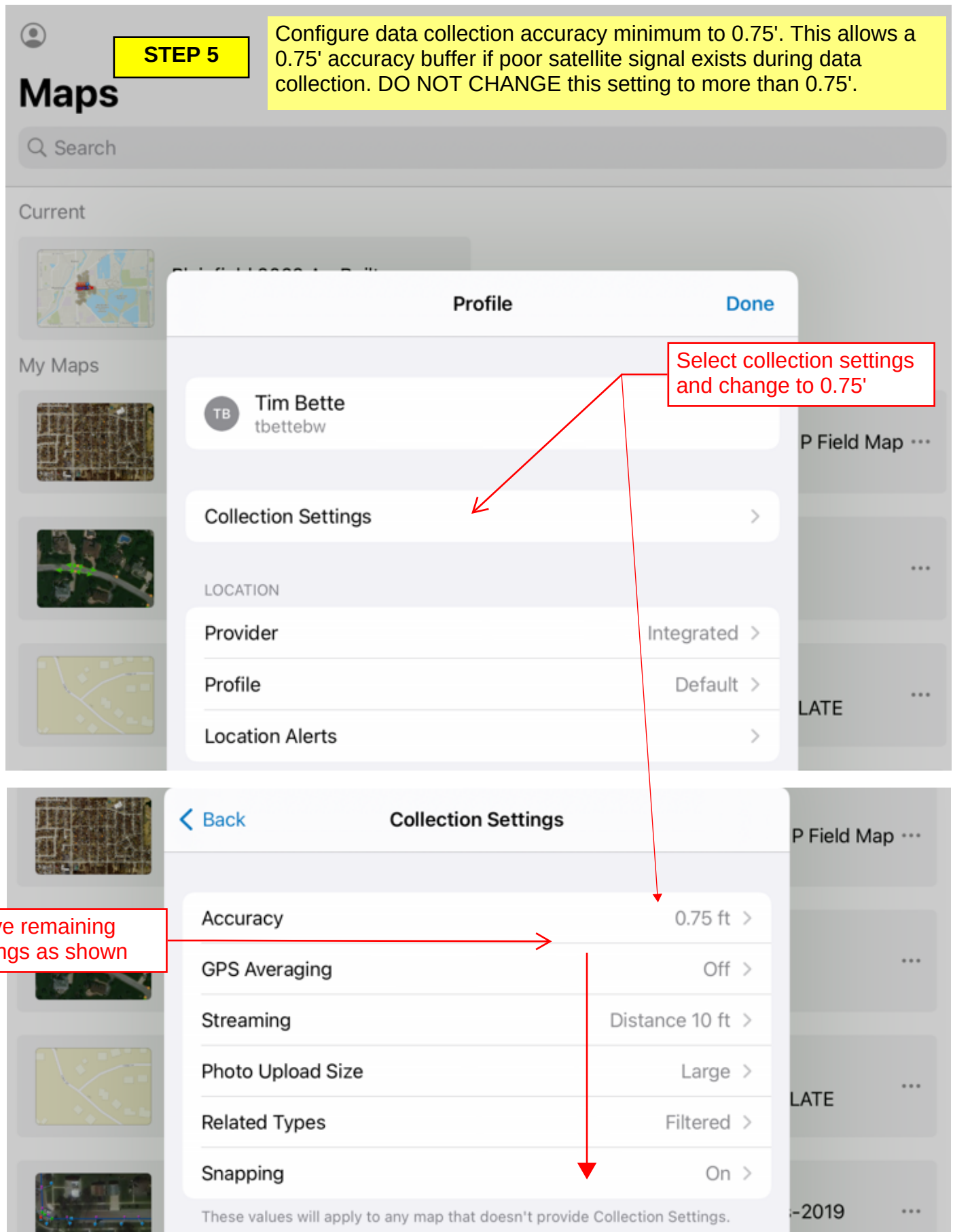
1.4 FIELD MAPS USER, AND MAP PROFILE SETUP (CONTINUED)

STEP 5

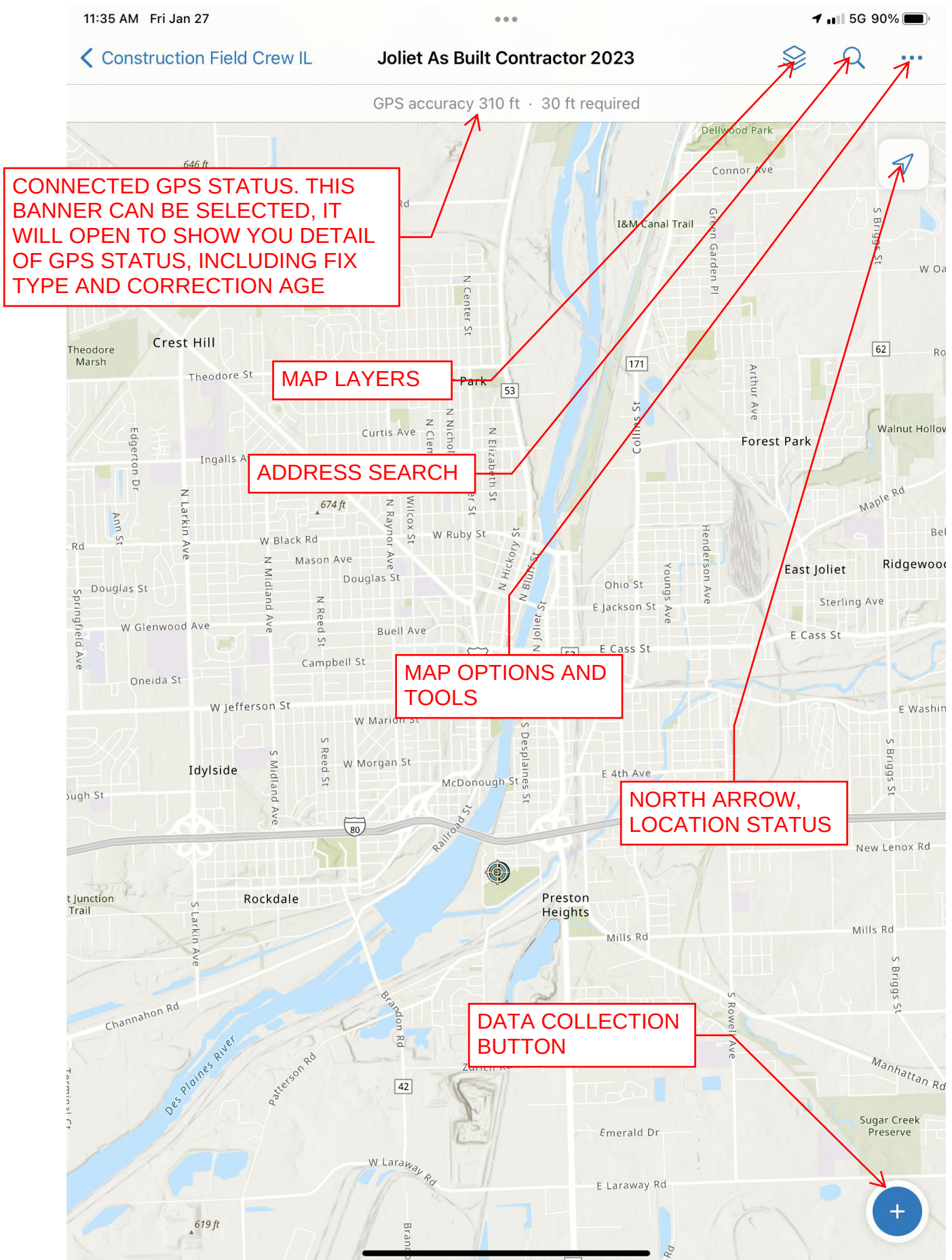
Configure data collection accuracy minimum to 0.75'. This allows a 0.75' accuracy buffer if poor satellite signal exists during data collection. DO NOT CHANGE this setting to more than 0.75'.

Select collection settings
and change to 0.75'

