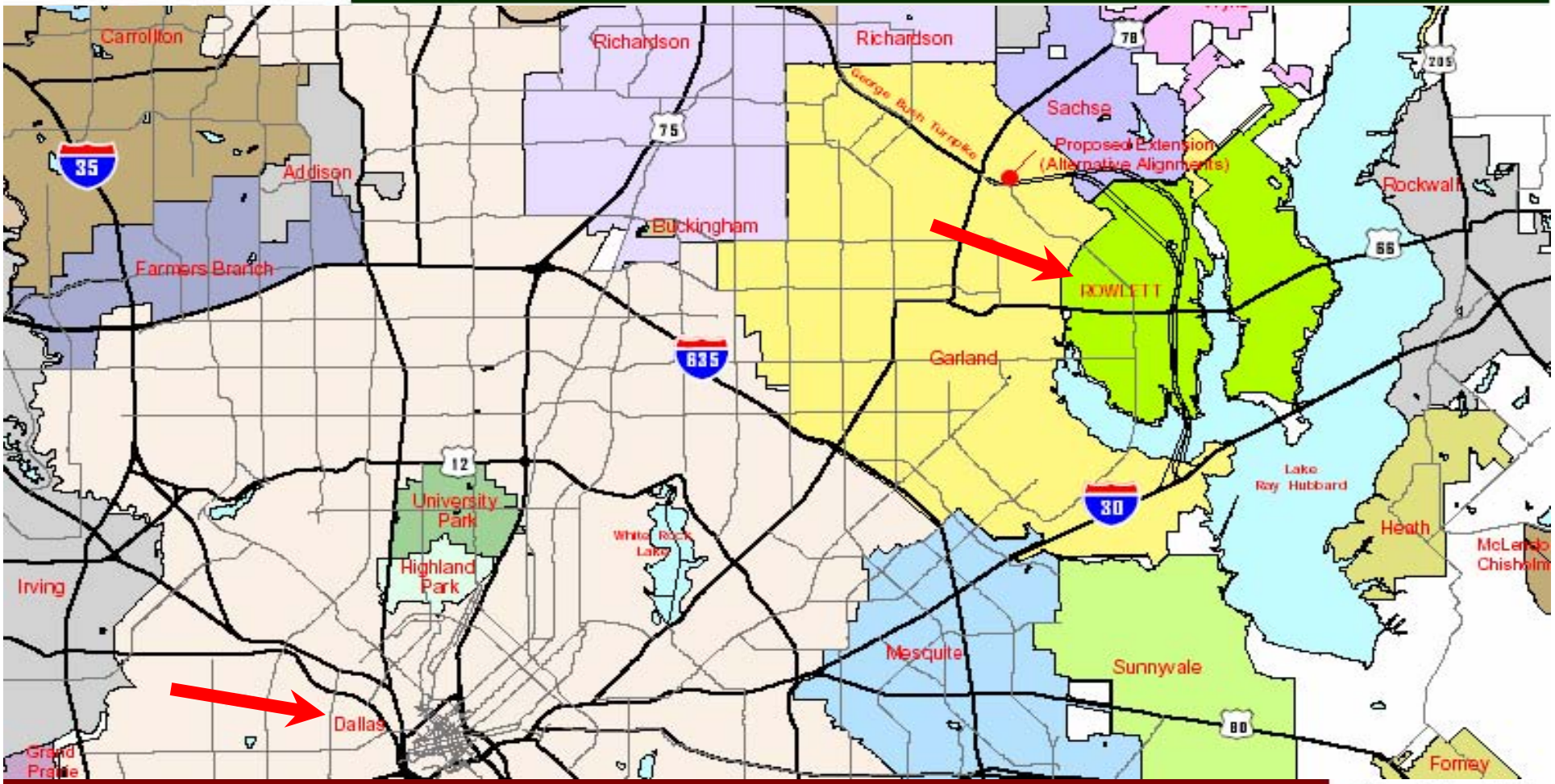
GASB 34 Compliance: Made Easy



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Rowlett
TEXAS

PROJECT GOALS

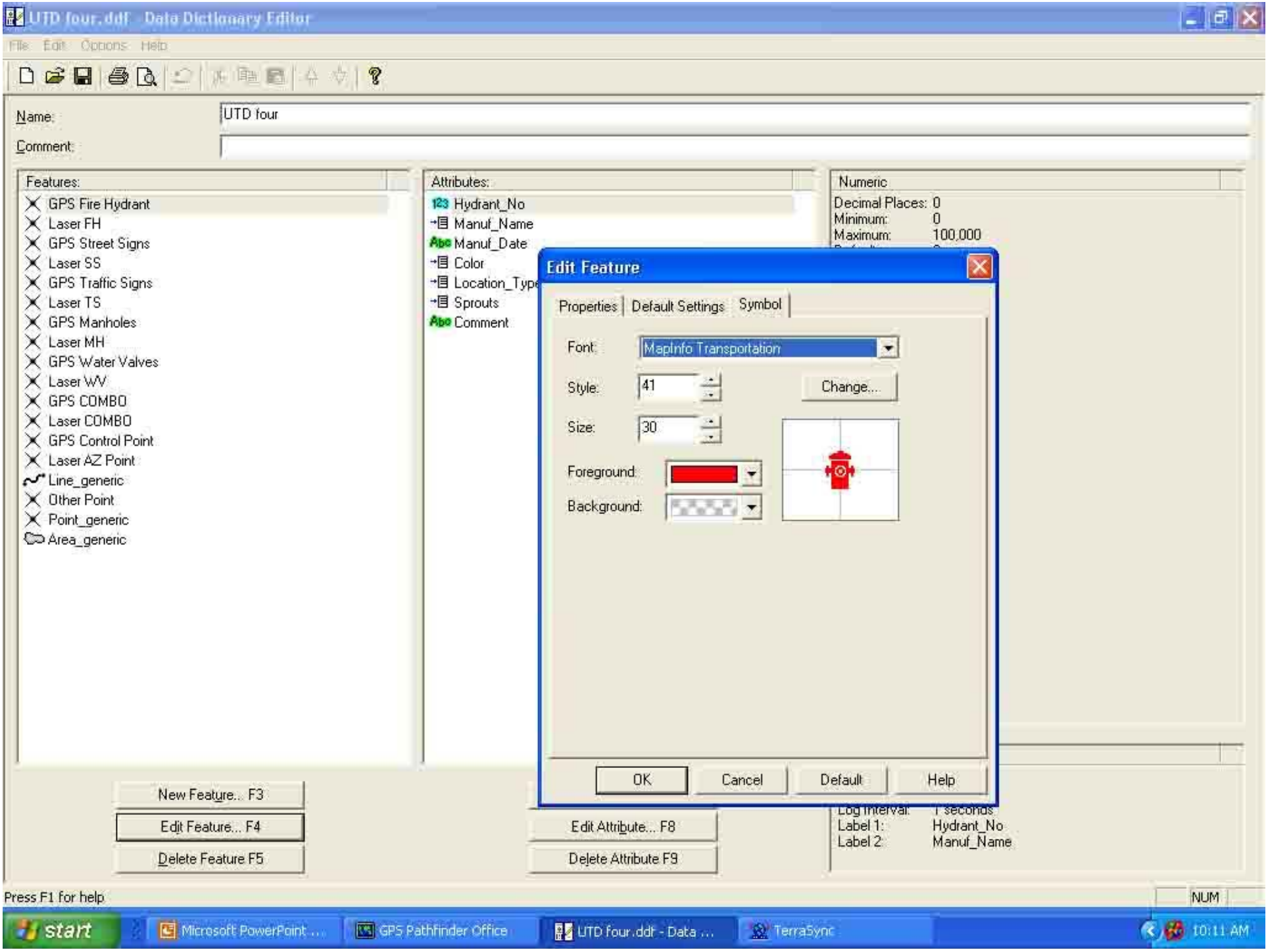
- POSITION CITY OWNED UTILITIES FOR GIS DATA BASE
  - USE TRIMBLE PROXRS FOR GPS POSITIONING
    - OMNISTAR DIFFERENTIAL SYSTEM FOR REAL TIME POSITIONING
    - PATHFINDER OFFICE FOR POST-PROCESSING
  - USE LASER ATLANTA ADVANTAGE CI FOR LASER OFFSETS
  - MAINTAIN ACCURACY WITHIN 3 FEET HORIZONTAL
  - DIFFERENTIATE POSITIONS COLLECTED
    - FIRE HYDRANTS, WATER VALVES, STORM AND SEWER MANHOLES, STREET SIGNS, TRAFFIC SIGNS

