

St. Johns County Public Works Infrastructure: Enterprise ArcGIS Centric Maintenance/Support

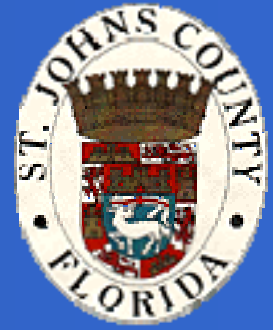
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St. Johns County, Florida

Rene Rodriguez, GISP
Woolpert, Inc.





County Objectives



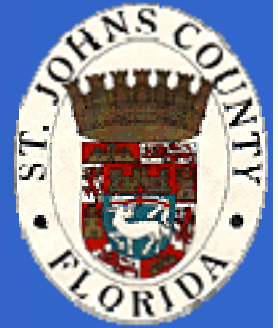
- **Comply with GASB 34**
- **County wide inventory of transportation and storm water assets**
- **Solution to manage assets**
 - Development of a work plan
 - Maintenance & repair
 - Reporting
 - Analysis
- **Reactive to preventive**
- **Paperless environment**





Scope of Project

- **First Phase**
 - Best Management Practices Studies
- **Second Phase**
 - GIS Design
 - Data Creation / Collection
 - Condition Assessment
- **Third Phase**
 - Asset Management Solution Evaluation
 - Solution Implementation
 - Go Live
- **Fourth Phase**
 - Systems Integration
 - Data Maintenance
 - Automation



St. Johns County Transportation Infrastructure Asset Inventory Process

Phase 1: Negotiations, Planning, Design and Conceptualization



Phase 2: Proof of Concept



Phase 3: System Wide Implementation

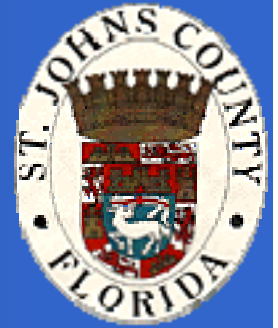


Phase 4: Optional Services





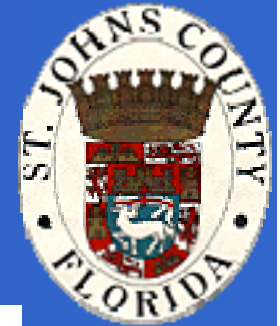
Geodatabase Design Process



- **Business Process Understanding**
 - Drainage Infrastructure
 - Traffic and Signals Infrastructure
 - Pavement Infrastructure
- **Asset Inventory Parameters**
 - Methods of Collection
 - Condition Assessment
- **Geodatabase Implementation**
 - Conceptual to Physical
 - Data Management



Conceptual Geodatabase Design



DATASET: STREET_BRIDGES

FEATURE CLASSES

Table 1. Street_Bridges Feature Classes

ESRI Class	Feature Class	Data type	Description	Subtypes	Value
SimpleEdgeFeature	TrPMU	Line	Pavement Management Unit. A length of roadway managed for pavement rehabilitation, maintenance, and repair.	Hot Mix Cold Mix Unpaved	1 2 3
SimpleJunctionFeature	TrIntersection	Point	Intersection of two or more roadways.	None	
SimpleJunctionFeature	TrBridge	Point	Bridge within St. Johns County.	None	

OBJECT CLASSES

Table 2. Street_Bridges Object Classes

Object Class	Description
TrCurbGutter	Stores attributes of Curb and/or Gutter information related directly to each pavement section.
TrVisualSurvey	Stores each observation collected in the field. Relates back to PMU feature class on the SurveyID field.
TrTurnLane	Stores each turn lane found to be related to a given pavement section.
TrSidewalk	Stores each observation collected in the field. Relates back to PMU feature class on the SurveyID field.
TrGuardrail	Stores each observation collected in the field. Relates back to PMU feature class on the SurveyID field.