Leave remaining
settings as shown

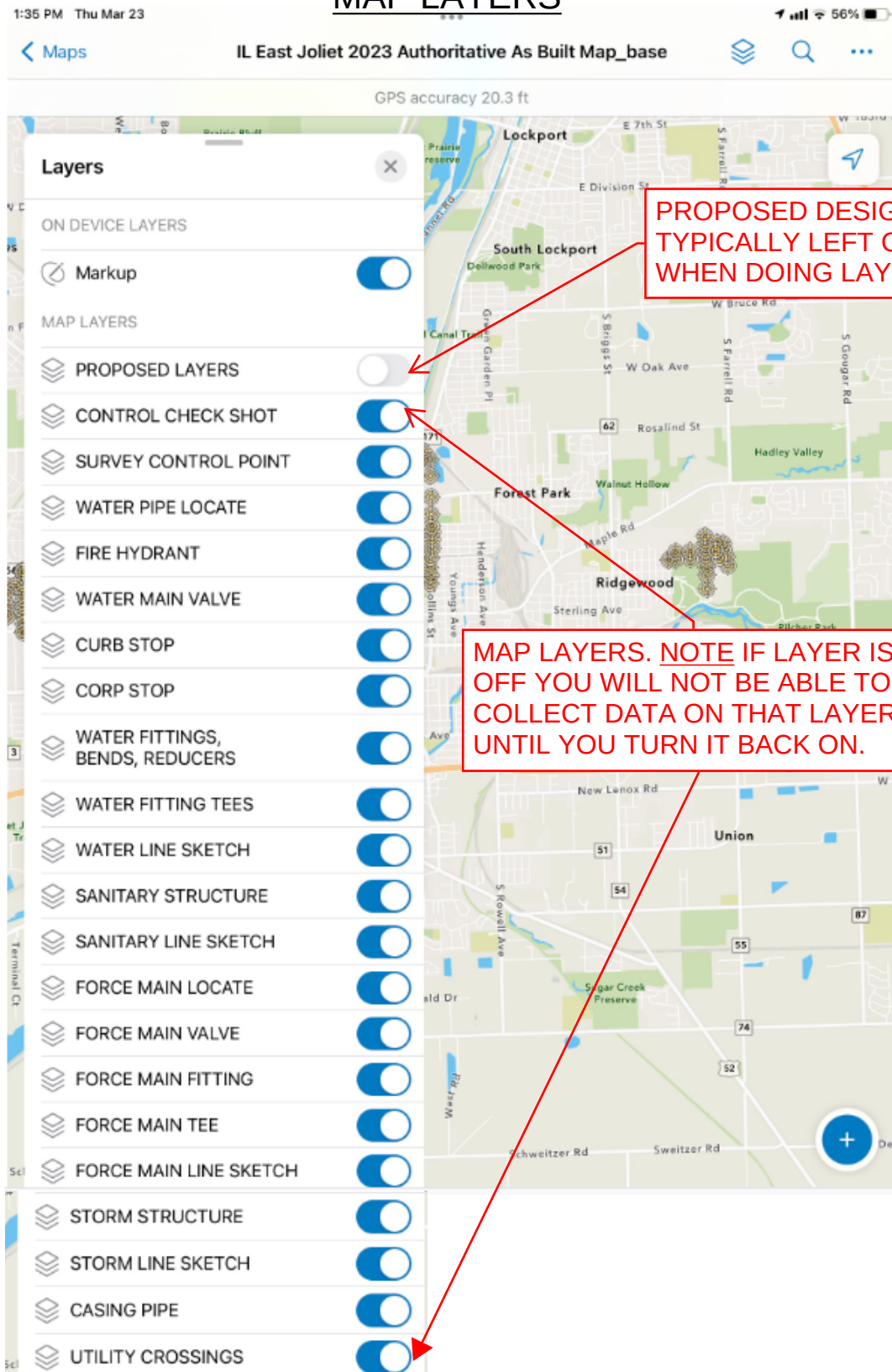


2.1 GENERAL MAP LAYOUT



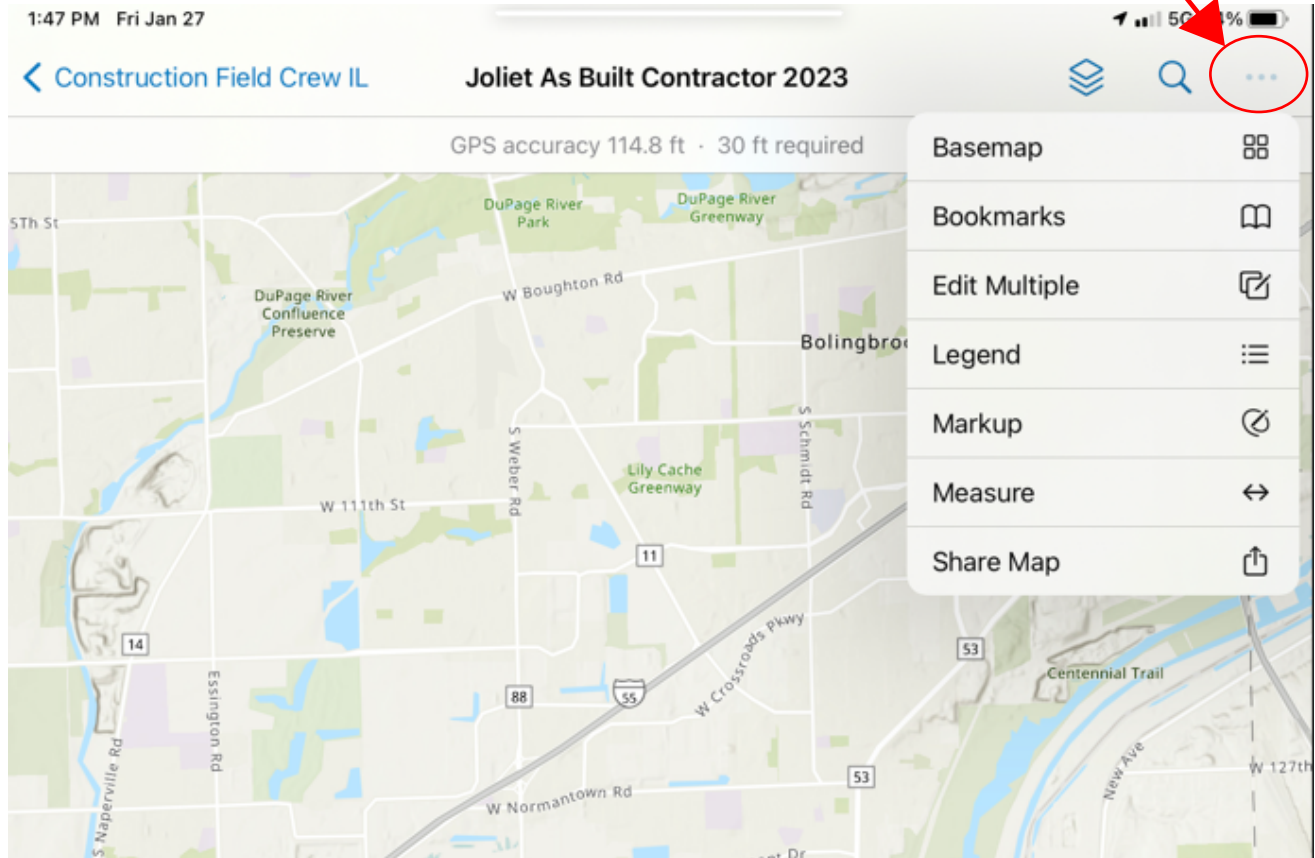
2.1 GENERAL MAP LAYOUT (CONTINUED)

MAP LAYERS



2.1 GENERAL MAP LAYOUT (CONTINUED)

MAP OPTIONS AND TOOLS



BASEMAP: Allows user to change the basemap background used on the map. This is strictly user preference but map default is the best option.

BOOKMARKS: Allows users bookmark map views.

EDIT MULTIPLE: Allows users to edit multiple map items that have similar data fields. This is a powerful tool if you want to mass edit data.

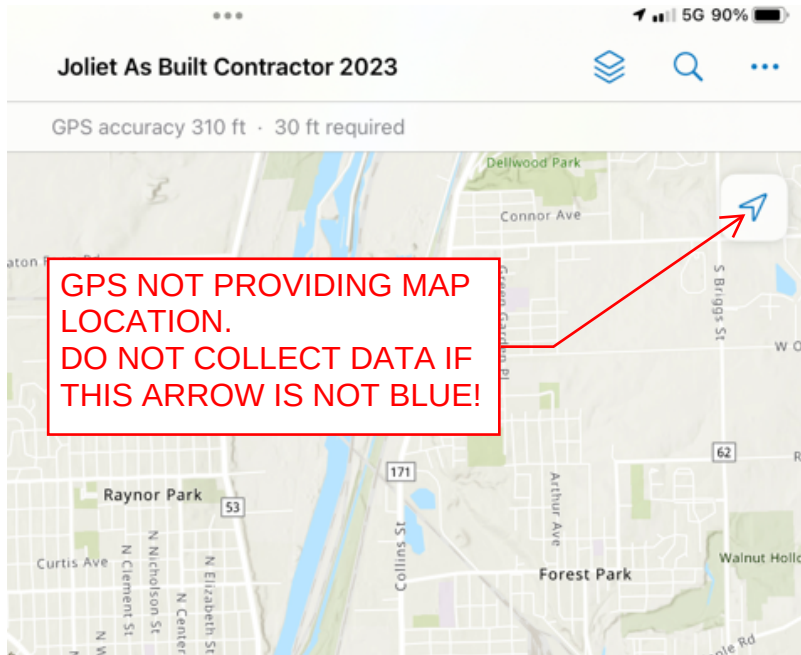
LEGEND: Shows map symbols without the need to press the collect data button.

MARKUP: Allows user to "Mark up map" with notes. This data is only visible by the logged on user. **DO NOT** use this feature to communicate as-built data.

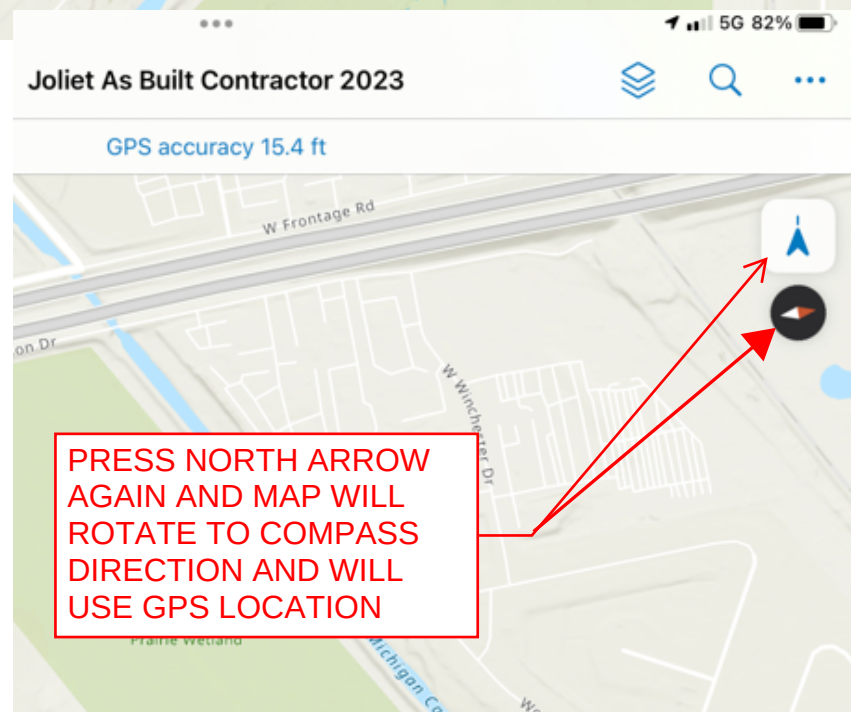
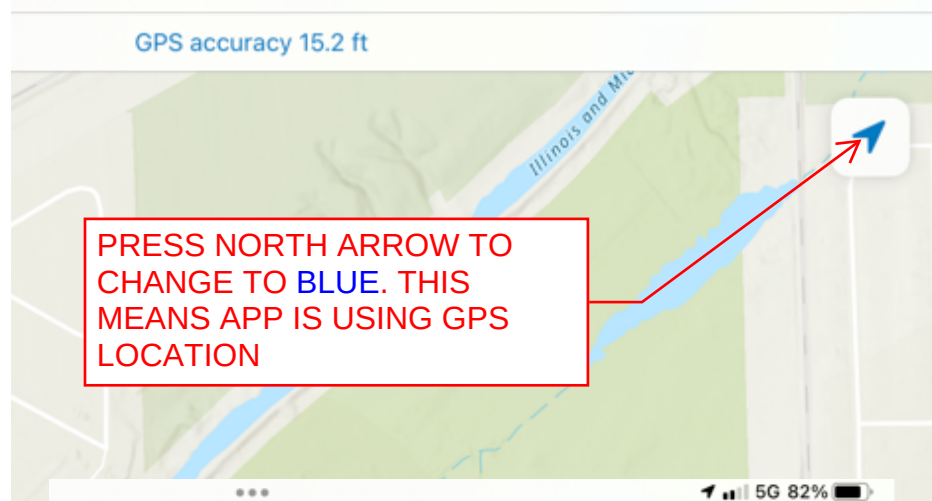
MEASURE: Allows user to measure map features including areas.