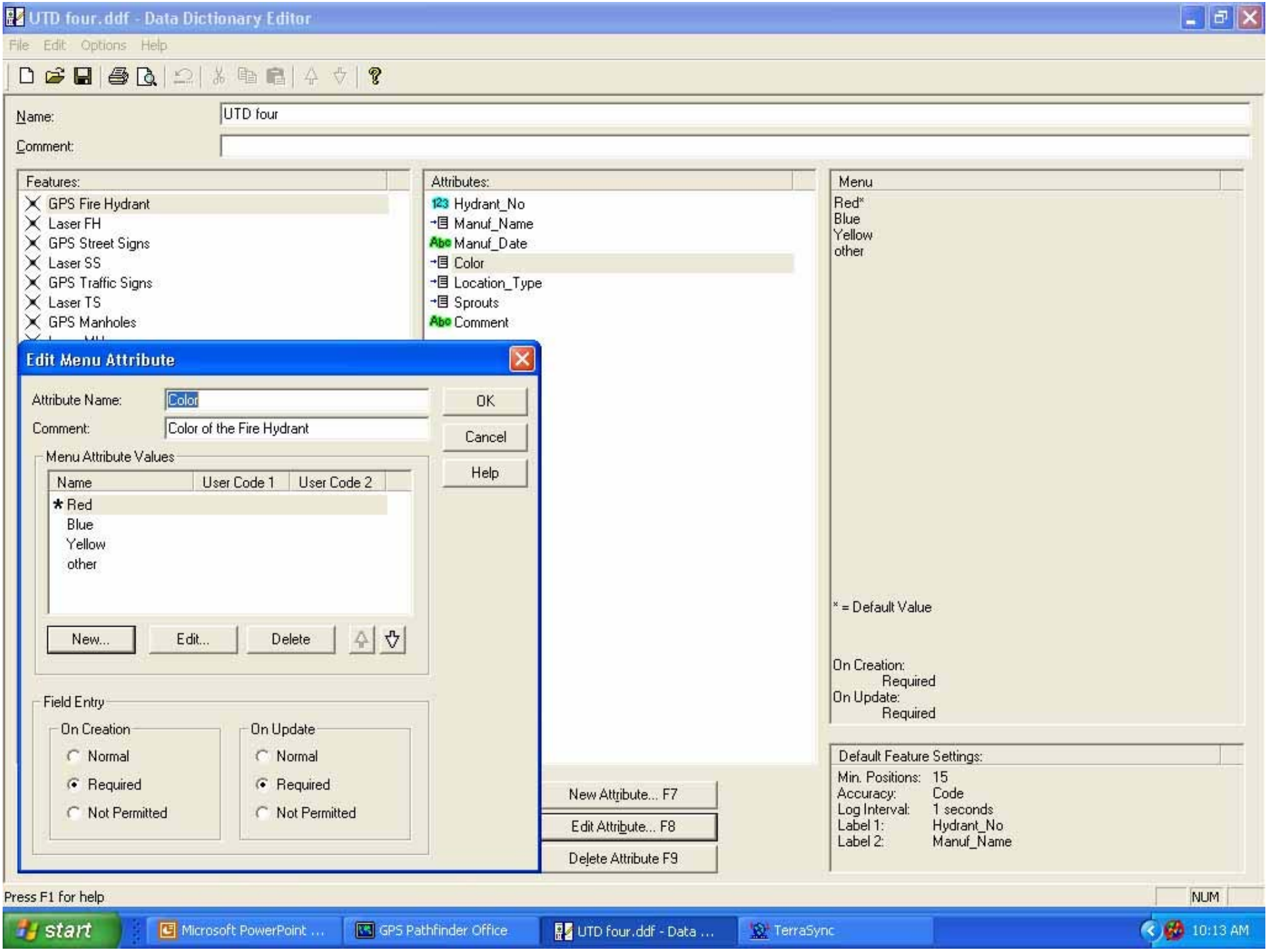
PROJECT REQUIREMENTS

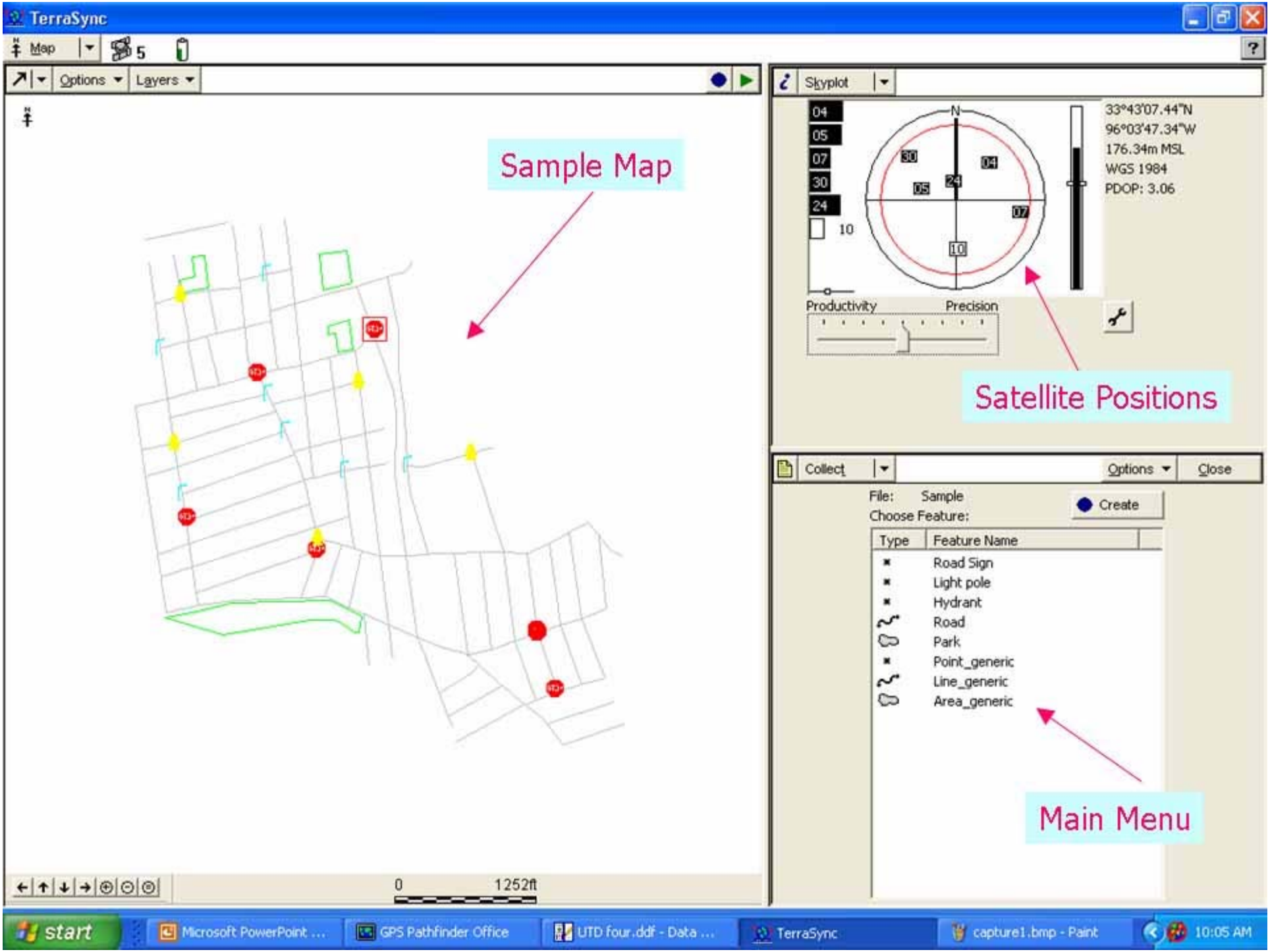
- UNIQUE ID NUMBER FOR EACH FEATURE
- MINIMUM 15 POSITIONS FOR EACH FEATURE
- MAX. PDOP OF 6.00
- U.S. STATE PLANE 1983
  - TEXAS NORTH CENTRAL 4202
    - UNITS: FEET

