

City of Rochester Street Utility Infrastructure Analysis (SUIA)

Training #1: Efficient data collection with Collector for ArcGIS

* Updated to reflect 8/2019 revision of City of Rochester Utility Appurtenances Policy

Norman H. Jones, DES Commissioner
Holly E. Barrett, City Engineer
Bill Vandame, Permit Coordinator

City of Rochester Water Bureau Training Room
10 Felix Street Rochester, NY
Thursday, June 6, 2019
2:00 – 3:30 p.m.



City of Rochester, NY
Lovely A. Warren, Mayor
Rochester City Council

B believe.

 **SUIA** | Why are we doing this?

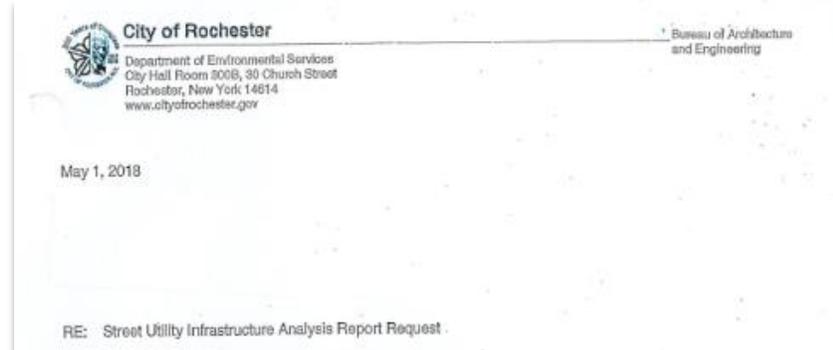


N/W CORNER CHESTNUT & WOODBURY

05/30/2019 11:14



SUIA | May 2018 Report Request



The City of Rochester is requesting all entities with underground infrastructure facilities (manholes, hand holes, valves and drainage basins) to perform a field survey analysis of the existing conditions of each structure located within the City's Public Right-of-Way. The analysis report shall include all structures located in the streets, sidewalks and tree lawn areas. As a tenant / permittee within the Right of Way it is your responsibility to properly maintain facilities under your control at a level that meets the appropriate structural standard.** Details regarding the report submission guidelines are included in the attached document.



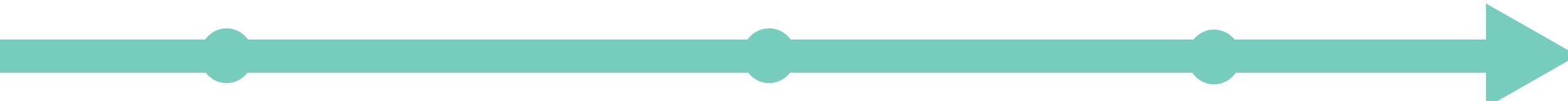


SUIA | Timeline (To Date)





SUIA | Timeline (Next Steps)



**June 2019,
continued**

Testing & tweaking
application internally

July 2019

Setting up agency
accounts*

Summer 2019

Implementation: Data
collection with Collector
begins

*One-on-one follow-up meetings with the City can be scheduled on request



SUIA | Today's Presenters

Marlana Zink

Community Liaison, City of Rochester Dept. of Environmental Services

Kamal Crues, P.E.

Sr. Structural Engineer, City of Rochester Dept. of Environmental Services



SUIA | Today's Agenda

- **Revisit May 2018 GIS Standards**
- **Overview of Collector for ArcGIS ("Collector")**
→ **Get Started in Six Steps**
- **Understanding the Inspection form**
- **Mock Inspection Demonstration**
- **Questions & Hands-on testing**



SUIA | GIS Requirements

Initial (May 2018) GIS Guidelines

Street Utility Infrastructure Analysis Guidelines

Please submit your report in a GIS deliverable, in ArcGIS Layer Package (.lpx) or ArcGIS Map Package (.mpk) format. ArcGIS File Geodatabase format is also acceptable. If you do not use ArcGIS software, Shapefile, MapInfo or KML formats will be accepted.

Report analysis findings should include:

- Location
 - Street name
 - Address (or closest available address)
- Type of facility structure (manhole, hand hole, valve, drainage basin, i.e.)
- Structure and surrounding pavement area condition ratings of each item
- Photo of each item/location:
Our preference is for photos to be included as ArcGIS Geodatabase Attachments. If this format is not possible, you may include a database field populated with photo file names.
- GIS coordinate points of each structure, if submitting in Microsoft Excel.

Final report needs to be a GIS deliverable

- (e.g. .lpx, .mpk, .gdb, .kml)

Required fields are outlined

- Further specified in *Policy of Requirements for Utility Appurtenances with the Public ROW*

Excel was previously acceptable

- Time-consuming on both ends
- Phasing out this option

SUIA | Collector for ArcGIS

2019 Update: Collector for GIS Reporting Option

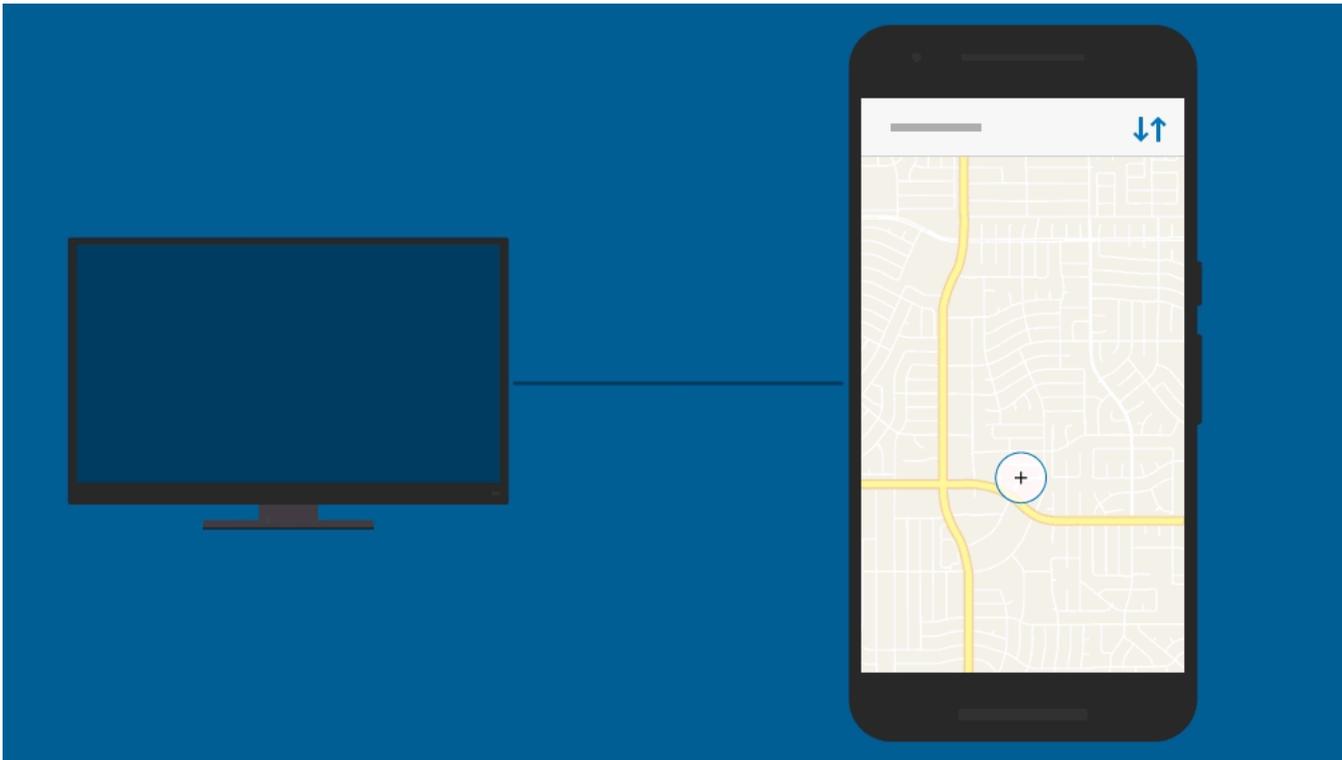
Goal: Not that.....this!