ATTRIBUTION

Table 3. TrPMU Attribution

Abstract Class: StreetBridgesStJohnsAttributesLn			
Attribute	Description	Field Type	Domain
AssetResponsibility	The unit responsible for maintaining the asset and/or updating the asset information in the database.	String	None
OperationalArea	Operational area; there are currently five operational areas of Public Works.	String	None



WOOLPERT



Transportation Inventory Data Model

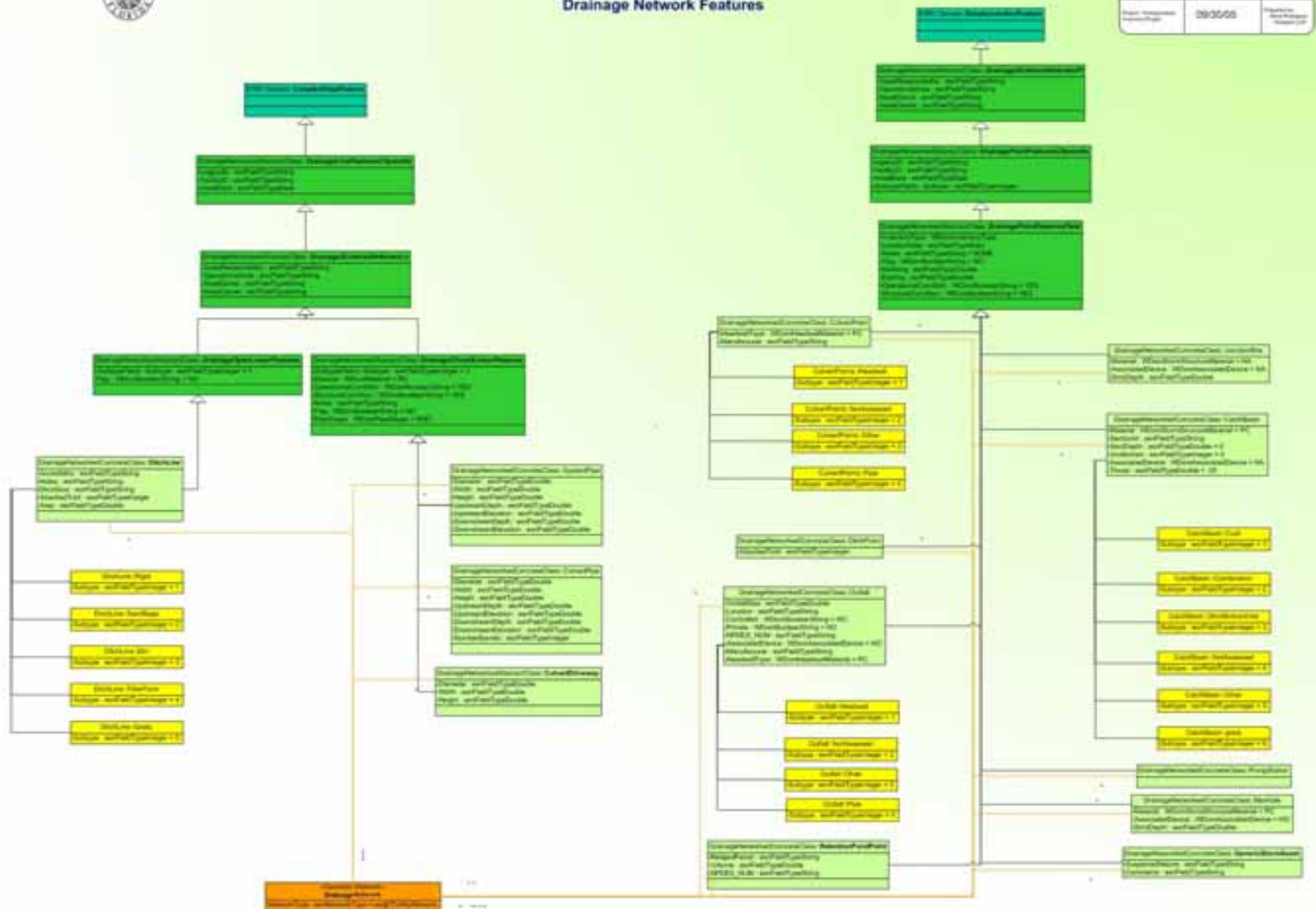
Drainage Network Features

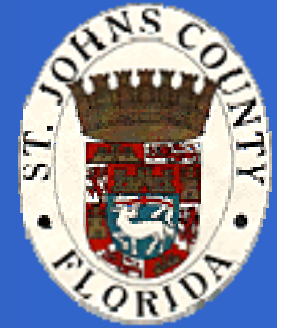
GIS/IT Services

Project: Transportation Inventory Data Model

09/30/2018

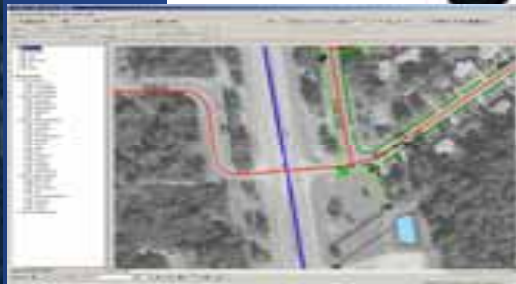
Report: City of Chicago

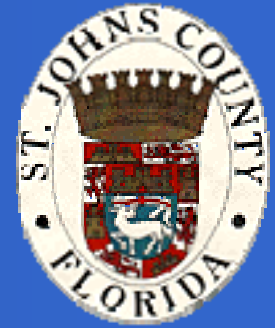




Data Collection Overview

- Orthophotography data extraction
- Windshield pavement surveys
- Video van data collection
- Field data collection