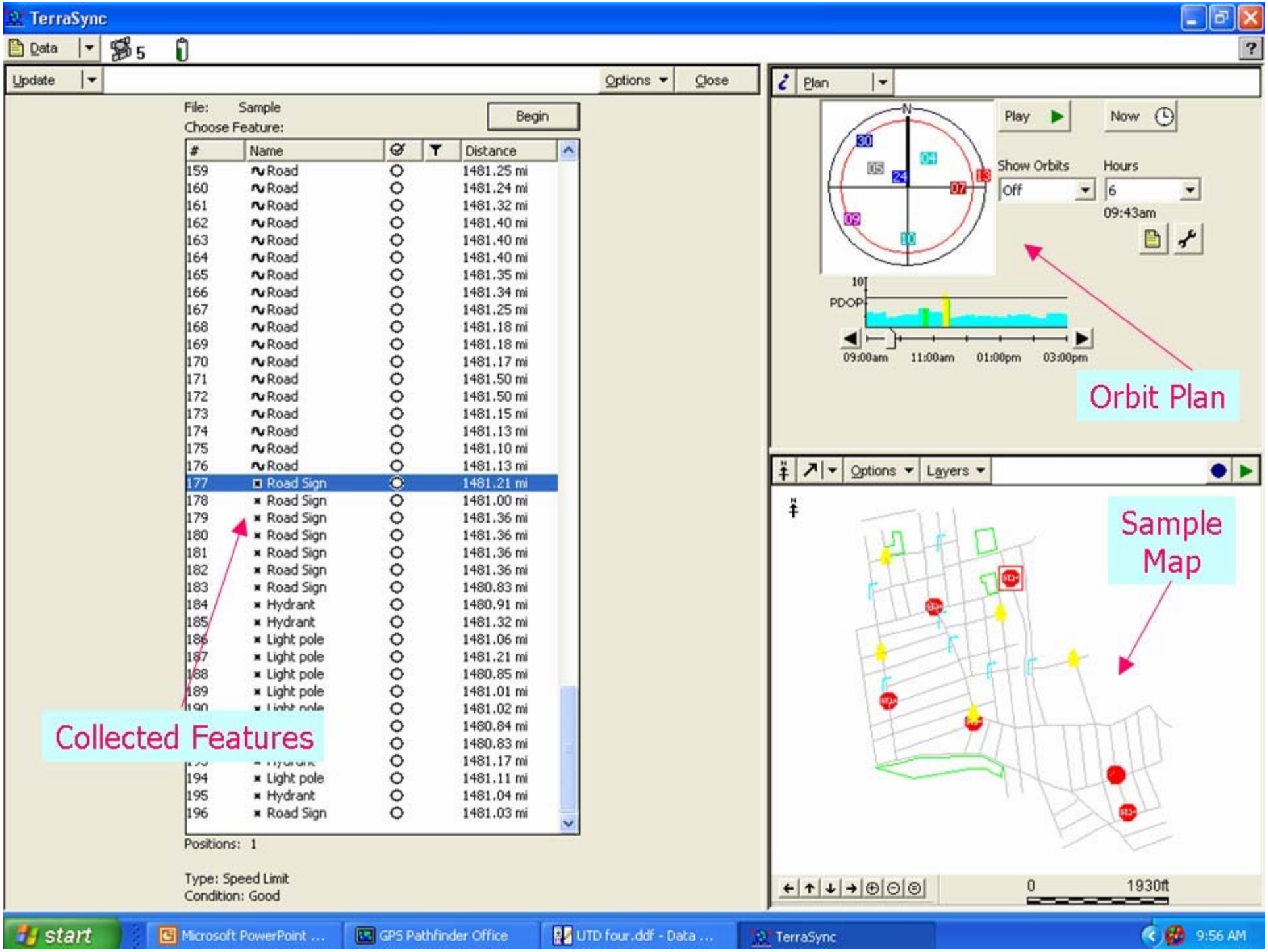
PROJECT SETUP

- DATA DICTIONARY
  - SET FEATURES
    - DEFINE SELECTED OBJECTS TO BE COLLECTED
  - SET ATTRIBUTES
    - DEFINE INFORMATION ABOUT EACH OBJECT


UTD four.ddf - Data Dictionary Editor
File Edit Options Help
Name: UTD four
Comment:
Features:
GPS Fire Hydrant
Laser FH
GPS Street Signs
Laser SS
GPS Traffic Signs
Laser TS
GPS Manholes
Laser MH
GPS Water Valves
Laser WV
GPS COMBO
Laser COMBO
GPS Control Point
Laser AZ Point
Line_generic
Other Point
Point_generic
Area_generic
Attributes:
Hydrant_No
Manuf_Name
Manuf_Date
Color
Location_Type
Sprouts
Comment
Numeric
Decimal Places: 0
Minimum: 0
Maximum: 100,000
Edit Feature
Properties
Default Settings
Symbol
Font: MapInfo Transportation
Style: 41
Change...
Size: 30
Foreground:
Background:
OK
Cancel
Default
Help
New Feature... F3
Edit Feature... F4
Delete Feature F5
Edit Attribute... F8
Delete Attribute F9
Log Interval: 1 seconds
Label 1: Hydrant_No
Label 2: Manuf_Name
Press F1 for help
NUM
start
Microsoft PowerPoint ...
GPS Pathfinder Office
UTD four.ddf - Data ...
TerraSync
10:11 AM