- ✓ Understanding of how Collector for ArcGIS can help with efficient data collection and reporting
- ✓ Documentation for today's training
- ✓ Line of communication to meet with DES for additional questions

SUIA | Collector for ArcGIS

What is Collector for ArcGIS?



GIF Source: Esri

Mobile data collection application

- Designed by Esri for tablets and smartphones
- City of Rochester DES configures application for external use

The app saves your location AND...

- Associated data
- Photos/videos

SUIA | Collector for ArcGIS

Collector Workflow vs Traditional Workflow

1. Go to the infrastructure



2. Record the location and data

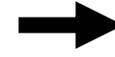
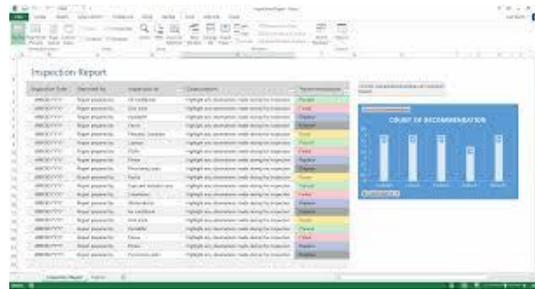
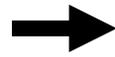


3. City DES sees the inspection



SUIA | Collector for ArcGIS

Collector Workflow vs **Traditional Workflow**



NAME	ADDRESS	CITY	S
Ace Market	1171 PELOMONT AVE NE	ATLANTA	GA
Andrew's Gasbar	1670 W PEACHTREE ST NE	ATLANTA	GA
AP Supermarket	4556 BEVERLY RD NE	ATLANTA	GA
Atlanta Market	241 16TH ST NW	ATLANTA	GA

Address Locator

● Geocoded point for the matched address



- NAD 1983 UTM Zone 15N
- NAD 1983 UTM Zone 16N
- NAD 1983 UTM Zone 17N
- NAD 1983 UTM Zone 18N
- NAD 1983 UTM Zone 19N**
- NAD 1983 UTM Zone 18W

Current coordinate system:
NAD_1983_UTM_Zone_19N
WKID: 26919 Authority: EPSG

Projection: Transverse_Mercator
False_Easting: 500000.0
False_Northing: 0.0
Central_Meridian: 69.0
Scale_Factor: 0.9996
Latitude_Of_Origin: 0.0
Linear_Units: Meter (1.0)

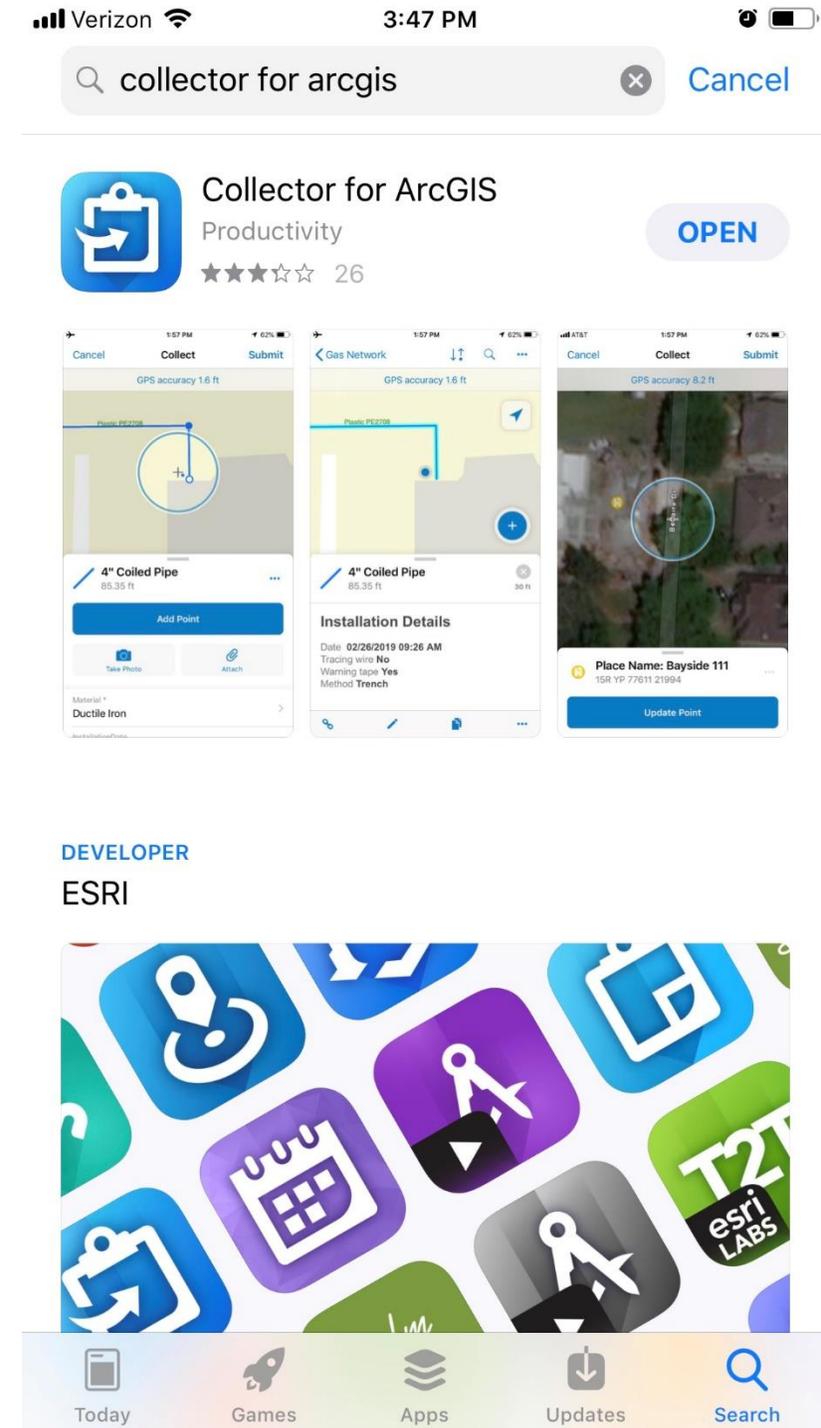




SUIA | Collector for ArcGIS

How to use Collector

1. **Download from app store and open on phone or tablet**
2. Sign in with City of Rochester-issued login information.
3. Open your agency's inspection map (you will ONLY have access to your agency's inspections)
4. Save your location
5. Take pictures
6. Complete inspection form & submit!