SHARE MAP: Allows user to share map link via. device apps. such as Email. Note recipient of link will only be able to view map if they have an AGOL UN and PW.

2.1 GENERAL MAP LAYOUT (CONTINUED)



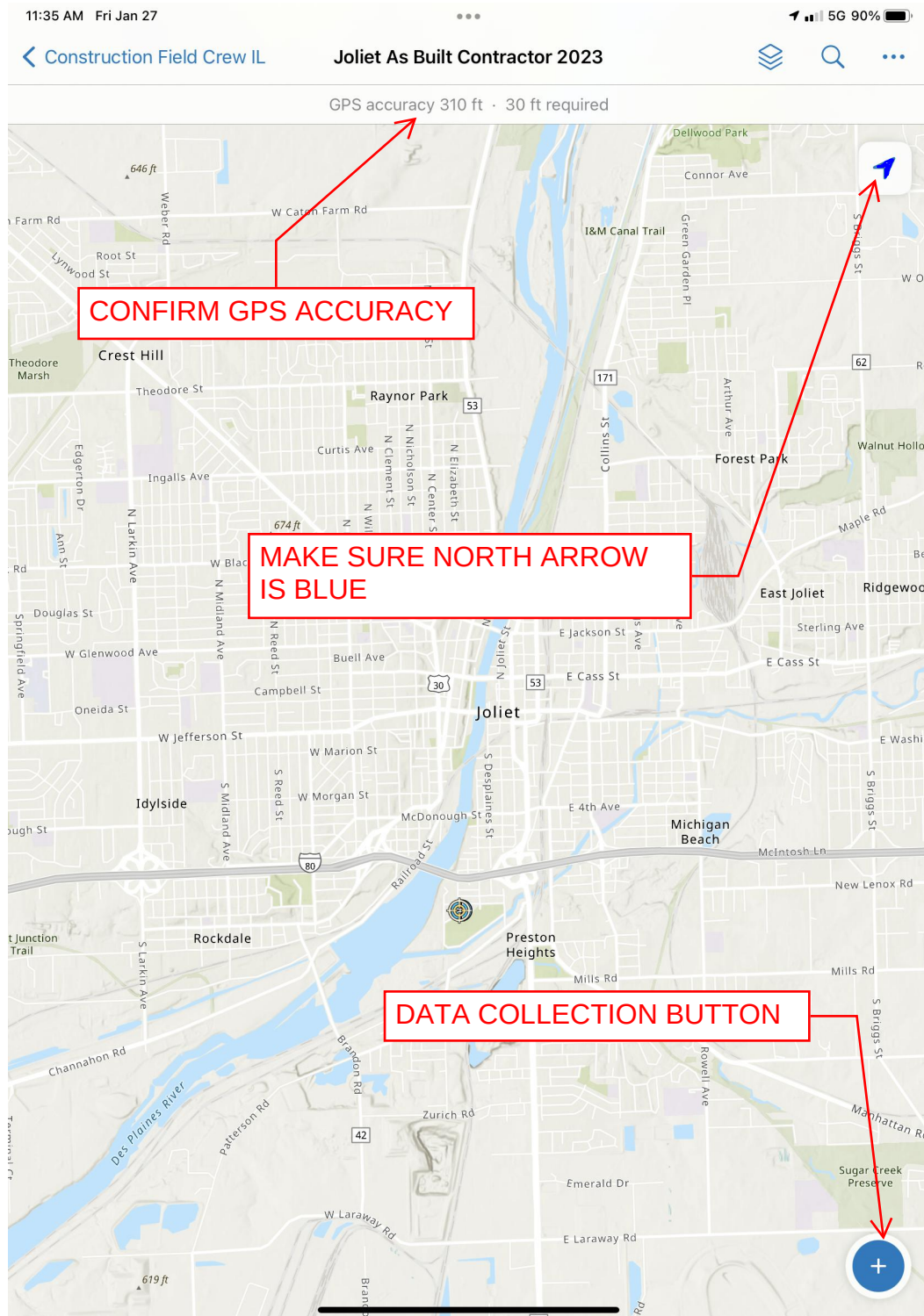
NORTH ARROW
LOCATION
STATUS



2.2 TAKING SHOTS, AND UPDATING POINTS

STEP 1

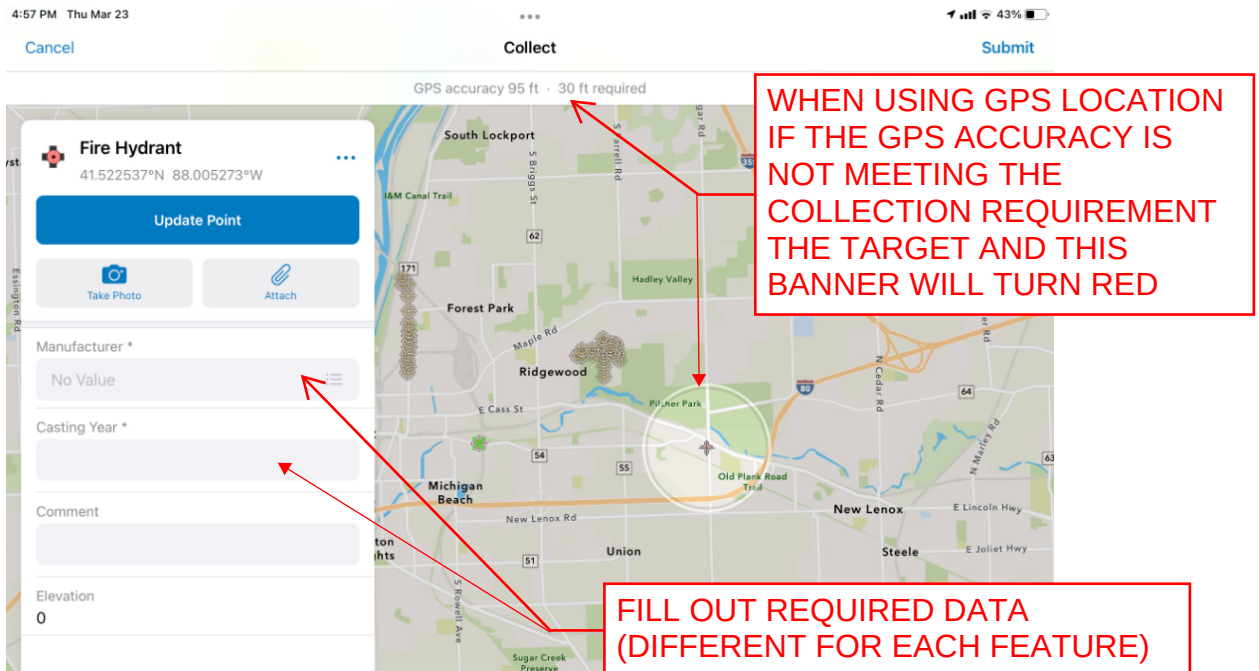
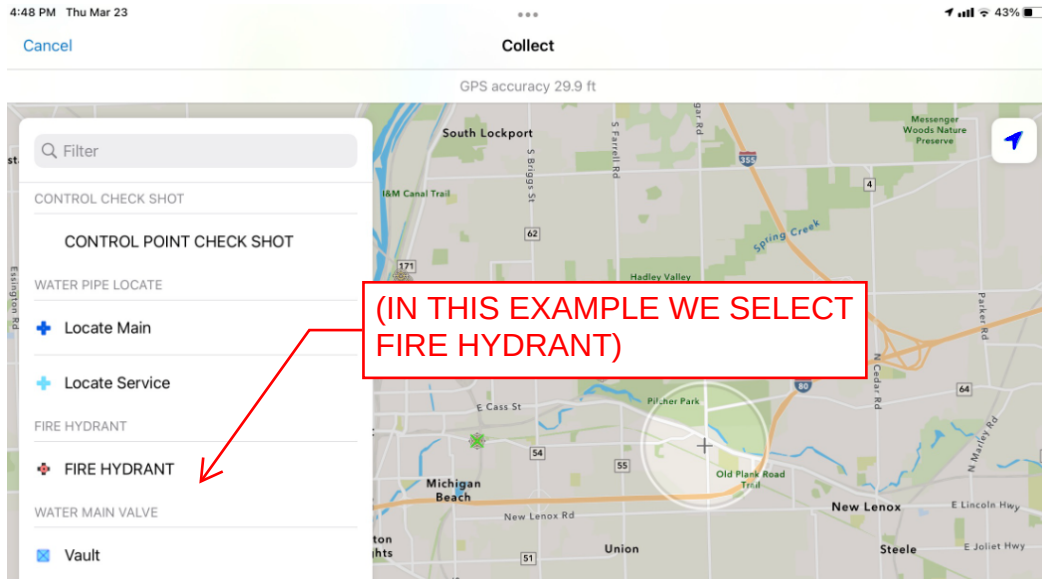
When a utility is ready to be shot and data collected there are a few things to be aware of. (1) make sure the rod height set is accurate. (2) Make sure your GPS accuracy is within acceptable range. (3) Make sure the map is tracking your current location (North arrow is blue). Once those requirements have been made the "+" button can be selected.