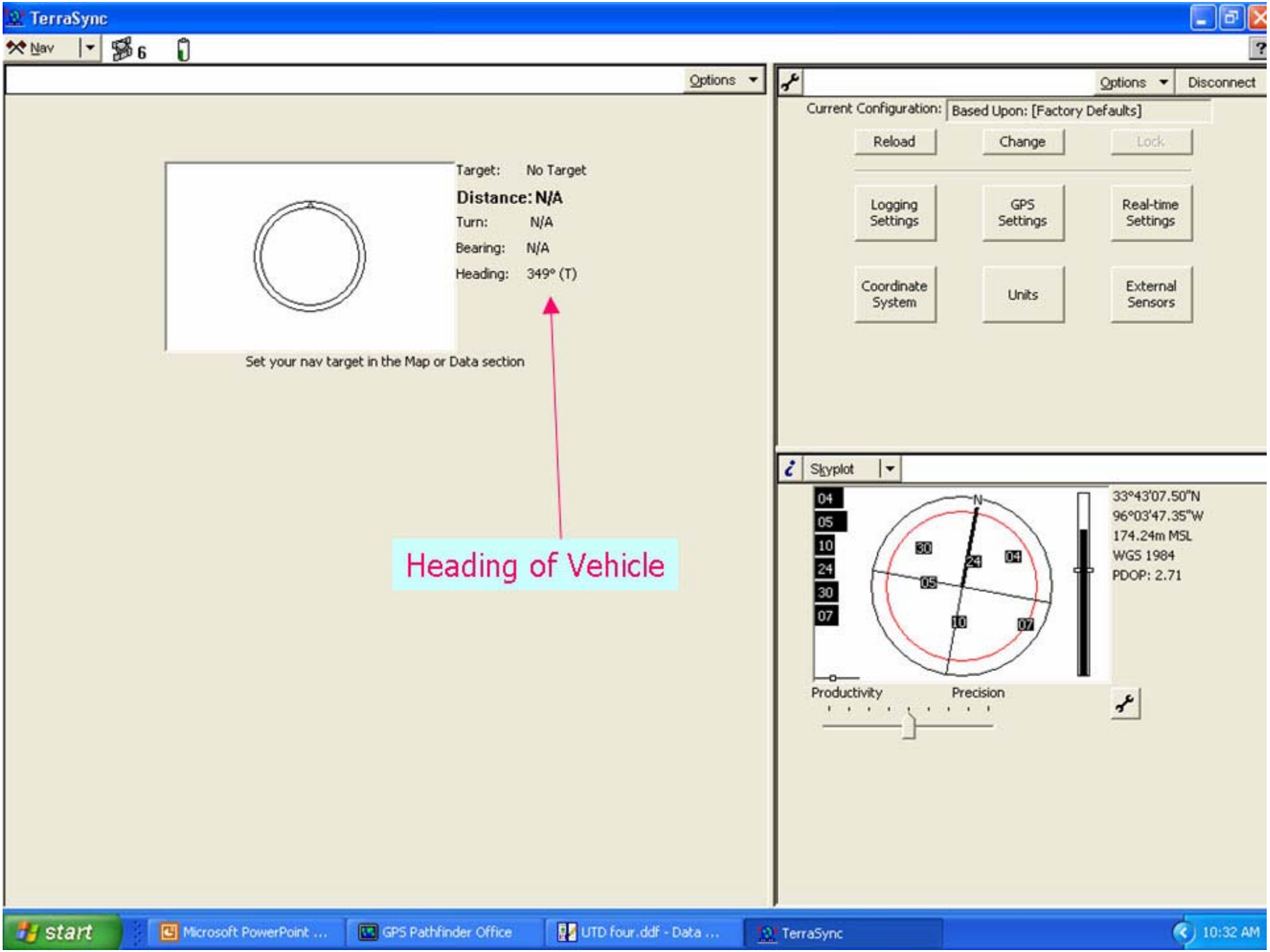

UTD four.ddf - Data Dictionary Editor
File Edit Options Help
Name: UTD four
Comment:
Features:
GPS Fire Hydrant
Laser FH
GPS Street Signs
Laser SS
GPS Traffic Signs
Laser TS
GPS Manholes
Attributes:
Hydrant_No
Manuf_Name
Manuf_Date
Color
Location_Type
Sprouts
Comment
Menu
Red*
Blue
Yellow
other
* = Default Value
On Creation:
Required
On Update:
Required
Edit Menu Attribute
Attribute Name: Color
Comment: Color of the Fire Hydrant
OK
Cancel
Help
Menu Attribute Values
Name
User Code 1
User Code 2
* Red
Blue
Yellow
other
New...
Edit...
Delete
Field Entry
On Creation
Normal
Required
Not Permitted
On Update
Normal
Required
Not Permitted
New Attribute... F7
Edit Attribute... F8
Delete Attribute F9
Default Feature Settings:
Min. Positions: 15
Accuracy: Code
Log Interval: 1 seconds
Label 1: Hydrant_No
Label 2: Manuf_Name
Press F1 for help
NUM
start
Microsoft PowerPoint ...
GPS Pathfinder Office
UTD four.ddf - Data ...
TerraSync
10:13 AM


TerraSync
Map
5
Options
Layers
Sample Map
Skyplot
04
05
07
30
24
10
N
33°43'07.44"N
96°03'47.34"W
176.34m MSL
WGS 1984
PDOP: 3.06
Productivity
Precision
Satellite Positions
Collect
Options
Close
File: Sample
Choose Feature:
Create
Type
Feature Name
Road Sign
Light pole
Hydrant
Road
Park
Point_generic
Line_generic
Area_generic
Main Menu
0
1252ft
start
Microsoft PowerPoint ...
GPS Pathfinder Office
UTD four.ddf - Data ...
TerraSync
capture1.bmp - Paint
10:05 AM


TerraSync
Data
5
Update
Options
Close
File: Sample
Choose Feature:
Begin
# Name Distance
159 Road 1481.25 mi
160 Road 1481.24 mi
161 Road 1481.32 mi
162 Road 1481.40 mi
163 Road 1481.40 mi
164 Road 1481.40 mi
165 Road 1481.35 mi
166 Road 1481.34 mi
167 Road 1481.25 mi
168 Road 1481.18 mi
169 Road 1481.18 mi
170 Road 1481.17 mi
171 Road 1481.50 mi
172 Road 1481.50 mi
173 Road 1481.15 mi
174 Road 1481.13 mi
175 Road 1481.10 mi
176 Road 1481.13 mi
177 Road Sign 1481.21 mi
178 Road Sign 1481.00 mi
179 Road Sign 1481.36 mi
180 Road Sign 1481.36 mi
181 Road Sign 1481.36 mi
182 Road Sign 1481.36 mi
183 Road Sign 1480.83 mi
184 Hydrant 1480.91 mi
185 Hydrant 1481.32 mi
186 Light pole 1481.06 mi
187 Light pole 1481.21 mi
188 Light pole 1480.85 mi
189 Light pole 1481.01 mi
194 Light pole 1481.11 mi
195 Hydrant 1481.04 mi
196 Road Sign 1481.03 mi
Positions: 1
Type: Speed Limit
Condition: Good
Collected Features
Plan
Play
Now
Show Orbits
Off
Hours
6
09:43am
PDOP
09:00am
11:00am
01:00pm
03:00pm
Orbit Plan
Options
Layers
Sample Map
0
1930ft
start
Microsoft PowerPoint ...
GPS Pathfinder Office
UTD four.ddf - Data ...
TerraSync
9:56 AM

Rowlett
TEXAS

NEED FOR LASER OFFSETS


TerraSync
Nav
6
Options
Target: No Target
Distance: N/A
Turn: N/A
Bearing: N/A
Heading: 349° (T)
Set your nav target in the Map or Data section
Heading of Vehicle
Options
Disconnect
Current Configuration: Based Upon: [Factory Defaults]
Reload
Change
Lock
Logging Settings
GPS Settings
Real-time Settings
Coordinate System
Units
External Sensors
Skyplot
04
05
10
24
30
07
N
33°43'07.50"N
96°03'47.35"W
174.24m MSL
WGS 1984
PDOP: 2.71
Productivity
Precision
start
Microsoft PowerPoint ...
GPS Pathfinder Office
UTD four.ddf - Data ...
TerraSync
10:32 AM