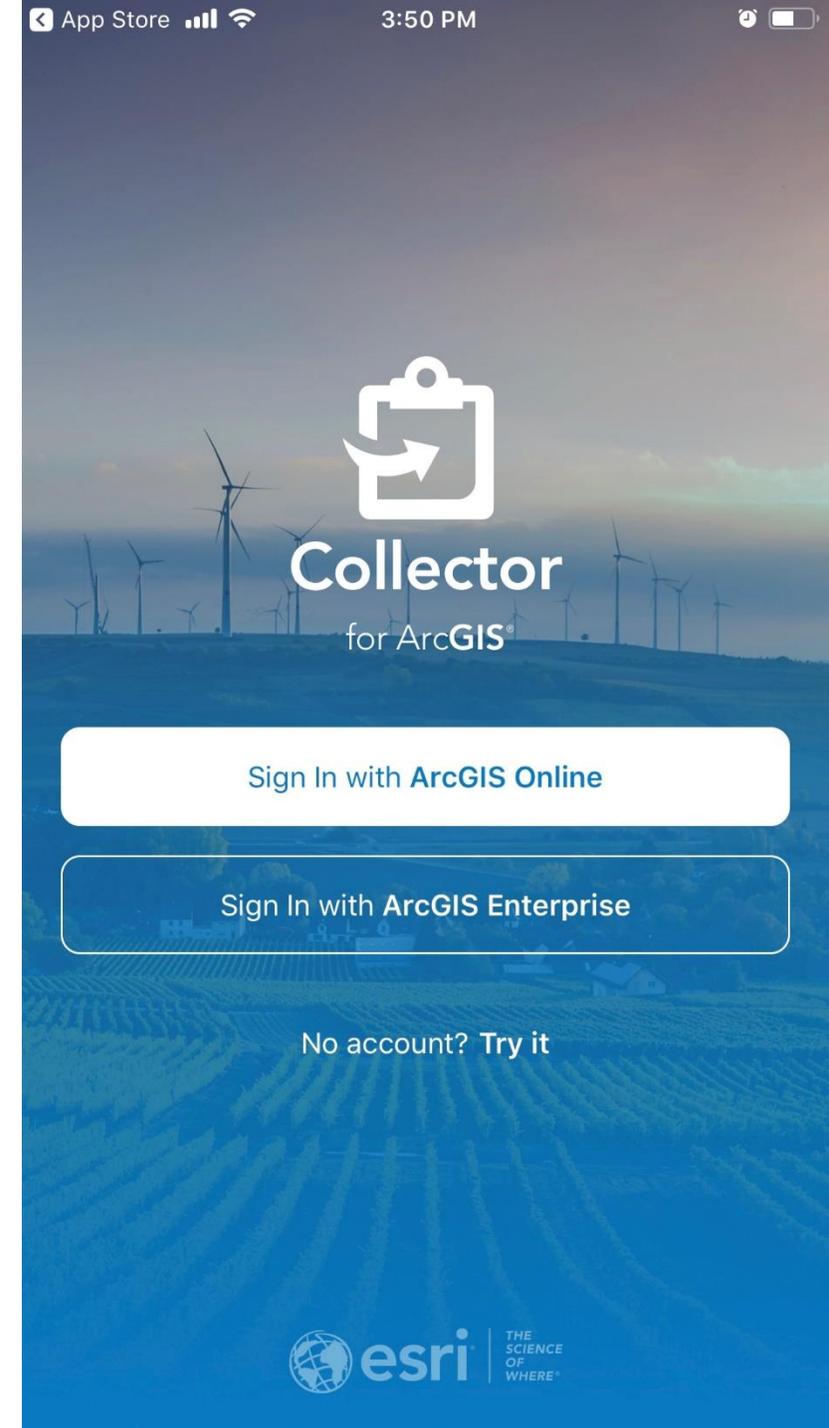




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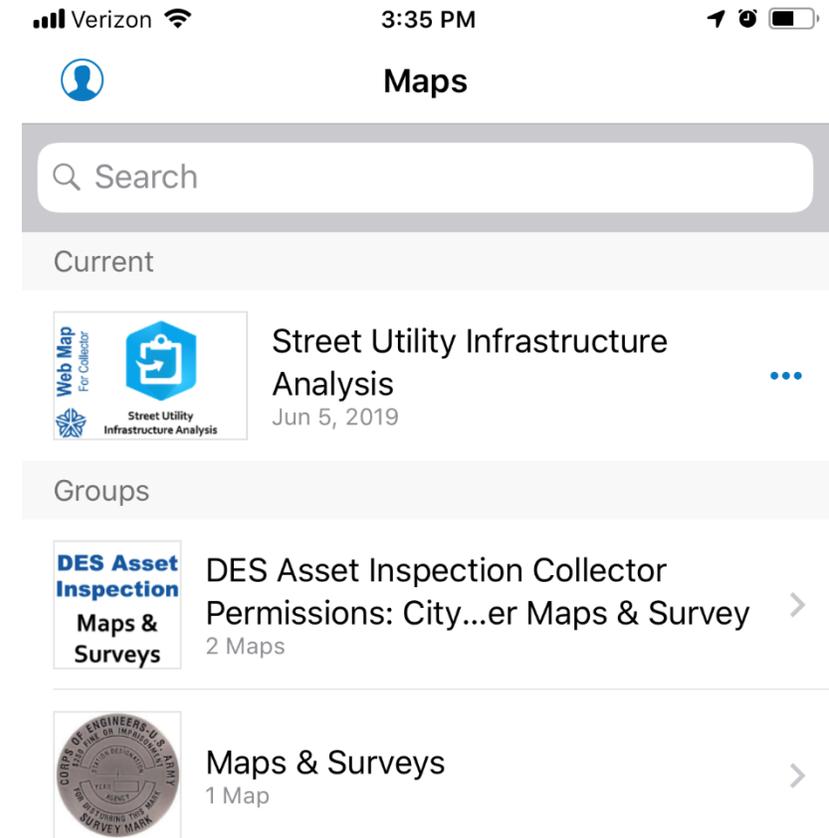