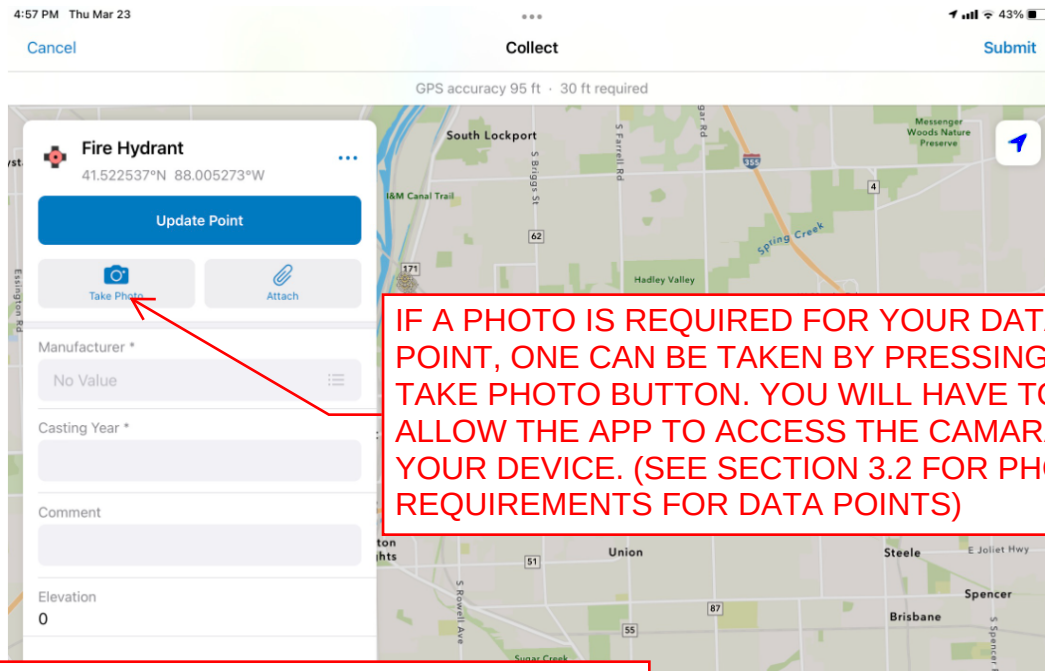
2.2 TAKING SHOTS, AND UPDATING POINTS (CONTINUED)

STEP 2

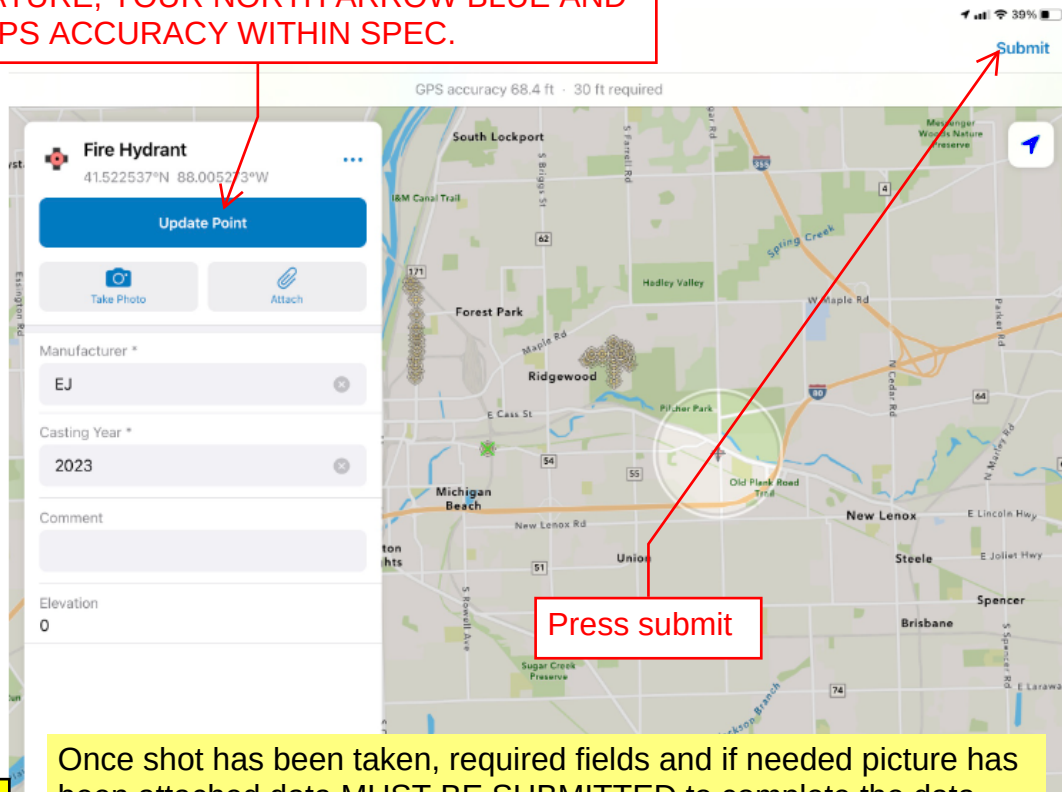
Once the rod is plumbed up you can then pick from the list the feature you are collecting data for. **NOTE: The GPS will officially take the shot when you select one of the features from the list below, Make sure the GPS rod is plumb when you do this.** (List can be scrolled through to view all the options prior to selection)



2.2 TAKING SHOTS, AND UPDATING POINTS (CONTINUED)



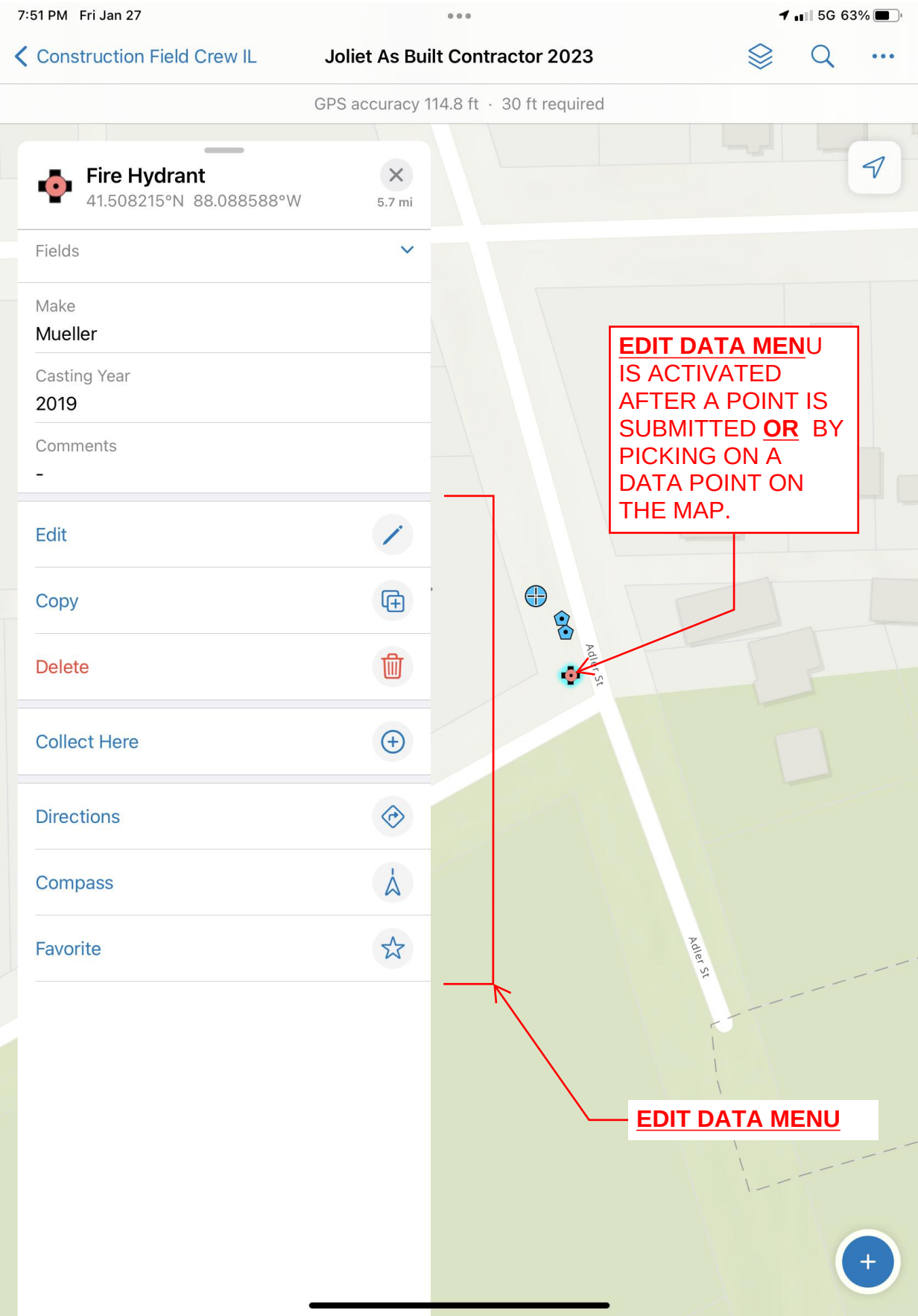
UPDATE POINT BUTTON ALLOWS THE USER TO UPDATE THE COORDINATES OF THE POINT IF NEEDED. NOTE THAT WHEN YOU HIT THIS BUTTON YOU WILL NEED TO BE PLUMB AND ON THE FEATURE, YOUR NORTH ARROW BLUE AND YOUR GPS ACCURACY WITHIN SPEC.