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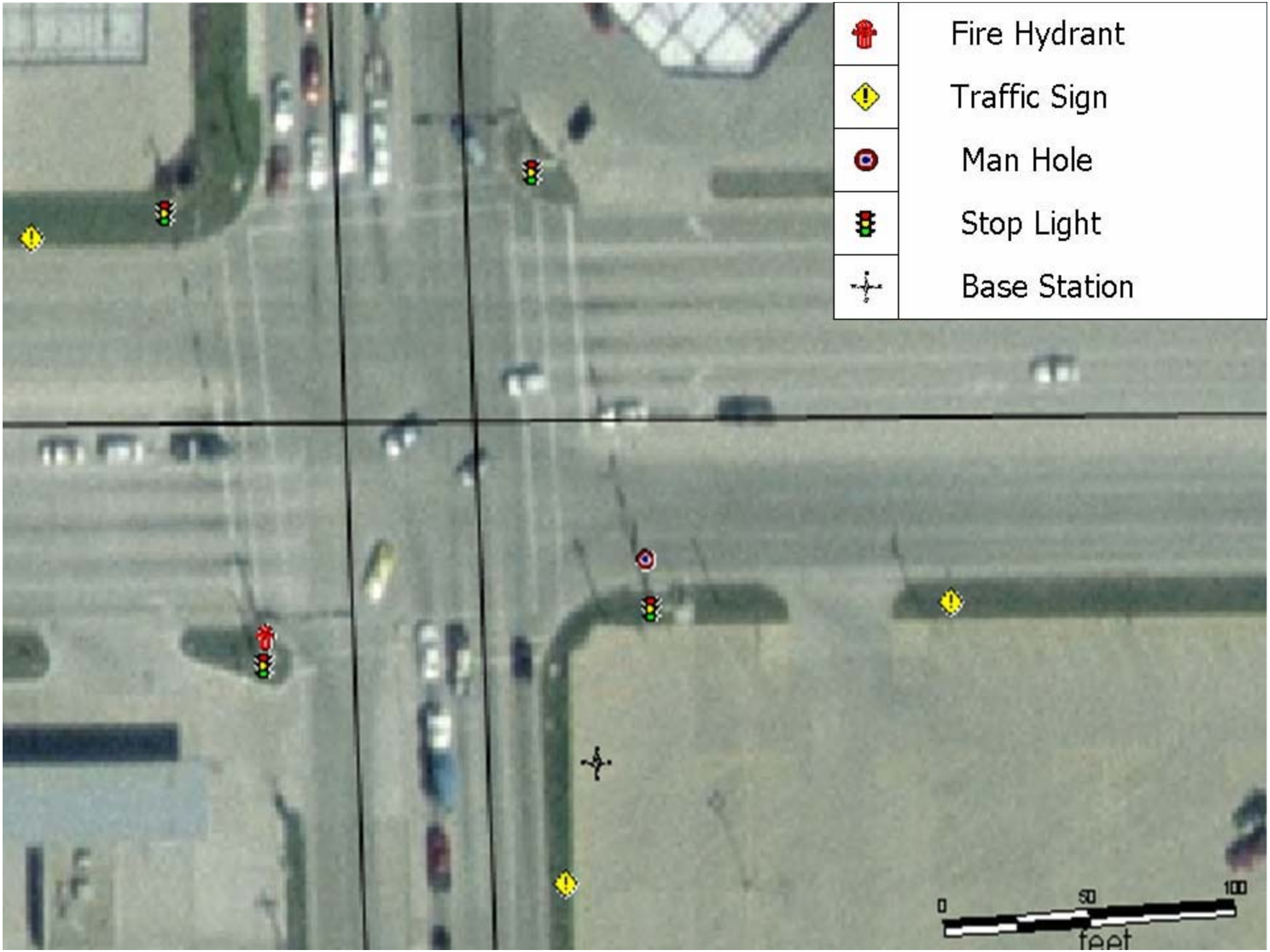
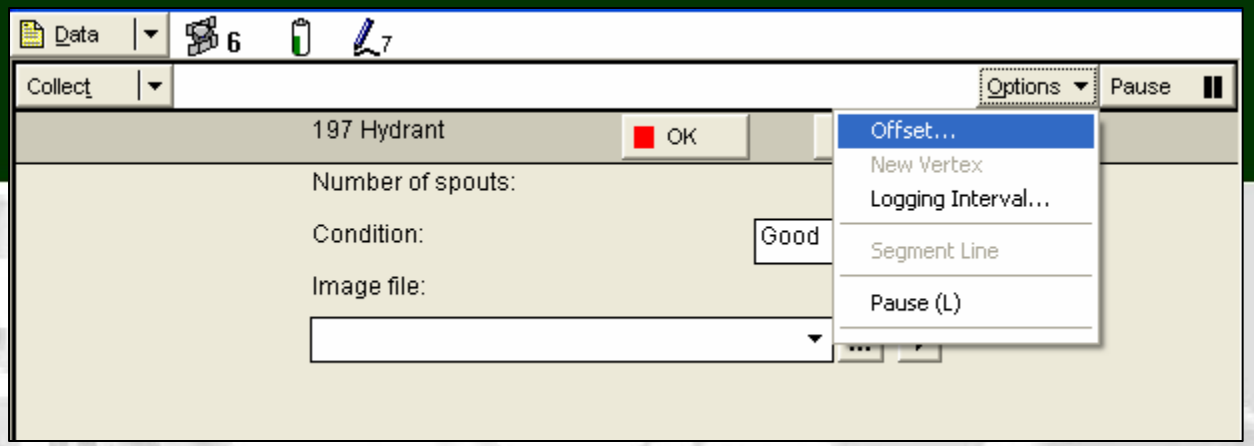
TEXAS