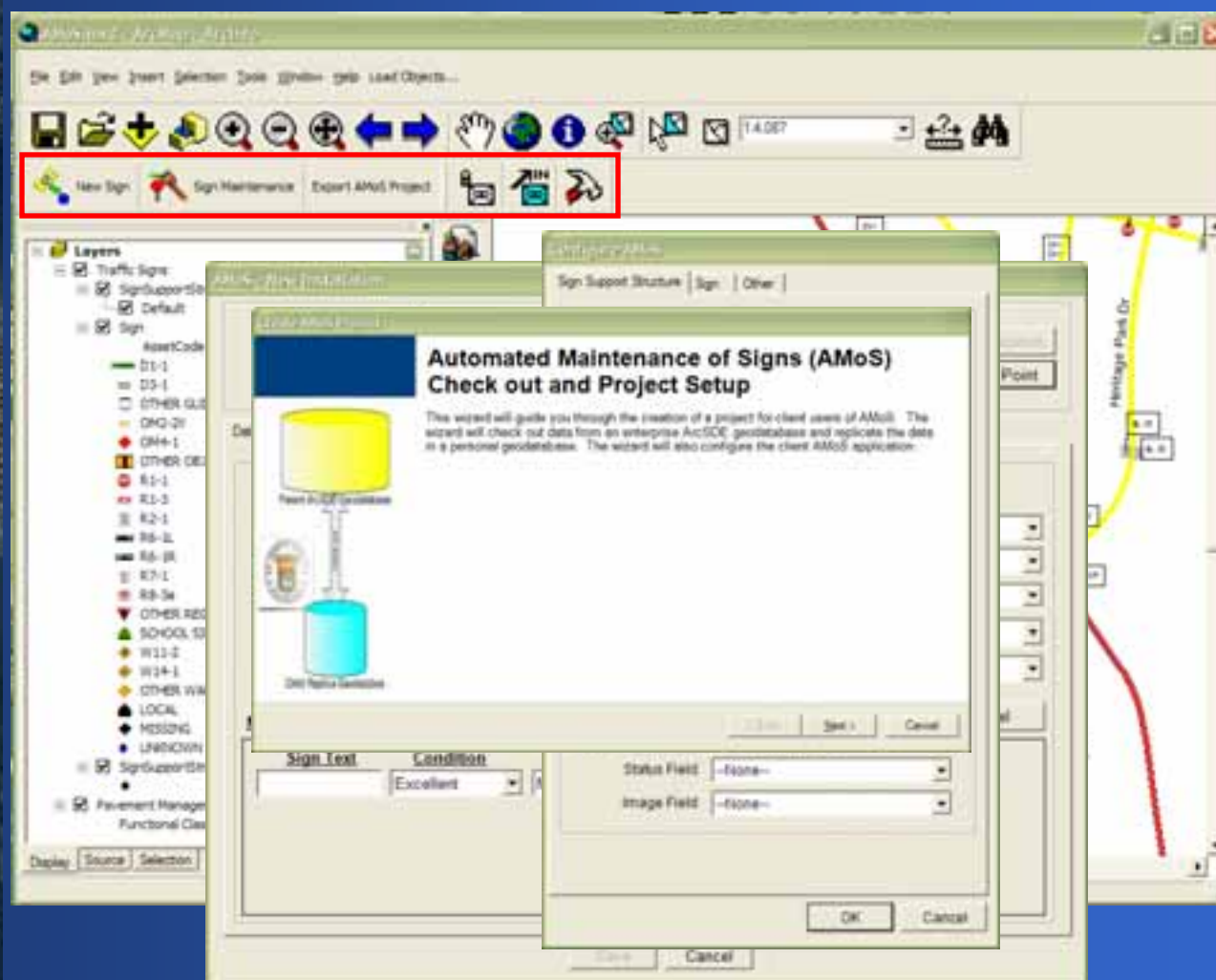


Asset Management Implementation

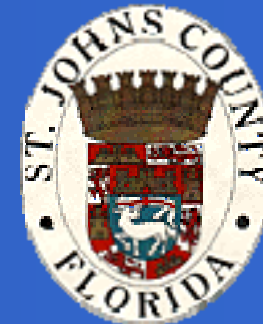
- **Asset Management Solutions Evaluation**
- **Software Configuration**
- **Software Training**
- **Go Live**



Phase Four Automation







Service Request # 26700 - RD SIDEWALK COLLAPSE / Sidewalk collapsing

Request Recent Search Save Close New Print Tools Labor

Search for Request ID: 26700 Recently Opened

☐ Apply To All

Problem Code	RD SIDEWALK COLLAPSE		
Description	Sidewalk needs repaired		
ID/Status	26700	CLOSED	
Priority/Activity	2 Immediate within two	CONCRETE	
Initiated By	KITCHENHILL, PATTI	4/3/2007 2:04:14 PM	
Submitted To	PAULERSON, DAVID	4/3/2007 2:04:14 PM	
Opened By	PAULERSON, DAVID	4/11/2007 4:42:34 PM	
Dispatched To	POTWELL, BRYAN	4/11/2007 4:45:53 PM	
Opened By			
Fis Comp. Date	MM/DD/YYYY		
Closed By	PAULERSON, DAVID	4/25/2007 3:48:52 PM	

☐ Is the Investigation Complete?
☐ Is This Incident an Emergency?
☐ Is a Work Order Needed?
☒ Cancel

Work Order

31111 [Open WO](#) [Attach To](#) [Create](#)

WO Description	RD SIDEWALK COLLAPSE	
Proj Start/Finish Date	4/12/2007	4/19/2007
Actual Start/Finish Date	4/19/2007	4/19/2007
Project		

[Open](#) [Attach To](#)

Problem Details:

Sidewalk collapsing on the corner of Phoenetia Dr and Palms Rd falling into the water main box.

Date/Time 4/3/2007 1:57:04 **Account**

☐ Mr ☒ Ms

First Name MARY **Last** MILLS

Address 34 PHOENETIA DRIVE

City ST AUGUSTINE **Zip**

Home Phone 732-1554 **Work**

Other Phone **Type**

Email

Caller Information

☐ Is Caller a Resident w/in the Service Area?
☐ Is This a Follow-up Call?
☐ Customer Contacted on Site?
☐ Customer Contacted Afterwards?