STEP 3

Once shot has been taken, required fields and if needed picture has been attached data MUST BE SUBMITTED to complete the data collection process.

2.3 EDIT DATA MENU

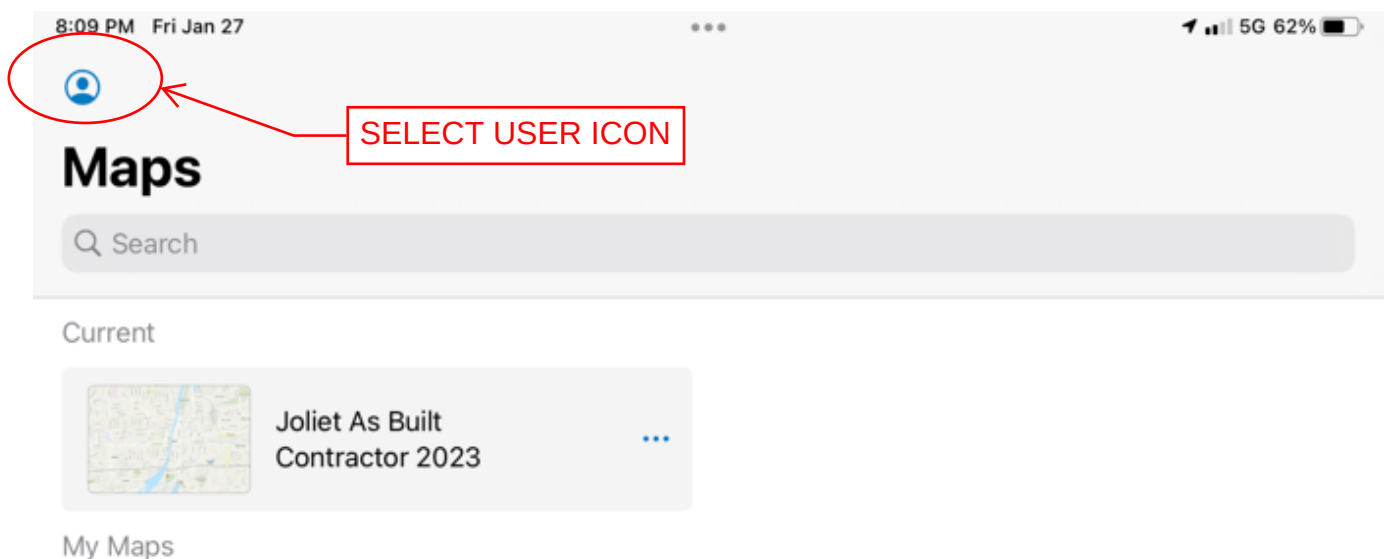
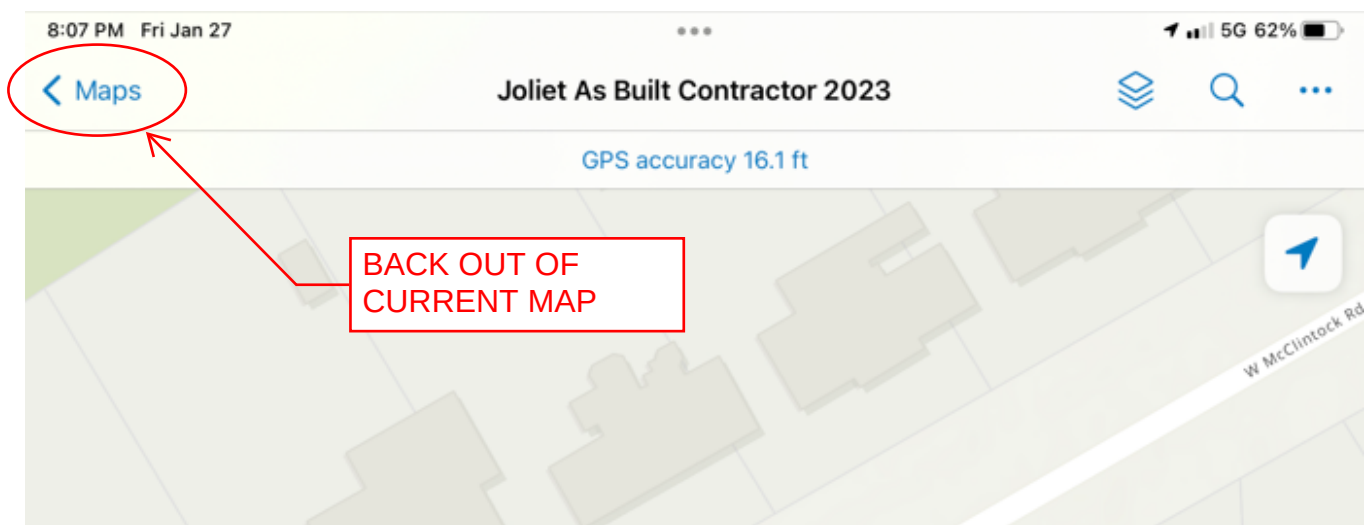


2.4 CHANGING ROD HEIGHT

Some data collection situations may require the use of the rod extension to accurately collect data. Line of sight or magnetic interference can be caused by deep trenches or adjacent objects. To avoid these issues you can increase the height of the GPS rod by attaching the rod extension. Use the following steps to change the standard 2 meter rod height to the extended rod height measurement.

STEP 1

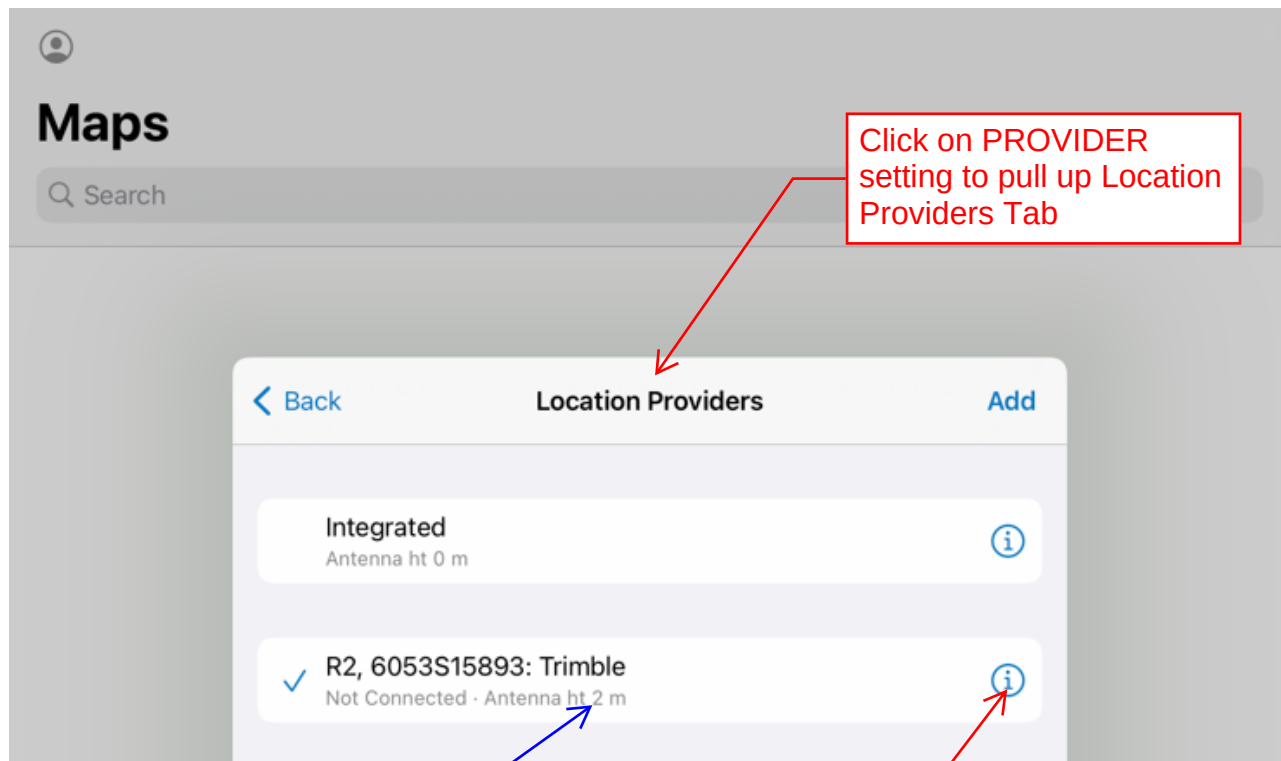
In Field Maps navigate to the map screen and select your user profile.