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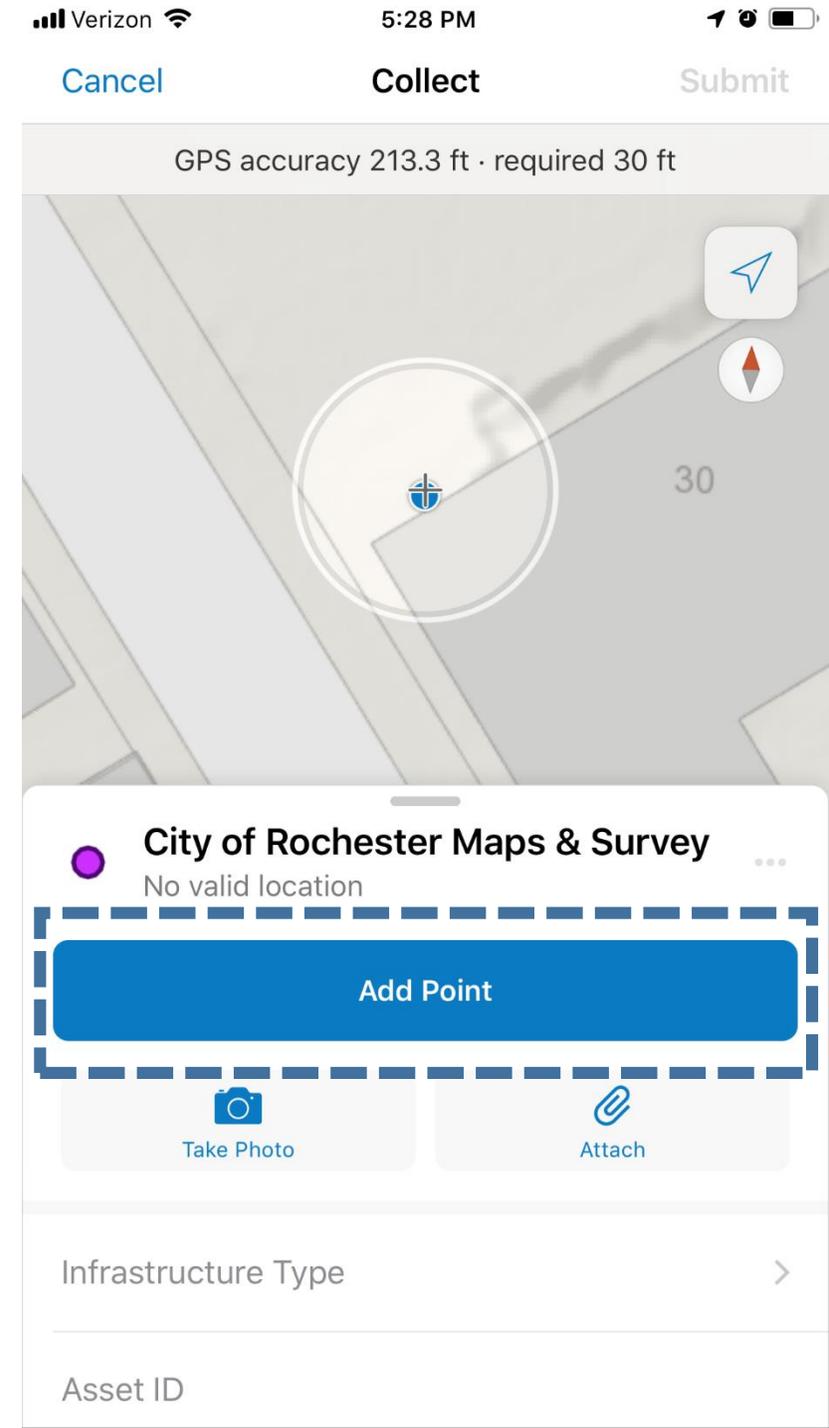




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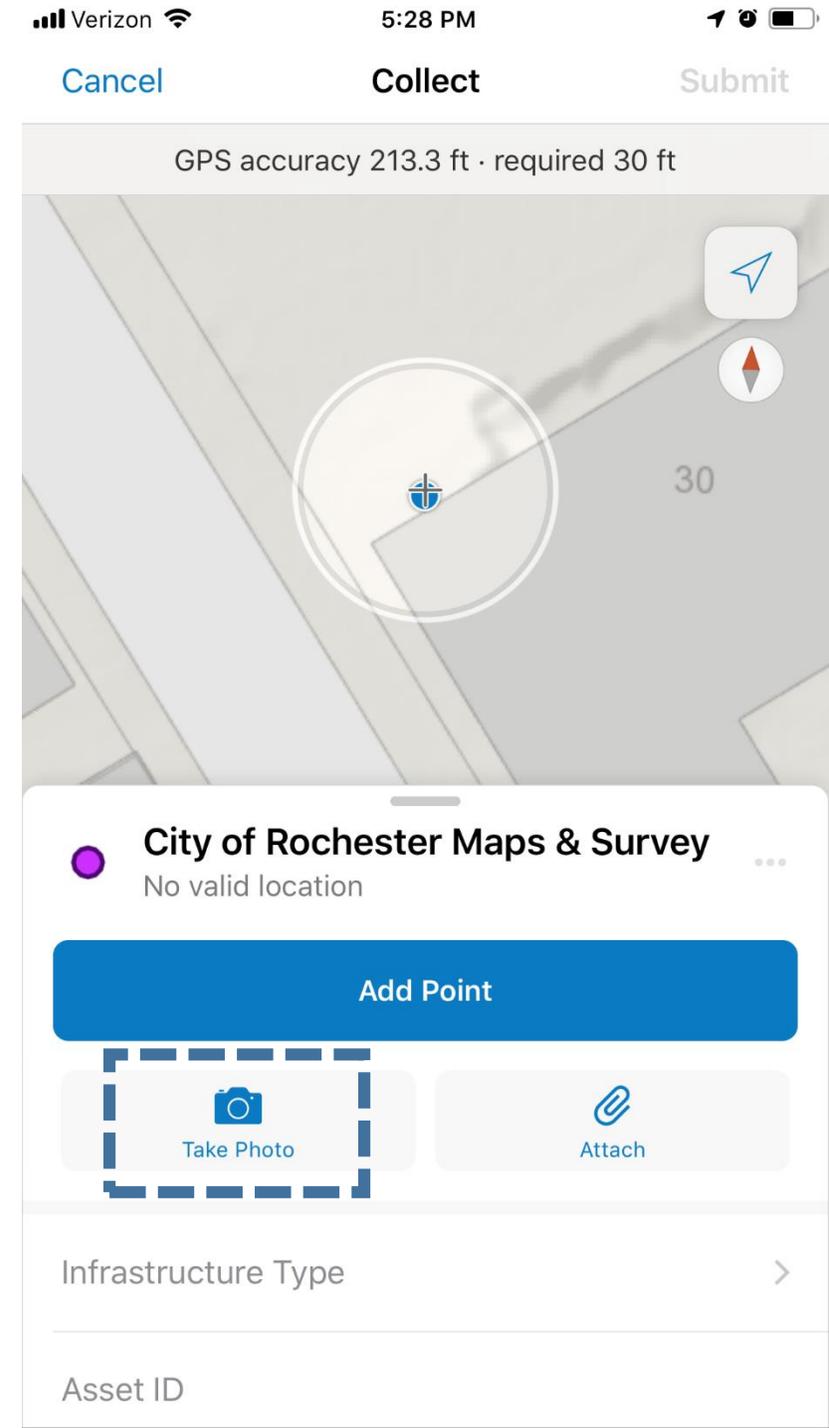




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5. **Take pictures**
6. Complete inspection form & submit!