Incident Address 34 PHOENETIA DR **Locate Using**

City/Zip SAINT AUGUSTINE 32086 ☒ Streets ☐ Parcels

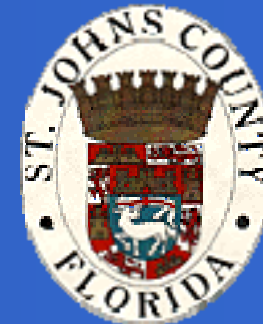
GIS Information:

Work Zone 2

Altter Page 83

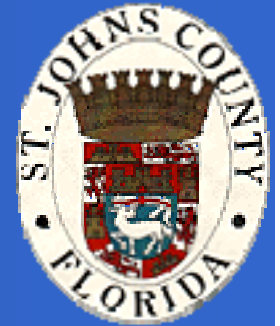
District 3

Layer	Field	Value

[illegible]

GIS & CMMS

"The Perfect Marriage"



Job Number: 31111 - SIDEWALK REPAIR

Save Print Tools Inspectors Tables Labor Material Equipment Find Job Date: 11/11

General Details Attachments SFCycle Plans Custom

Description: SIDEWALK REPAIR SIDEWALK
Job Number: 31111
Status: CLOSED
Requested By: [Name]
Initiated By: PAULERSON, DAVID 4/11/2007 4:46:19 PM
Submitted To: [Name] 4/20/2007 6:41:57 AM
Supervisor: [Name]
Projected Start/Finish: 04/12/2007 04/19/2007
Opened By: POWELL, BRIAN D. 4/12/2007 5:15:16 PM
Completed By: [Name]
Actual Start/Finish: 04/15/2007 04/19/2007
Work Quantity: 1.20.00 SQUARE FEET
Close Job Code: PAULERSON, DAVID 4/26/2007 2:48:52 PM

General Location: 14 PHOENETIA DR, SAINT AUGUSTINE, 32086
Side walk repair

Locate with Sheets
Locate with Parcel

Comments Editor Instructions Map Layers

New Comments

Existing Comments
From Request ID: 30758, 4/11/2007 4:46:08 PM
JOB: SIDEWALK REPAIR
Sidewalk needs repair
Problem Details: Sidewalk collapsing in the corner of Phoenixia Dr and Palmco

Search By: PREDEFINED

ID	Description	Unit Cost	Rate Type	Manufacturer	Model	Units	Hours	Start Date
DUMPTK	Dump Truck	16.46	Hourly			1.00	2.00	
COMPAC	Compactor	6.36	Hourly			1.00	10.00	
WATTRK	Water Tanker	21.88	Hourly			1.00	5.00	
CEMCON	Concrete Mixer	2.50	Hourly			1.00	5.00	
BACKHO	Backhoe	17.50	Hourly			1.00	10.00	

Start Date: 04/19/2007
Units: 1
Hours: 0
Finish Date: MM/DD/YYYY
Account: [Name]
Contact: [Name]
Select Contact/Tab