2.4 CHANGING ROD HEIGHT (CONTINUED)

STEP 2

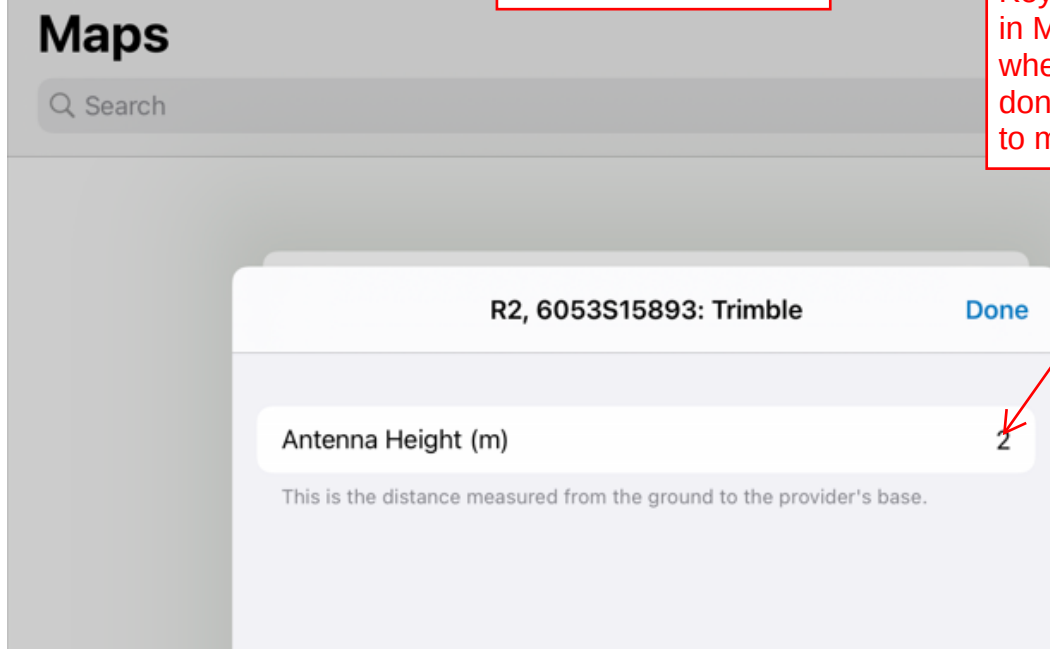
Under user profile select PROVIDER. This will bring you to the Location providers options. Your R2 GPS should be selected. Pick the INFO button, and modify antenna Height accordingly.



NOTE: Current rod height is shown here.

Click on INFO

Key in new rod height in Meters XX.XX when complete hit done and return back to map.



NOTE:

This rod height will remain the same until the above mentioned steps are followed to change it.

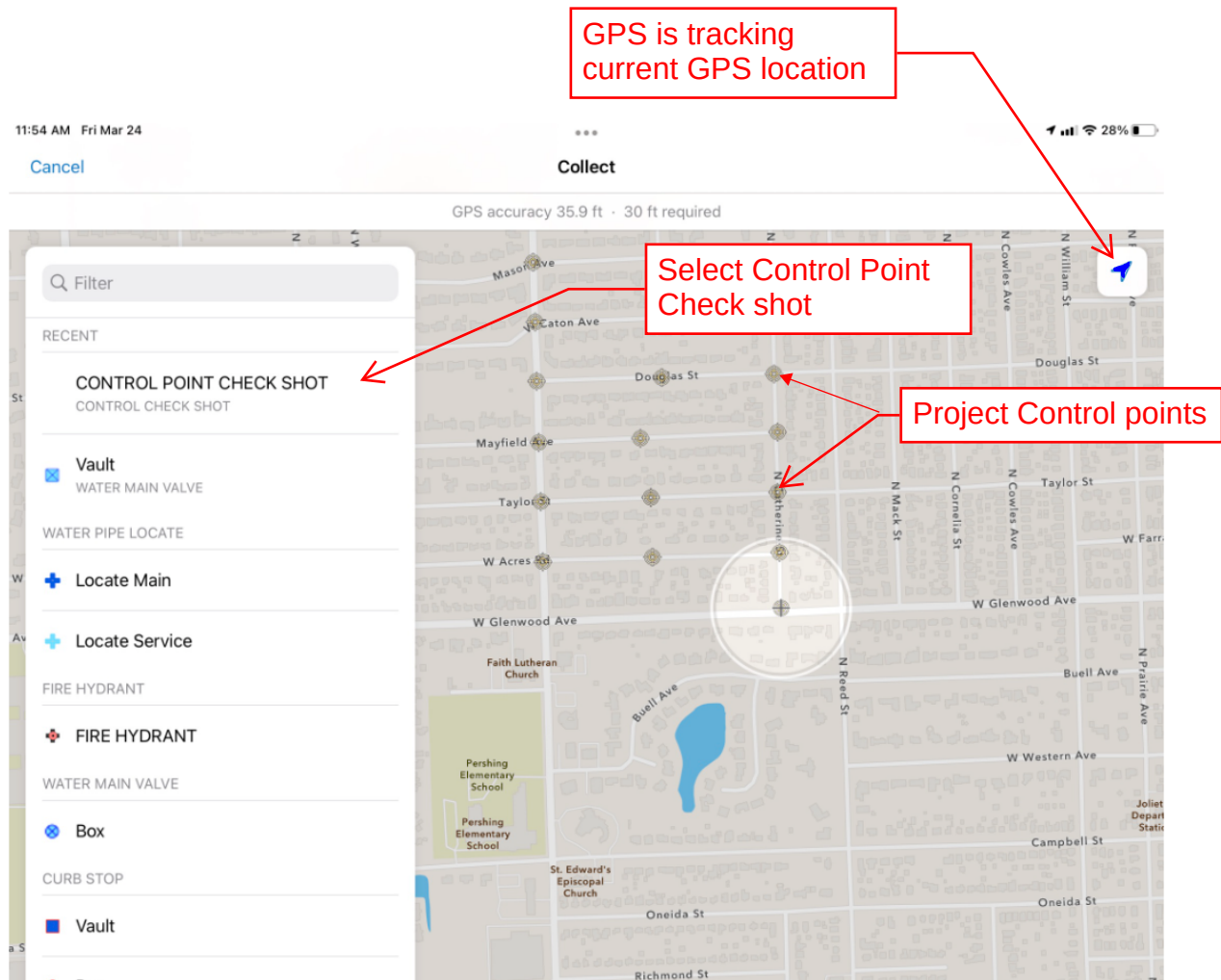
3.1 DAILY CONTROL POINT CHECKS

NOTE:

On a daily basis when collecting data the GPS will need to be checked against project control to verify horizontal and vertical accuracy. This should be done in the morning before data is collected for the day. Dozens of control exist along the project route. Throughout the project, control will be knocked out due to conflicts with construction. IF you have a case where all control has been destroyed on your project please contact Field services manager Tim Bette at 815-444-3320 to have new control set on your site.

STEP 1

Once equipment is assembled and GPS is connected and you are receiving Fixed RTK corrections you can use the GPS to find control locations shown on map. Using the bipod plumb the unit up over the control point and press the "+" button and select "CONTROL POINT CHECK SHOT"



3.1 DAILY CONTROL POINT CHECKS (CONTIUED)

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STEP 2

Once shot is taken fill out the date and operator initials to record check. Note elevation as shown in check shot and compare that information to the elevation recorded in the the actual control point in the map. In addition check your horizontal accuracy by using the measure command to measure a distance from the control check shot to the control point. If elevation OR horizontal distance is more than 0.25' off check rod height settings, re-plumb unit and retry. If an elevation and or horizontal can not be achieved within the 0.25' tolerance, consider changing mount points in TMM or contact your construction inspection representative for assistance with trouble shooting.

12:43 PM Fri Mar 24

Cancel Collect Submit

GPS accuracy 84.4 ft · 30 ft required

Check shot
41.523302°N 88.056612°W

Update Point

Take Photo Attach

Elevation
565.721474795987

Comment
3-20-23 TJB

CP ID
Public works control point

CP Type
PK

ELEVATION RECORDED ON CHECK SHOT

ENTER DATE AND OPERATOR INITIALS TO RECORD CHECK REQUIREMENT

IF KNOWN ENTER POINT ID NUMBER

IDENTIFY CONTROL POINT TYPE

STEP 2

AFTER CONFIRMING CHECK SHOT MEETS 0.25' TOLORANCE. You are now ready to collect data.

3.2 WHAT GETS COLLECTED

NOTE:

Every as-built feature type collected will have it's own set of required data entry. Every effort has been taken to make this as easy and quick as possible for the end user. Required data will have to be entered in order to submit points. In some cases photos will be required to show additional detail for as-built clarity. Photos should be taken from a distance that allows end user to orient the features in the photo for future reference.

+ Water Pipe Located Main or Service

Take Photo

Attach

Main Material

No value

***REQUIRED**

Main Size

No value

***REQUIRED**

Main or Service? *

Main

AUTOMATILY SELECTED

Comment

IF HDD NOTE DEPTH OF PIPE IN FEET IN THIS FORMAT (-5.25 T/P)

Valve Vault

No location

Take Photo

Attach

Enclosure Type *

Vault

AUTOMATILY SELECTED

Size *

No Value

***REQUIRED**

Manufacturer *

No Value

***REQUIRED**

Comment

IF NEEDED

Curb Stop Box or Vault

Take Photo

Attach

Enclosure Type *

Vault

AUTOMATILY SELECTED

Size *

No Value

***REQUIRED**

Manufacturer *

No Value

***REQUIRED**

Address

***REQUIRED** (Enter house "Number" or "Unknown" if not known. Street name not needed)

Comment

IF NEEDED

Fire Hydrant

No location

Take Photo

Attach

Manufacturer *

No Value

***REQUIRED**

Casting Year *

***REQUIRED**

Comment

IF NEEDED

Valve Box

No location

Take Photo

Attach

Enclosure Type *

Box

AUTOMATILY SELECTED

Size *

No Value

***REQUIRED**

Manufacturer *

No Value

***REQUIRED**

Hydrant Auxiliary Valve *

No Value

***REQUIRED**

Comment

IF NEEDED

CORP STOP

No location

Take Photo

Attach

Size *

No Value

***REQUIRED**

Manufacturer *

No Value

***REQUIRED**

CorpType *

No Value

***REQUIRED**

Address

***REQUIRED** (Enter house "Number" or "Unknown" if not known. Street name not needed)

Comment

IF NEEDED

3.2 WHAT GETS COLLECTED (CONTINUED)

33

Fitting

No location

Take Photo

Attach

Fitting Distribution Type

No value

*REQUIRED

Fitting Type

No value

*REQUIRED

Size

No value

*REQUIRED

Reducer - Cross Secondary Size

No value

*REQUIRED IF REDUCER OR CROSS

Comment

IF NEEDED

* Water Main and Force Main Tee

No location

Take Photo

Attach

Main Size

No value

*REQUIRED

Tee Distribution Type

No value

Tee Material

No value

Tee Style

No value

Branch Size

No value

Comment

IF NEEDED

Sanitary Manhole and Sanitary Cleanout

No location

Size Manhole

No value

*REQUIRED

Drop MH

No value

*REQUIRED

Number of Pipes

1

*NUMBER OF PIPES IN STRUCTURE NEEDS TO BE ENTERED TO OPEN PIPE DATA IN FORM BELOW

Structure Notes

IF NEEDED

Elevation (Feet)