SUIA | Collector for ArcGIS

How to use Collector

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2. Sign in with City of Rochester-issued login information.
3. Open your agency's inspection map (you will ONLY have access to your agency's inspections)
4. Save your location
5. Take pictures
6. **Complete inspection form & submit!**

Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions

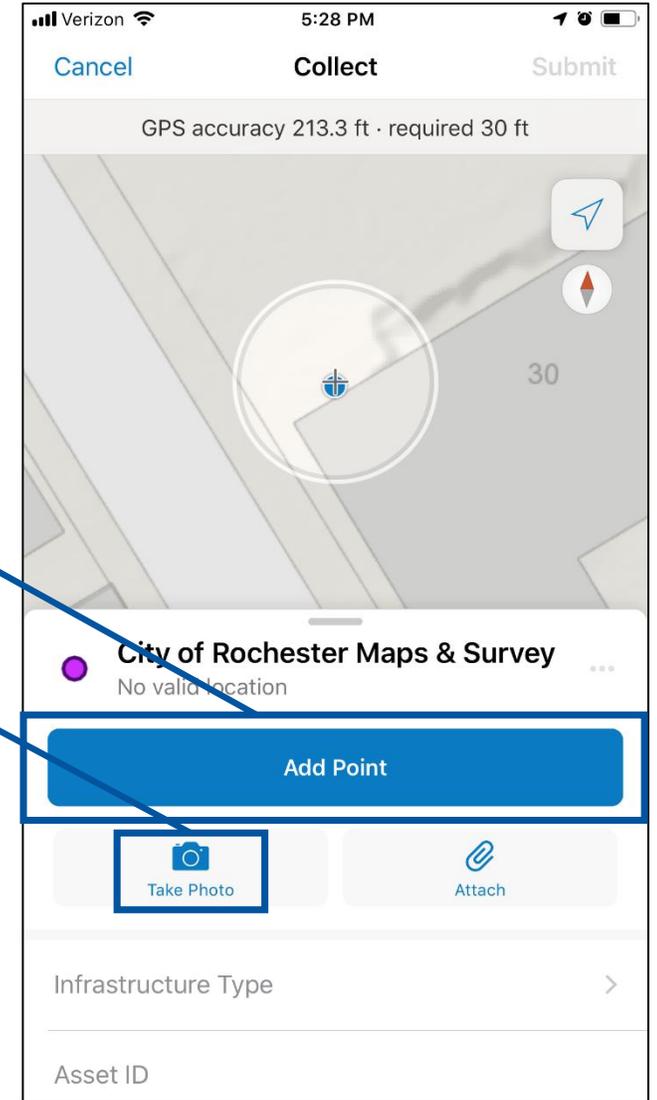
1. Add Point, Take Photo

Report analysis findings should include:

- Location (street address or closest available address)
- Asset ID (specific to facility owner's identification convention)

- Photo of Each Item / Location
(Photos should be included as ArcGIS Geodatabase Attachments)

- **"Add Point"** is how you record your location in Collector
- **"Take Photo"** allows you to take pictures at your location

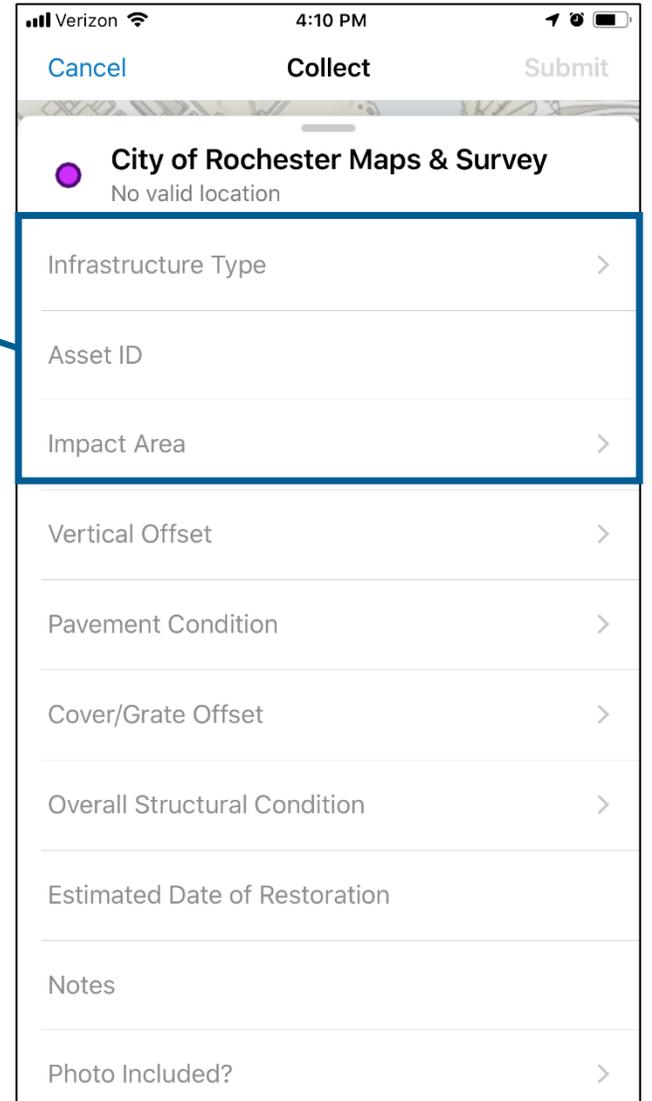


SUIA | Inspection Definitions

2. Infrastructure Type, Asset ID, Impact Area

- Type of facility structure (manhole, hand hole, valve, utility pedestal, vault, catch basin, control box, monument, hydrant, utility pole, or other)

- **"Infrastructure Type"** allows you to choose the type of infrastructure you are evaluating from a drop-down list
- **"Asset ID"** is where you record your asset's name or ID number
- **"Impact Area"** further specifies infrastructure location



Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions

Infrastructure Type

Cancel Collect Submit

Q Filter Cancel

- Manhole
- Handhole
- Valve
- Utility Pedestal
- Vault
- Catch Basin
- Control Box (Cabinet)
- Monument
- Hydrant
- Utility Pole
- Other (Describe in notes)

Asset ID

(Asset ID is manual entry)

Impact Area

Cancel Collect Submit

Q Filter Cancel

- No Value ✓
- Sidewalk
- Tree lawn
- Driveway
- Pavement
- Other

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

- Infrastructure Type >
- Asset ID
- Impact Area >
- Vertical Offset >
- Pavement Condition >
- Cover/Grate Offset >
- Overall Structural Condition >
- Estimated Date of Restoration
- Notes
- Photo Included? >



SUIA | Inspection Definitions

3. Vertical Offset (Frame)

- Condition of Structure
 - ★ Vertical offset of frame from surrounding level surface (See Section 2.2)
 - Cover/grate offset from corresponding frame (within ¼", or greater than ¼ ", See Section 2.2)
 - Overall Structural Condition (good condition, or needs structural review)

- Based on S100-01 – GRADE LEVEL UTILITY APPURTENANCE CONDITION EVALUATION

Vertical Difference*	Requirement
≤ ¼ inch	No Corrective Action Required
¼ inch up to ½ inch	Monitor Condition and Reinspect Annually in Compliance with Street Utility Infrastructure Analysis Requirements
≥ ½ inch	Corrective Action Required Within 30 Days of Deficiency Identification – Refer to Detail S100-01

* All measurements are from the surrounding level surface elevation

Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions

Vertical Difference (Frame) & Corrective Actions



Verizon 10:01 AM

Cancel Collect Submit

Filter Cancel

No Value ✓

Up to but not exceeding 1/4 inch - No corrective action required

Over 1/4 inch, up to 1/2 inch - Deficient condition - Monitor condition and re-inspect annually in conformance with requirements of Street Utility Infra...