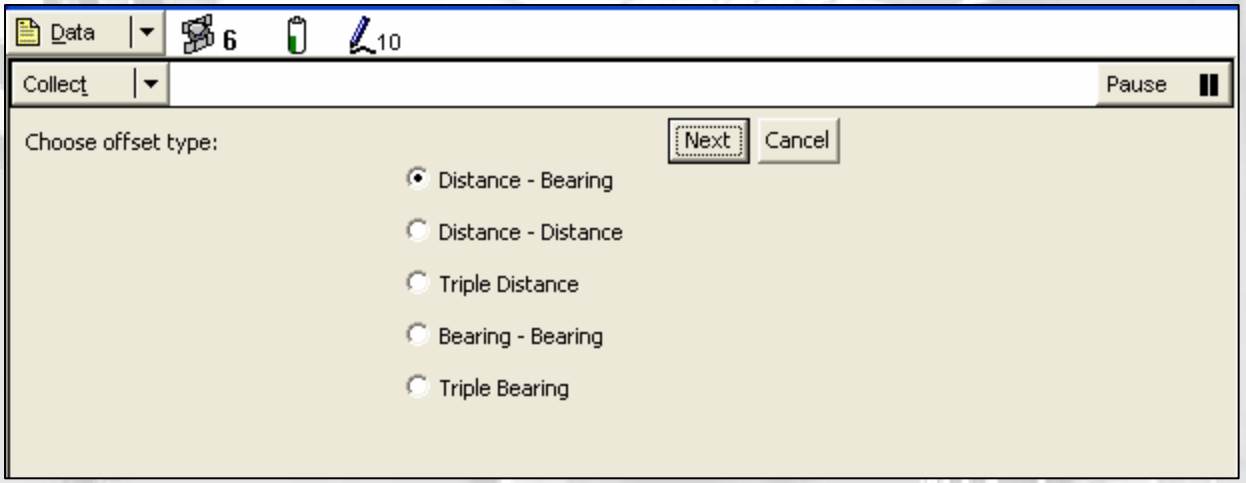

Fire Hydrant
Traffic Sign
Man Hole
Stop Light
Base Station
0
50
100
feet

Rowlett
TEXAS

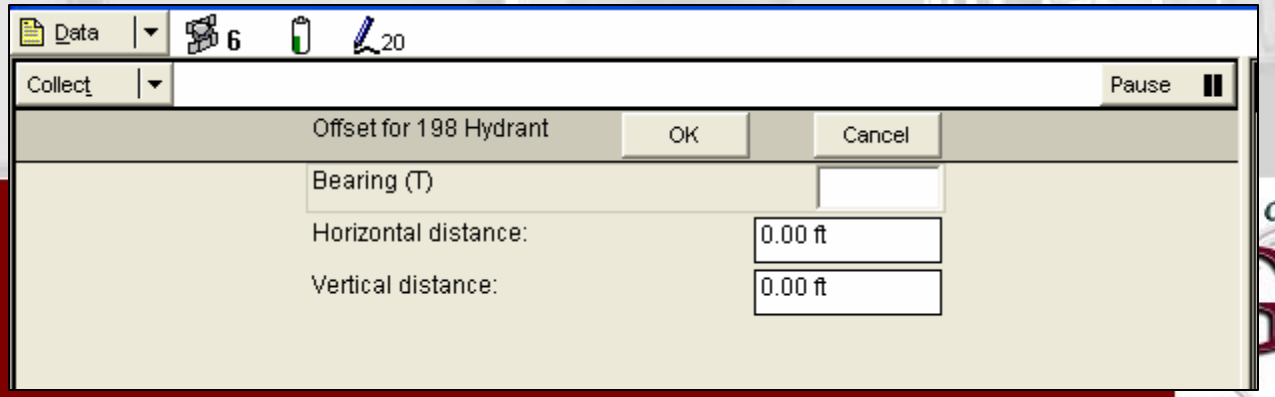
1.



2.



3.