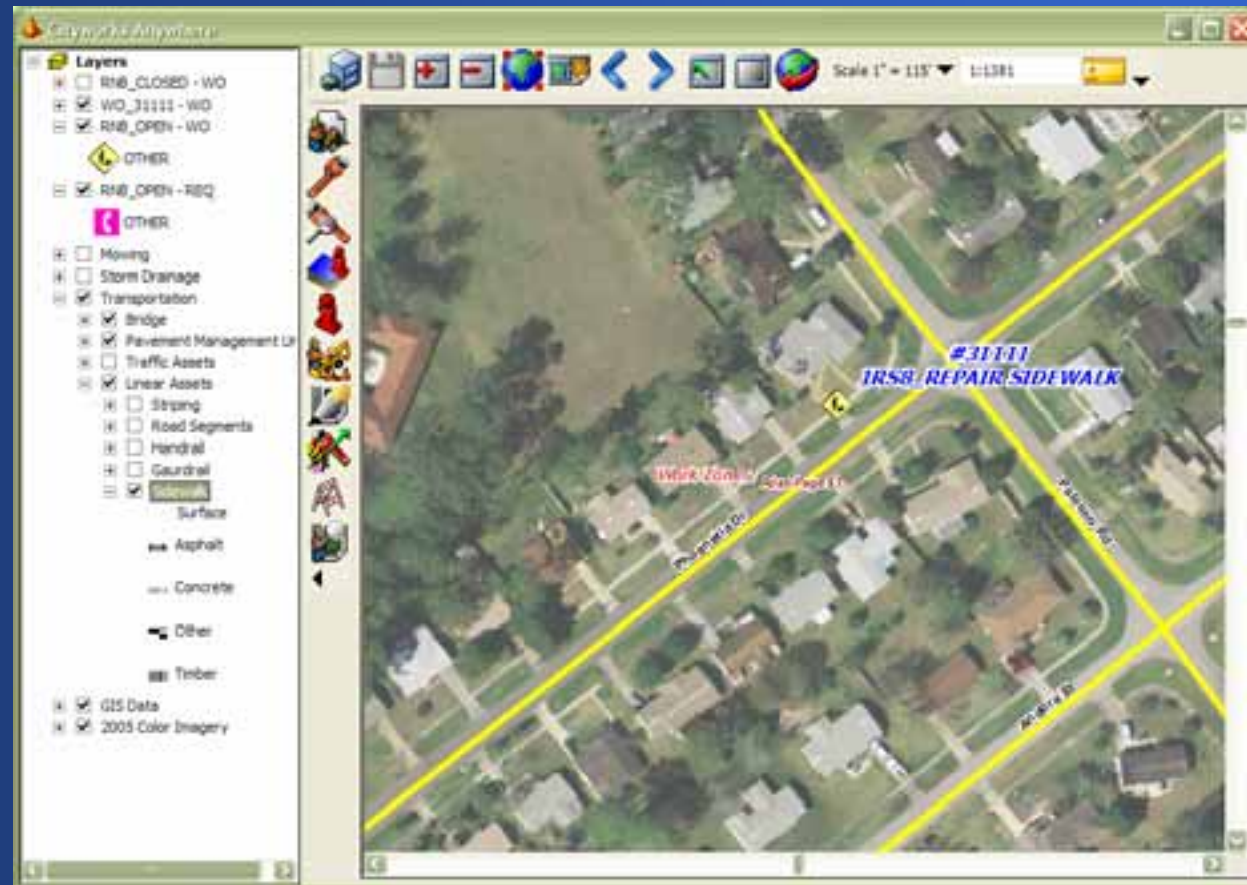
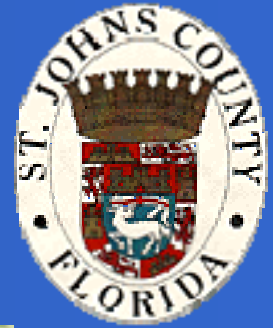
Add Close Remove

Total Actual: \$136.34

Equipment ID	Description	Hours Required	Units Required	Rate Type	Cost
0552	Crew Cab - 1997 Ford F350	2.00	1.00	Hourly	21.94
0552	Crew Cab - 1997 Ford F350	1.00	1.00	Hourly	32.91
0933	Concrete Mixer - Stone 65CM	5.00	1.00	Hourly	16.45
0746	Crew Pickup - 1999 GMC Sierra	5.00	1.00	Hourly	38.03
0747	Pickup - 1999 GMC Sierra	5.00	1.00	Hourly	19.13
0747	Pickup - 1999 GMC Sierra	2.00	1.00	Hourly	7.64

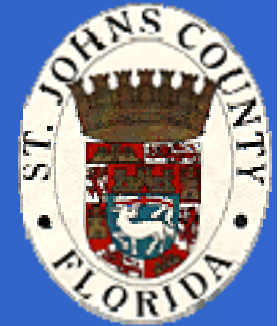
GIS & CMMS

“The Perfect Marriage”



GIS & CMMS

"The Perfect Marriage"



Act Start Range: 04/01/2007 to 04/30/2007
 Act Finish Range: 04/01/2007 to 04/30/2007
 Closed By: MM/DD/YYYY to MM/DD/YYYY
 Past: Hours