Over 1/2 inch - Deficient condition - Mitigate deficiency within 30 calendar days of deficiency identification - Reset appurtenance per S604 and S9...

N/A - Tree lawn / other

Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions

4. Pavement Condition & Corrective Actions

- Surrounding Pavement Area Condition Rating (See Section 2.3)

- Based on S100-02 – PAVEMENT CONDITION AT UTILITY APPURTENANCE

Standard PCI™
Rating Scale



PCI	RATING
100 - 86	VERY GOOD
85 - 71	GOOD
70 - 26	FAIR – POOR
25 - 0	SERIOUS - FAILED

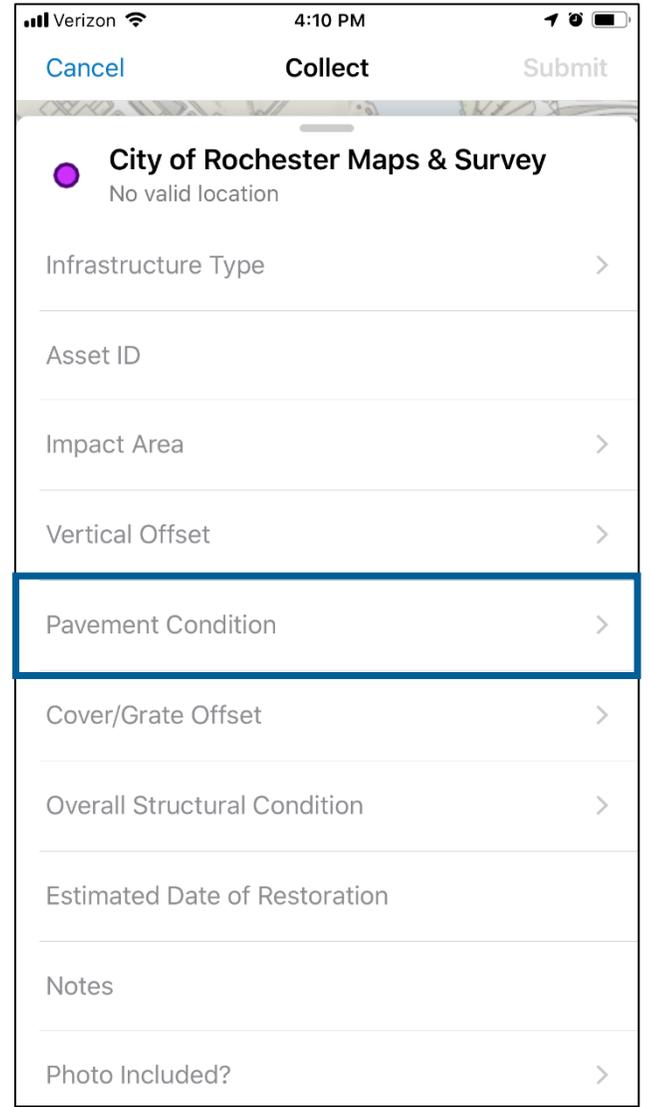
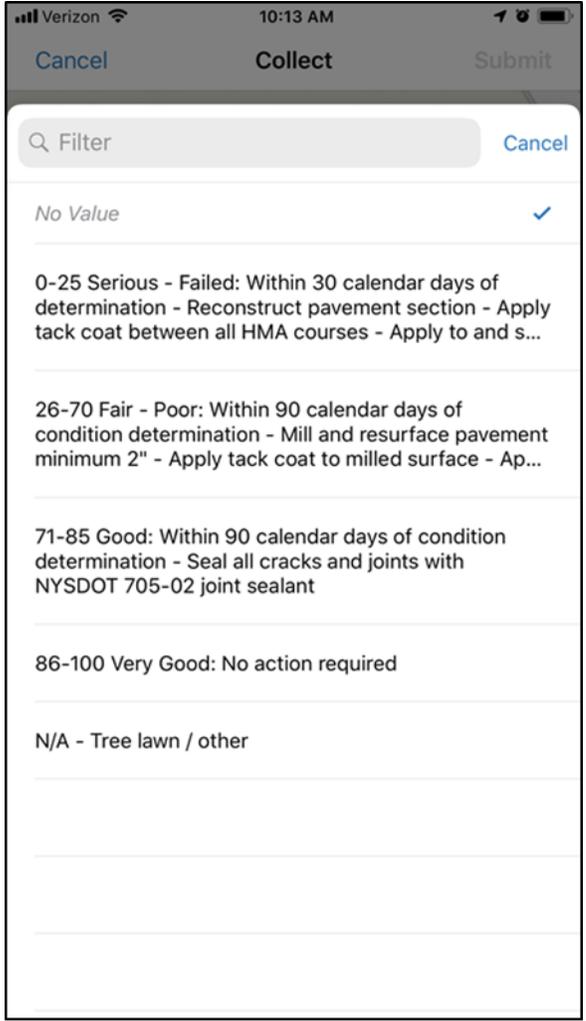
A screenshot of a mobile application interface for data collection. The top bar shows 'Verizon' signal strength, '4:10 PM' time, and battery level. Below the bar are three buttons: 'Cancel', 'Collect', and 'Submit'. The main content area is titled 'City of Rochester Maps & Survey' with a purple location pin icon and the text 'No valid location'. Below this are several input fields with right-pointing chevrons: 'Infrastructure Type', 'Asset ID', 'Impact Area', 'Vertical Offset', 'Pavement Condition' (highlighted with a blue border), 'Cover/Grate Offset', 'Overall Structural Condition', 'Estimated Date of Restoration', 'Notes', and 'Photo Included?'.



SUIA | Inspection Definitions



Pavement Condition & Corrective Actions





SUIA | Inspection Definitions

5. Cover/Grate & Corrective Action

- Condition of Structure
 - Vertical offset of frame from surrounding level surface (See Section 2.2)
 - ★ Cover/grate offset from corresponding frame (within 1/4", or greater than 1/4", See Section 2.2)
 - Overall Structural Condition (good condition, or needs structural review)

Grade-level utility appurtenances are to be installed and maintained in the same horizontal plane as the surrounding elevation, true to line and grade, and with the cover/grate having full continuous and uniform bearing contact with its corresponding frame. The cover/grate is to be stable and immovable when in place and when under the influence of traffic or any other type of load bearing stress. The top of the cover/grate is to be level with the top of the corresponding frame, within 1/4" (Refer to Detail S100-01, S604 Series and S909 Series).

Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions



Cover/Grate Offset & Corrective Actions

Verizon 10:47 AM

Cancel Collect Submit

Q Filter Cancel

No Value ✓

N/A - Tree lawn / other

Over 1/4 inch - Deficient Condition - Mitigate deficiency within 30 calendar days of deficiency identification

Up to but not exceeding 1/4 inch - No corrective action required

Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Inspection Definitions

6. Overall Structural Condition

- Condition of Structure
 - Vertical offset of frame from surrounding level surface (See Section 2.2)
 - Cover/grate offset from corresponding frame (within 1/4", or greater than 1/4", See Section 2.2)
 - ★ Overall Structural Condition (good condition, or needs structural review)

• "What we can't see *can* hurt us"



Verizon 4:10 PM

Cancel Collect Submit

City of Rochester Maps & Survey
No valid location

Infrastructure Type >

Asset ID

Impact Area >

Vertical Offset >

Pavement Condition >

Cover/Grate Offset >

Overall Structural Condition >

Estimated Date of Restoration

Notes

Photo Included? >



SUIA | Collector for ArcGIS

What happens to the inspection next?