--

Failed to calculate

CALCULATED BY GPS (RIM ELEVATION)

PIPE 1 INFO

Pipe 1 Direction

No value

*REQUIRED

Pipe 1 Material

No value

*REQUIRED

Pipe 1 Size

No value

*REQUIRED

Pipe 1 Depth

**REQUIRED (DEPTH MEASURED IN FEET FROM FROM FINISHED RIM TO PIPE INVERT)

Pipe 1 Invert

**IF PIPE DEPTH IS ENTERED THIS FIELD IS LEFT BLANK. IF DEPTH CAN'T BE MEASURED AND KNOWN PIPE INVERT ELEVATION IN FEET IS KNOWN ENTER HERE

Pipe 1 Notes

IF NEEDED

+ Force Main Locate

41.468986°N 88.185560°W

Take Photo

Attach

GROUP 1

Material

No value

*REQUIRED

Size

No value

*REQUIRED

Comment

IF HDD NOTE DEPTH OF PIPE IN FEET IN THIS FORMAT (-5.25 T/P)

Valve Vault

No location

Take Photo

Attach

GROUP 1 *

Enclosure Type *

Vault

AUTOMATILY SELECTED

Valve Type

No value

*REQUIRED

Manufacturer

No value

*REQUIRED

Size

No value

*REQUIRED

Comment

IF NEEDED

3.2 WHAT GETS COLLECTED (CONTINUED)

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 **Valve Box**
41.541206°N 87.832500°W

 Take Photo

 Attach

GROUP 1 *

Enclosure Type *
Box AUTOMATILY SELECTED

Manufacturer
No value *REQUIRED

Size
No value *REQUIRED

Comment
IF NEEDED

 **Storm Manhole, Catch Basin, and Inlet**
41.541180°N 87.832517°W

 Take Photo

 Attach

GENERAL INFO *

Type *
CATCH BASIN AUTOMATILY SELECTED

Size_MH_Inlet_CB
No value *REQUIRED

Depth
*IF STRUCTURE HAS A SUMP ENTER DISTANCE IN FEET FROM FINISHED RIM TO BOTTOM OF STRUCTURE

Number of Pipes
No value *NUMBER OF PIPES IN STRUCTURE NEEDS TO BE ENTERED TO OPEN PIPE DATA IN FORM BELOW

Cover Type
No value *REQUIRED

Structure Notes
IF NEEDED

PIPE 1 INFO

Pipe 1 Direction
No value *REQUIRED

Pipe 1 Material
No value *REQUIRED

Pipe 1 Size
No value *REQUIRED

Pipe 1 Depth **REQUIRED (DEPTH MEASURED IN FEET FROM FROM FINISHED RIM TO PIPE INVERT)

Pipe 1 Invert **IF PIPE DEPTH IS ENTERED THIS FIELD IS LEFT BLANK. IF DEPTH CAN'T BE MEASURED AND KNOWN PIPE INVERT ELEVATION IN FEET IS KNOWN ENTER HERE

Pipe 1 Notes
IF NEEDED

 **Fitting**
No location

 Take Photo

 Attach

GROUP 1

Fitting Type
No value *REQUIRED

Size
No value *REQUIRED

Reducer - Cross Secondary Size
No value *REQUIRED IF REDUCER OR CROSS

Comment
IF NEEDED

 **FLARED END SECTION**
No location

 Take Photo

 Attach

GENERAL INFO *

Type *
FLARED END SECTION AUTOMATILY SELECTED

Structure Notes
IF NEEDED

Elevation
--
Failed to calculate ** FEATURE IS SHOT AT THE INVERT OF PIPE

FES

Size_FES
No value *REQUIRED

Material FES
No value *REQUIRED

Pipe1DirFES
No value *REQUIRED

 **CASING PIPE**
No location

 Take Photo

 Attach

Material
No value *REQUIRED

Size
No value *REQUIRED

Elevation
--
Failed to calculate

Comment
IF NEEDED

3.2 WHAT GETS COLLECTED
(CONTINUED)

◆ Utility Crossings: Electric, Gas, Sanitary, Storm, Water, Unknown Utility
41.541177°N 87.832519°W



Take Photo



Attach

Type

No value

*REQUIRED



Size

*REQUIRED

Comment

IF NEEDED

3.3 WHEN AND HOW DATA IS COLLECTED

CONTROL CHECK SHOT

CONTROL POINT CHECK SHOT

DATA COLLECTION INTERVAL: **ONCE A DAY AT GPS STARTUP OR WHEN GPS BASE STATION IS CHANGED.**

WATER PIPE LOCATE

Locate Main

DATA COLLECTION INTERVAL: **(OPEN CUT) EVERY 50' AND AT HORIZ. AND VERT. BENDS (HDD) EVERY 10' WITH DEPTHS INPUT.**

Locate Service

DATA COLLECTION INTERVAL: **(OPEN CUT) EVERY 10' AND AT BEND POINTS (HDD) EVERY 10' WITH PIPE DEPTHS MANUALLY INPUT.**

FIRE HYDRANT

FIRE HYDRANT

DATA COLLECTION LOCATION: **BACK CENTER POINT OF HYDRANT (POINT FURTHEST FROM AUX VALVE) AT GROUND ELEVATION.**

WATER MAIN VALVE

Vault

DATA COLLECTION LOCATION: **TOP OF OPERATING NUT (GATE VALVES) TOP OF C/L OF VALVE (BUTTERFLY VALVES).**

Box

DATA COLLECTION LOCATION: **TOP OF OPERATING NUT (NOT B-BOX COVER)**

CURB STOP

Vault

DATA COLLECTION LOCATION: **TOP OF OPERATING NUT (GATE VALVES) TOP OF C/L OF VALVE (BUTTERFLY VALVES).**

Box

DATA COLLECTION LOCATION: **TOP OF OPERATING NUT (NOT B-BOX COVER)**

CORP STOP

CORP STOP

DATA COLLECTION LOCATION: **TOP OF WATER MAIN AT C/L OF CORP. SADDLE OR TAP.**

WATER FITTINGS, BENDS, REDUCERS

WATER FITTINGS, BENDS, REDUCERS

DATA COLLECTION LOCATION: **C/L TOP OF FITTING. PHOTO REQUIRED AT CONNECTIONS TO EXISTING SYSTEM AND WHERE REQUIRED IN FIELD BY ENGINEER**

WATER FITTING TEES

WATER FITTING TEES

DATA COLLECTION LOCATION: **C/L TOP OF FITTING.**

WATER LINE SKETCH

WATER LINE SKETCH

THIS DATA WILL BE ENTERED BY ENGINEER.

SANITARY STRUCTURE

SANITARY MANHOLE

DATA COLLECTION LOCATION: **C/L OF RIM AT FINISHED GRADE (DEPTHS ARE MEASURED FROM FINISHED GRADE)***

SANITARY CLEANOUT

DATA COLLECTION LOCATION: **C/L TOP OF CAP AT FINISHED GRADE (DEPTHS ARE MEASURED FROM FINISHED GRADE) ***

SANITARY LINE SKETCH

SANITARY LINE SKETCH

THIS DATA WILL BE ENTERED BY ENGINEER.

3.3 WHEN AND HOW DATA IS COLLECTED (CONTIUNED)

FORCE MAIN LOCATE

 **FORCE MAIN LOCATE** DATA COLLECTION INTERVAL: (OPEN CUT) EVERY 50' AND AT HORIZ. AND VERT. BENDS (HDD) EVERY 10' WITH DEPTHS INPUT.

FORCE MAIN VALVE

 **Vault** DATA COLLECTION LOCATION: TOP OF OPERATING NUT OR AT TOP OF AIR RELEASE VALVE

 **Box** DATA COLLECTION LOCATION: TOP OF OPERATING NUT (**NOT** B-BOX COVER)

FORCE MAIN FITTING

 **ForceMain_Fitting** DATA COLLECTION LOCATION: C/L TOP OF FITTING.

FORCE MAIN TEE

 **ForceMain_Tee** DATA COLLECTION LOCATION: C/L TOP OF FITTING.

FORCE MAIN LINE SKETCH

 **Force_Main_Sketch** THIS DATA WILL BE ENTERED BY ENGINEER.

STORM STRUCTURE

 **CATCH BASIN** DATA COLLECTION LOCATION: C/L OF RIM AT FINISHED GRADE (DEPTHS ARE MEASURED FROM FINISHED GRADE)*

 **FLARED END SECTION** DATA COLLECTION LOCATION: PIPE FINISHED GRADE INVERT

 **INLET** DATA COLLECTION LOCATION: C/L OF RIM AT FINISHED GRADE (DEPTHS ARE MEASURED FROM FINISHED GRADE)*

 **STORM MANHOLE** DATA COLLECTION LOCATION: C/L OF RIM AT FINISHED GRADE (DEPTHS ARE MEASURED FROM FINISHED GRADE)*

STORM LINE SKETCH

 **STORM LINE SKETCH** THIS DATA WILL BE ENTERED BY ENGINEER.

CASING PIPE

 **CASING PIPE** DATA COLLECTION LOCATION: TOP OF CASING AT BEGINNING AND END OF CASING. (SEE EXAMPLE)

UTILITY CROSSINGS

 **Electric** DATA COLLECTION LOCATION: TOP OF UTILITY WHERE IT INTERSECTS WITH WATER MAIN. (SEE EXAMPLE) **PHOTO REQUIRED**