Comments Entities Instructions Map Layers

EntityID: Type: SIDEWALK

Get From Theme Add Remove Work Completed

Entity Type: ☒ SIDEWALK

General Details Attachments S Cycle Print Custom

Project Fund Contractor

Work Zone: 2
 Atlas Page: 93
 X: 554734.000
 Y: 1991940.000

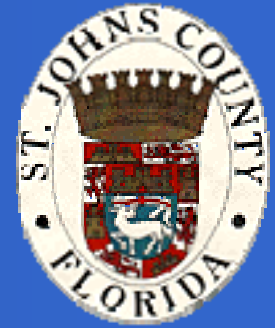
Stage: ☒ Actual ☐ Proposed

☒ Update Map ☐ Logit Backlot ☐ Contractor Billable

Expense Type: ☐ Cancel Work Order

ID	Asset	Description	Status	Actual Start Date	Actual Finish Date	Address	Location	Update Map
30743	GENERALWORK	1RN4_TRAINING	CLOSED	4/12/2007	4/12/2007	AGRICULTURAL CENTER DR & COUNTY ROAD 200		Y
30000	SIGNSUPPORTS	1TS_SIGN FABRI	CLOSED	4/2/2007	4/2/2007 3:19:00	2740 Industry Center Rd, Saint Augustine, 32084	Help RU	Y
30881	SIGNSUPPORTS	1TS_SIGN FABRI	CLOSED	4/2/2007	4/2/2007	2740 Industry Center Rd, Saint Augustine, 32084	Shop Time	Y
30903	SIGNSUPPORTS	1TS_SIGN FABRI	CLOSED	4/3/2007	4/3/2007	5 ST JOHNS ST, SAINT AUGUSTINE, 32084	Valves	Y
30916	TRAFFICSIGNAL	1TT_SIGNAL PM	CLOSED	4/1/2007	4/1/2007	2740 INDUSTRY CENTER RD, SAINT AUGUSTINE, 32084	PM School Flashers	Y
30929	GENERALWORK	1RN4_MEETING	CLOSED	4/17/2007	4/17/2007 5:03:00	1625 STATE ROAD 16		Y
30934	SIGNSUPPORTS	1TS_SIGN MAIN	CLOSED	4/4/2007	4/4/2007 10:46:00	EVERGREEN & SPRING ST		Y
30962	TRPMU	1RS3_GENERAL	CLOSED	4/5/2007	4/5/2007 6:12:00	D BECK RD & Kelly Rd		Y
30963	SIGNSUPPORTS	1TS_SIGN FABRI	CLOSED	4/4/2007	4/4/2007	2740 INDUSTRY CENTER DR	need to roll out sign	Y
30970	TRPMU	1RN1_GENERAL	CLOSED	4/3/2007	4/3/2007	FRANCIS AND MARY USINA BRIDGE & COASTAL Hwy	At intersection of	Y
30979	GENERALWORK	1RN1_VEHICLE	CLOSED	4/3/2007	4/3/2007	1625 STATE ROAD 16	in back yard Roa	Y
30980	SIGNSUPPORTS	1TS_SIGN INST	CLOSED	4/5/2007	4/5/2007	6670 US 1 S, SAINT AUGUSTINE, 32086		Y
31006	TRPMU	DRIVEWAY CUL	CLOSED	4/5/2007	4/5/2007 2:27:00	6050 ARMSTRONG RD		Y
31008	TRPMU	DRIVEWAY CUL	CLOSED	4/5/2007	4/5/2007 2:31:00	962 JOSIAH ST		Y
31009	TRPMU	DRIVEWAY CUL	CLOSED	4/5/2007	4/5/2007 2:58:00	859 AVERY ST		Y
31013	DITCHLINE	1RN1_DITCH/S	CLOSED	4/3/2007	4/3/2007	CORONA RD.	Off Sea Winds LN	Y

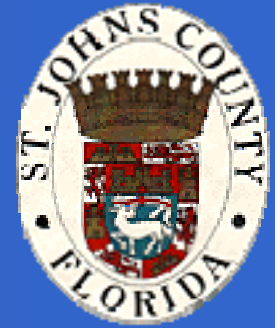




Automation of Data Maintenance

- **Integrated GPS**
 - Survey of Pavement Condition
 - Automated Maintenance of Sign Data
- **Integrated GIS, CMMS, Document Management**
- **Integration of Pentamation Employee Data**
- **Automatic Integration of As-Built Data to GIS**
- **Uniform Platform across the Board**





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