The screenshot displays the SUIA Collector for ArcGIS interface. The main map shows an aerial view of a city street with a 'Handhole' feature highlighted. A blue arrow points from the 'Handhole' feature on the map to the popup window on the right. Another blue arrow points from the 'Contents' panel on the left towards the map area.

Contents Panel:

- Rochester Grid
- Grid Number
- Survey Monuments
- Inspection Layer (City of Rochester Maps and Survey)
- Inspection Layer (Extenet Systems)
- Inspection Layer (City of Rochester Street Lighting Division)
- Inspection Layer (NY DOT)
- Inspection Layer (Frontier)
- Inspection Layer (Monroe County Pure Waters (MCPW))
- Inspection Layer (Rochester Gas and Electric (RGE))
- Inspection Layer (Time Warner)
- Inspection Layer (Verizon)
- Inspection Layer (Crown Castle)
- Inspection Layer (Monroe County DOT)
- Inspection Layer (City of Rochester Water Works (RWW))
- Inspection Layer (Admin)

Handhole Details:

Agency Name	
Inspector Name	BreAsia.Griffin@CityofRochester
Initial Inspection Date	5/31/2019, 1:40 PM
Infrastructure	Handhole
Asset ID	
Pavement Condition	71-100: Good
Impact Area	Sidewalk

[Zoom to](#) [Get Directions](#) [Edit](#) [Show Related Records](#)