 **Gas**

 **Sanitary**

 **Storm**

 **Water**

 **Unknown**



3.3 WHEN AND HOW DATA IS COLLECTED

UTILITY CROSSINGS



UTILITY CROSSING

Electric

Gas

Sanitary

Unknown

Storm

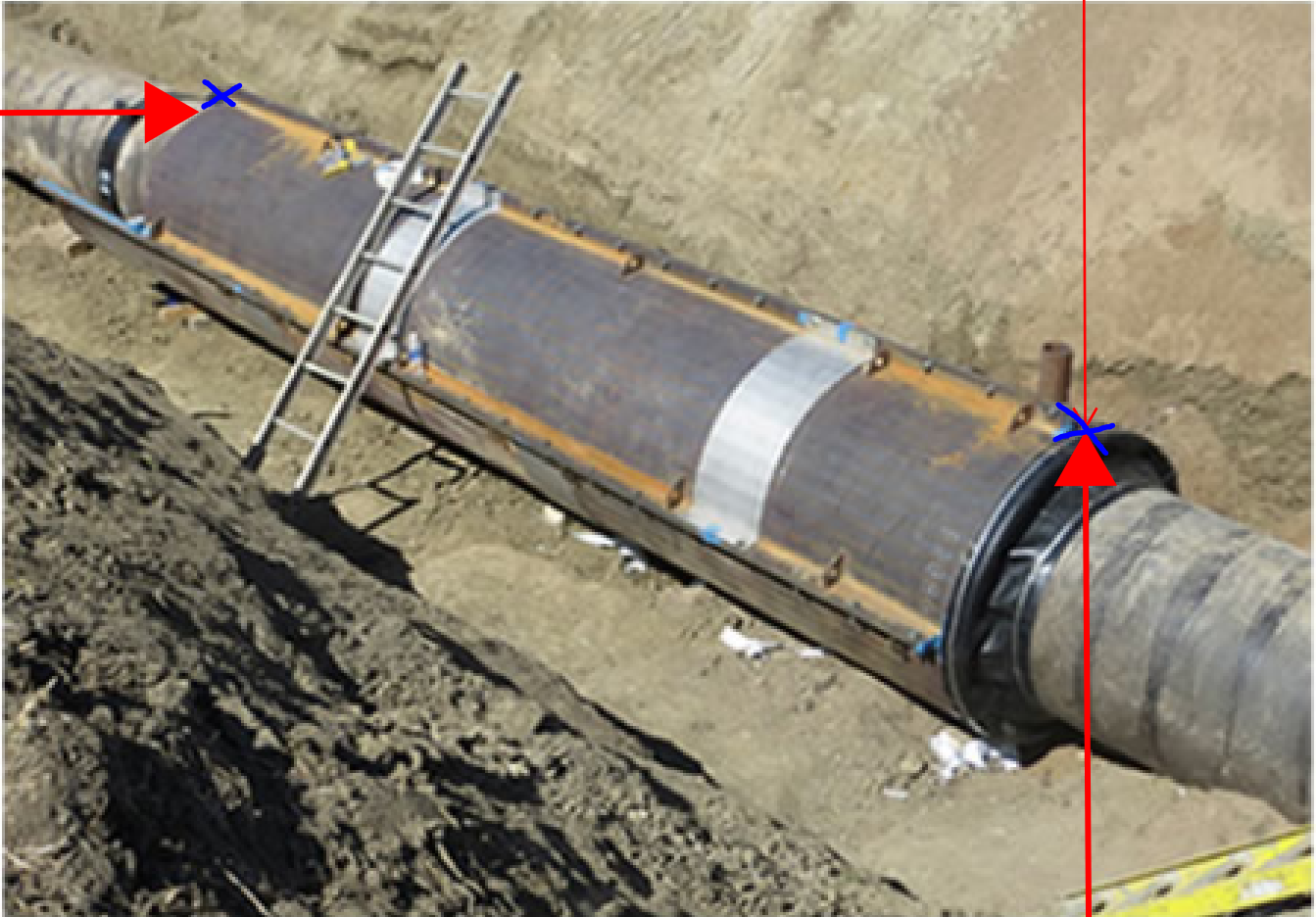
Tel-Com

Water

3.3 WHEN AND HOW DATA IS COLLECTED CASING PIPES

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SHOOT CASING
PIPE AT EACH END
OF CASING



◆ Tel-Com

◆ Water

CASING PIPE

☐ Casing Pipe

4. Trouble Shooting and Best Practices

4.1 Dealing with Poor GPS Accuracy:

Accurate GPS data collection requires clear line of sight, as well as a low level of magnetic interference due to steel structures.

When taking shots in an open trench centered on a steel trench box, you may need to add an extension section to the GPS pole (See section 2.4 Changing Rod Heights). This will ensure GPS receiver head is above the magnetic interference from the trench box and high enough that the sides of the GPS receiver have a clear line of sight.

This interference can also be caused by excavation equipment too close to the data collection site. When possible, keep heavy equipment from being directly adjacent GPS receiver when taking shots.

4.2 Best Practices for Accurate Data Collection:

When staging the GPS unit on the construction site do not leave it directly under trees, laying on the ground or in the back of a truck. This will cause the unit to go into a “Float” position and will not provide accurate position and will take additional time waiting for GPS to achieve a “Fixed” Position.

Keep the unit in an upright position in a location free of being damaged by construction equipment or personnel, and out of direct sunlight on hot sunny days. Direct sunlight can cause mobile devices to overheat.

If a shot, falls directly in an area where GPS “Fixed” position can’t be achieved (heavy tree cover etc.) establish offset points in a “GPS-able” location and note offset information in point. Please refer to Section 3 “Data Collection Requirements” section 3.3 “When and How Data is Collected” of this document on information on how to establish offsets. In addition, work with B&W engineer to document information on plans to be later manually input into GIS map.

4.3 Issues with GPS Networks, Changing Network and SPS Base Stations:

On occasion SPS CORS base stations can be taken offline for maintenance or may have equipment failure. This will cause the GPS to only get SBAS corrections and never dial down the standard 0.5-2-inch accuracy. One way to fix this problem is to switch SPS base stations to the next closest base station. See Section 1 “Getting Started” section 1.3 “Configuration” on how to do this. If switching SPS stations does not fix this issue, GPS Network provider may need to be changed. Contact Field Services Manager for alternate network Information. See section 5 “Technical Support” section 5.3 “Online Screen sharing and technical support calls” for contact information.

4.4 Usernames and Passwords:

Each data collection unit will require usernames and passwords for the following application:

AGOL (Field Maps Application) UN & PW supplied by city. If contractor becomes locked out of an account, contact **Mike DiGiannantonio, COJ GIS Coordinator** at 815-486-1054 Direct or 847-224-4251 Cell, for password reset.

4. Trouble Shooting and Best Practices (Continued)

4.4 Usernames and Passwords (Continued):

Note: Application setting in Field Maps and Trimble Mobile Manager are user specific. That means that if the equipment changes hands the new user will need access to the UN & PW that was used to set up equipment. Users may have to log out and log back onto applications. **We strongly suggest that the email that was used to set up these accounts is also accessible on the same mobile device used to collect data.** This will assist with resetting passwords and troubleshooting using Facetime calls.

In addition, **one of the most often issues end users have with the equipment is locking themselves out of applications due to inaccurate UN & PW information.** We suggest that UN and PW information be saved in a location accessible to all users somewhere on the mobile device. IOS users may want to use the Notes app to do this.

5. Technical Support

5.1 First Steps:

First Identify if issue is **GPS related**, (poor GPS accuracy, GPS will not connect) or **Field Maps App related** (Map does not load correctly, points will not submit).

When dealing with Field Maps issues (Non-GPS issues) First try **Closing** or “Killing” app by swiping up to view all running apps and “X” out – close app.

If this does not fix the issue go to the Field Maps, Maps screen Click on user Icon and **log out of field maps user and log back into AGOL account and re-open map.**

Final option that sometimes works is **to turn off and restart tablet.** We have found that sometimes this fixes the issue with data connections to AGOL Field Maps.

When dealing with GPS issues (NON-Field Maps App issues) First check mobile device settings, Bluetooth and verify GPS is connected. If GPS is on and connected to mobile device, **check to make sure Trimble mobile manager App is running. This app should automatically launch in the background when Field Maps is started.** If it does not launch automatically close all apps and shut down and restart mobile device. Check Bluetooth connect and launch Field Maps. Check to see if TMM automatically launches. Check the **GPS Accuracy tab in field maps to make sure your GPS provider is set to the connected R2 GPS unit.** If is not set correctly, please refer to section 1.3 and 1.4 “Configuration and Map Profiles” of this document. If it is set to connected GPS, proceed to second step, and seek on site assistance.

5.2 Second Steps:

All onsite Construction inspectors are trained in GIS – GPS related data collection equipment. Contact onsite COJ Construction inspectors to assist with trouble shooting. **This will be your fastest access to onsite technical support.**

5.3 Online Screen sharing and technical support calls:

If issues cannot be resolved by standard troubleshooting outlined above or by onsite COJ Construction inspector, please contact Mike DiGiannantonio, COJ GIS Coordinator at 815-486-1054 Direct or 847-224-4251 Cell.

5. Technical Support (Continued)

5.3 Online Screen sharing and technical support calls (Continued):

a screen share via FaceTime call can be done to view your mobile device screen and assist with issues. **Support calls will be dealt with on an hourly basis with each contract getting 4 hours per month of technical support. Please review project specifications manual for details.**

5.4 Onsite technical support:

In the very rare occasion steps 1-3 do not fix the problem onsite technical support is available by Field Services Manager. Manager will attempt to be onsite within 1 hour. If problem cannot be resolved due to equipment (GPS) failure B&W will provide a backup GPS unit at no cost until unit is fixed or replaced. If it is found to be an issue with the contractor supplied mobile device, B&W will provide a short term (1 week) backup mobile device at no cost.

Note: During periods of equipment outages contractor is still responsible for accurately locating underground utilities. Please refer to Section 3 “Data Collection Requirements” section 3.3 “When and How Data is Collected” of this document.