of Rowlett
GIS

OTHER NEEDS FOR LASER OFFSETS

Rowlett
TEXAS

MOBILE UNIT SETUP

Rowlett
TEXAS

MOBILE UNIT SETUP

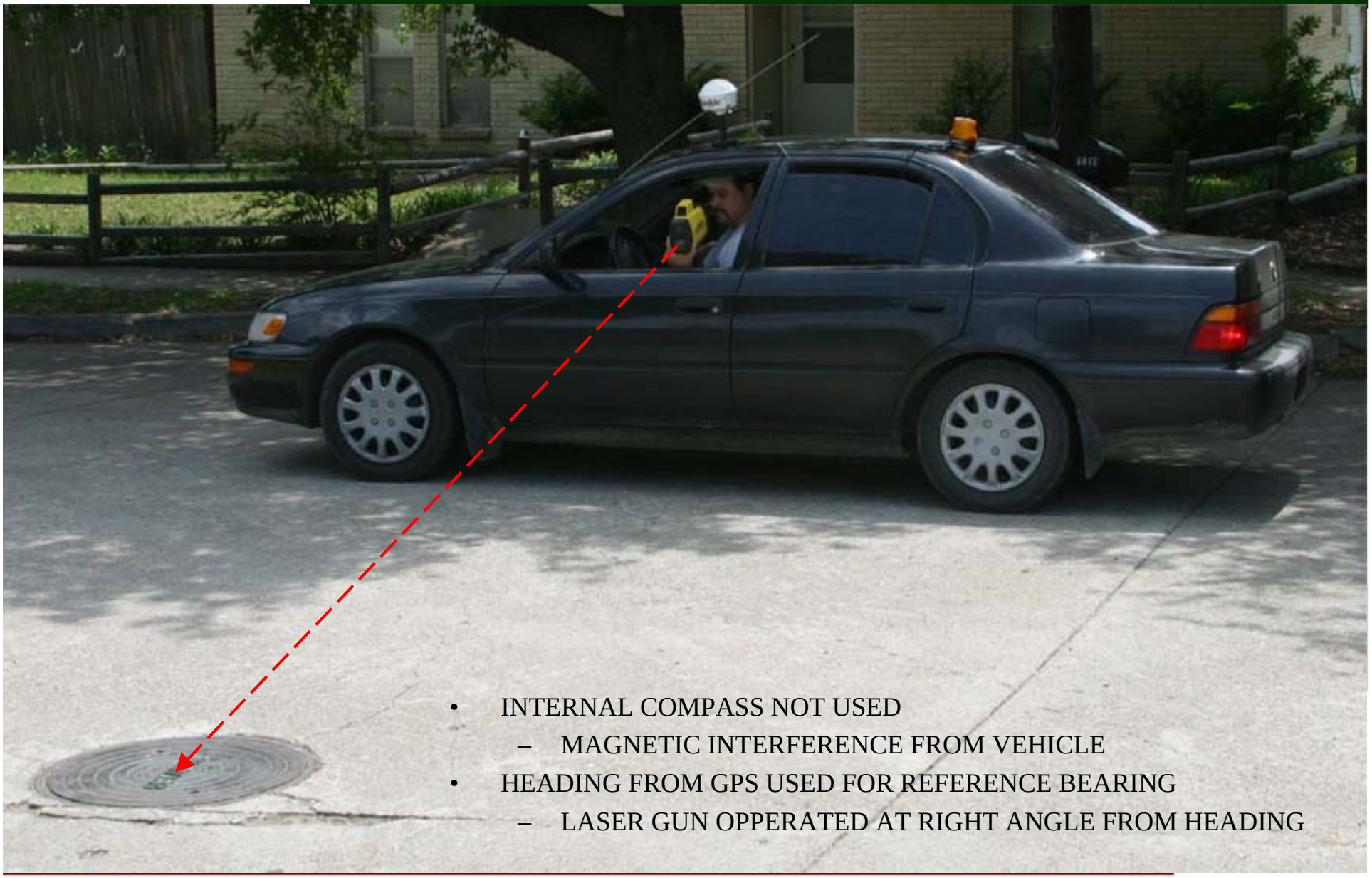