POWERED BY ESRI

 **SUIA** | Thank you!**For questions on rules & regulations, permitting**

Bill Vandame

Phone: 585-428-7121

Email: bill.vandame@cityofrochester.gov

For GIS-specific questions

Marlana Zink

Phone: 585-428-1307

Email: marlana.zink@cityofrochester.gov

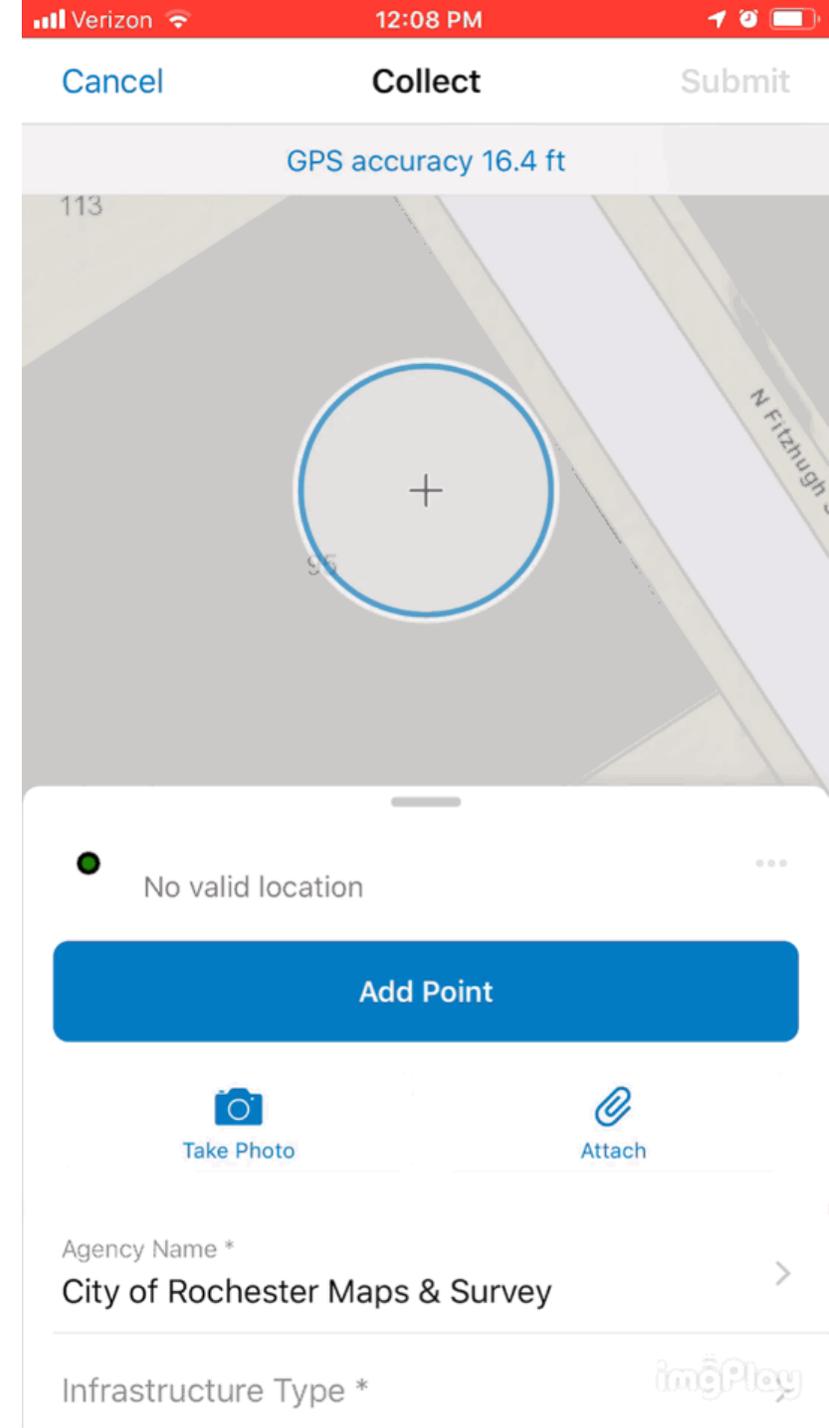


SUIA | Collector for ArcGIS

Case Study Demonstration

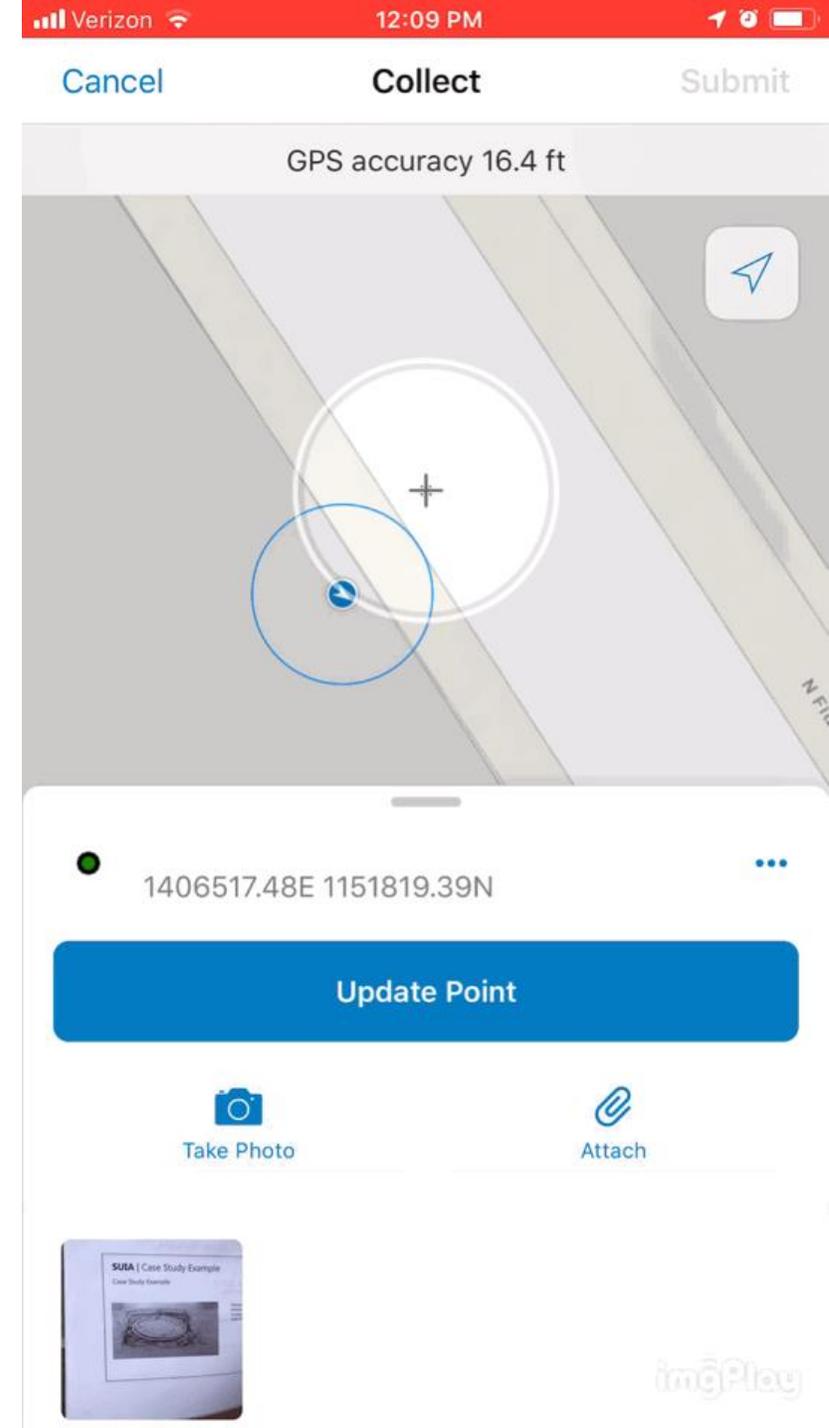
SUIA | Case Study Example

Case Study Example: Add Point & Take Photo



SUIA | Case Study Example

Case Study Example: Infrastructure Type
& Asset ID





SUIA | Case Study Example

Case Study Example: Impact Area



Verizon 12:09 PM

Cancel Collect Submit

● **Manhole MH1234**
1406517.48E 1151819.39N



Agency Name *
City of Rochester Maps & Survey >

Infrastructure Type *
Manhole >

Asset ID *
MH1234

Impact Area * >

Vertical Difference * >

Corrective Action 1 * >

Pavement Condition * >

Corrective Action 2 * >

imgPlay

SUIA | Case Study Example

Case Study Example: Vertical Difference & Corrective Action 1



Verizon 12:09 PM

Cancel Collect Submit

● **Manhole MH1234**
1406517.48E 1151819.39N



Agency Name *
City of Rochester Maps & Survey

Infrastructure Type *
Manhole

Asset ID *
MH1234

Impact Area *
Pavement

Vertical Difference *

Corrective Action 1 *

Pavement Condition *

Corrective Action 2 *

imgPlay

SUIA | Case Study Example

Case Study Example: Pavement Condition & Corrective Action 2



Verizon 12:09 PM

Cancel Collect Submit

Manhole MH1234
1406517.48E 1151819.39N

ASSET ID
MH1234

Impact Area *
Pavement >

Vertical Difference *
Deficient: Over 1/4 inch, up to 1/2 inch >

Corrective Action 1 *
Deficient: Mitigate within 90 calendar days - M&R surrounding pavement to minimum depth >

Pavement Condition * >

Corrective Action 2 * >

Cover/grate flush with frame? * >

Corrective Action 3 * >

Overall Structural Condition * >

Estimated Date of Restoration * >

imgPlay

SUIA | Case Study Example

Case Study Example: Cover/Grate & Corrective Action 3



Verizon 12:10 PM

Cancel Collect Submit

Manhole MH1234
1406517.48E 1151819.39N

Vertical Difference *
Deficient: Over 1/4 inch, up to 1/2 inch

Corrective Action 1 *
Deficient: Mitigate within 90 calendar days - M&R surrounding pavement to minimum depth

Pavement Condition *
0-25: Serious - Failed

Corrective Action 2 *
0-25 Serious - Failed: Mitigate within 30 calendar days - Reconstruct pavement section in kind - Apply tack coat between al...

Cover/grate flush with frame? *

Corrective Action 3 *

Overall Structural Condition *

Estimated Date of Restoration *
12/29/1899, 7:00 PM

Notes 



SUIA | Case Study Example

Case Study Example: Overall Structural Condition



Verizon 12:10 PM

Cancel Collect Submit

● **Manhole MH1234**
1406517.48E 1151819.39N

max curbside pavement to minimum depth

Pavement Condition *
0-25: Serious - Failed >

Corrective Action 2 *
0-25 Serious - Failed: Mitigate within 30 calendar days - Reconstruct pavement section in kind - Apply tack coat between al... >

Cover/grate flush with frame? *
Yes >

Corrective Action 3 *
Yes: No action >

Overall Structural Condition * >

Estimated Date of Restoration *
12/29/1899, 7:00 PM

Notes

Photo Included? * >

* indicates required field

imgPlay

SUIA | Case Study Example

Case Study Example: Estimated Date of Restoration



Verizon 12:10 PM

Cancel Collect Submit

Manhole MH1234
1406517.48E 1151819.39N

mark surrounding pavement to minimum depth

Pavement Condition *
0-25: Serious - Failed

Corrective Action 2 *
0-25 Serious - Failed: Mitigate within 30 calendar days - Reconstruct pavement section in kind - Apply tack coat between al...

Cover/grate flush with frame? *
Yes

Corrective Action 3 *
Yes: No action

Overall Structural Condition *
Needs Structural Review

Estimated Date of Restoration *
12/29/1899, 7:00 PM

Notes

Photo Included? *

* indicates required field

imgPlay

SUIA | Case Study Example

Case Study Example: Notes, Photo Included?,
& Submit



Verizon 12:11 PM

Cancel Collect Submit

● Manhole MH1234
1406517.48E 1151819.39N

Yes ✓

Corrective Action 3 * >
Yes: No action

Overall Structural Condition * >
Needs Structural Review

Estimated Date of Restoration *
7/5/2019, 12:10 PM

Notes 0/255

 Done

Q W E R T Y U I O P
A S D F G H J K L
↑ Z X C V B N M ✕
123 globe microphone space 