Rowlett
TEXAS

USE GPS ONLY

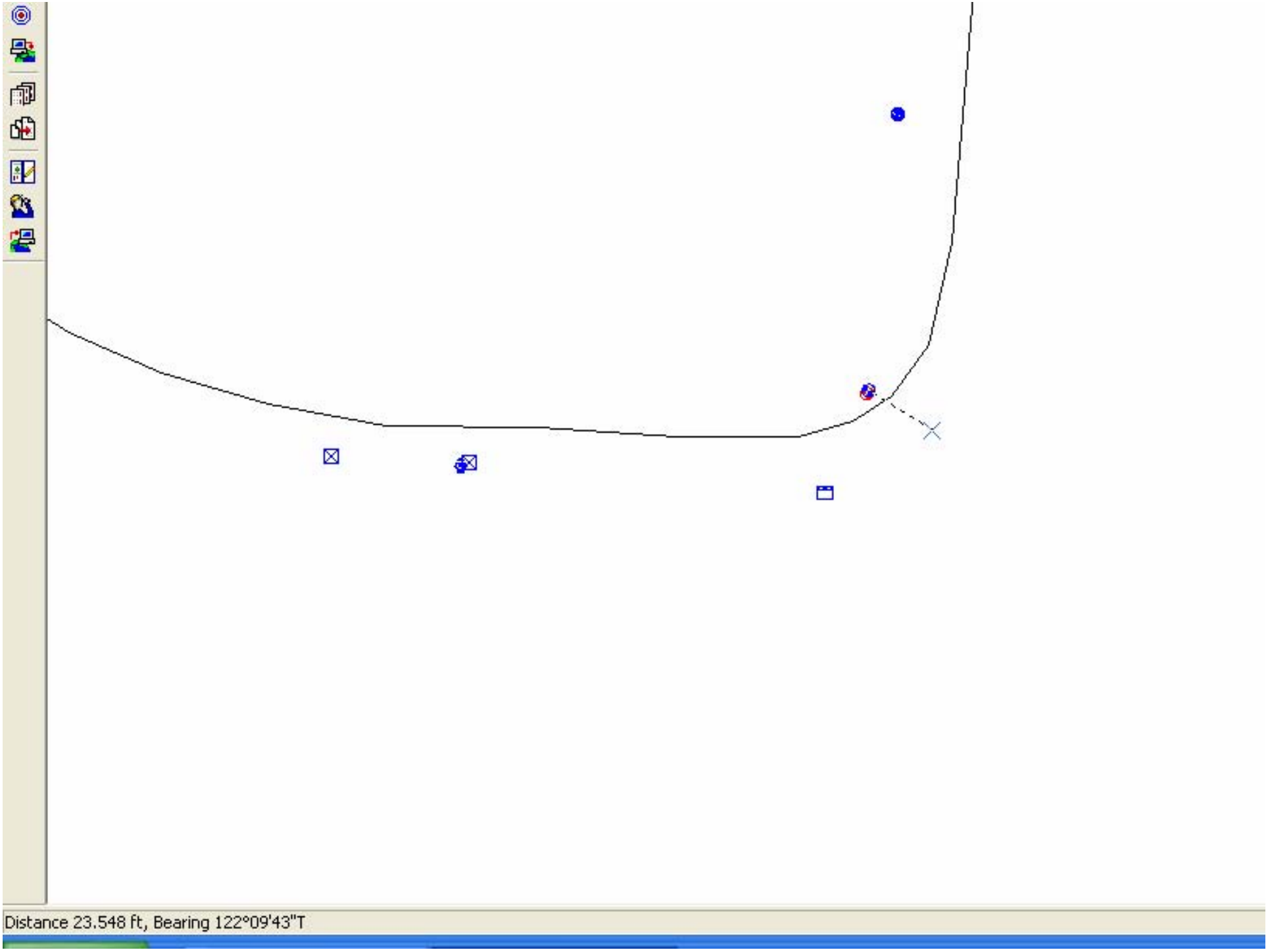
Rowlett
TEXAS

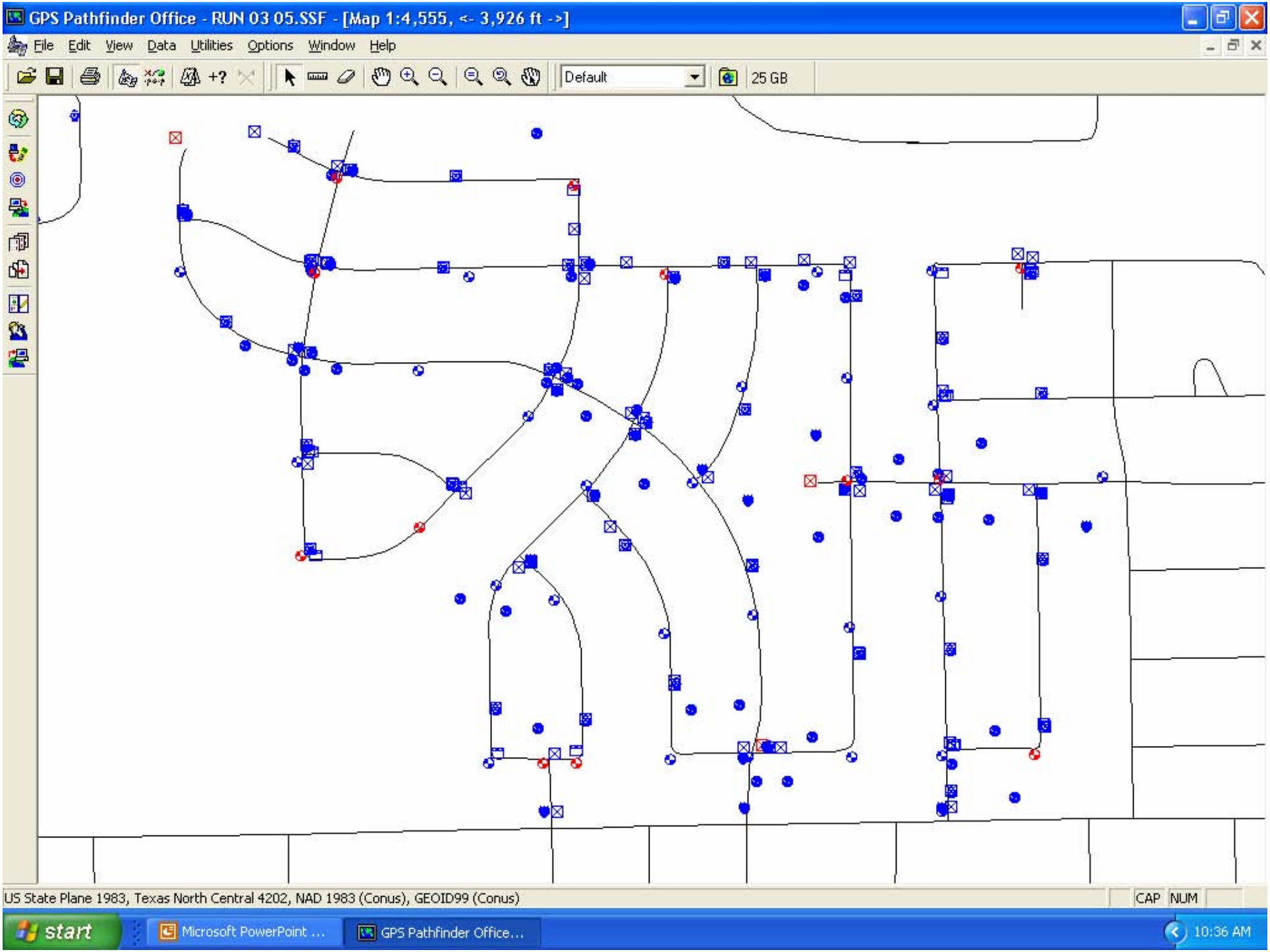
USE GPS ONLY

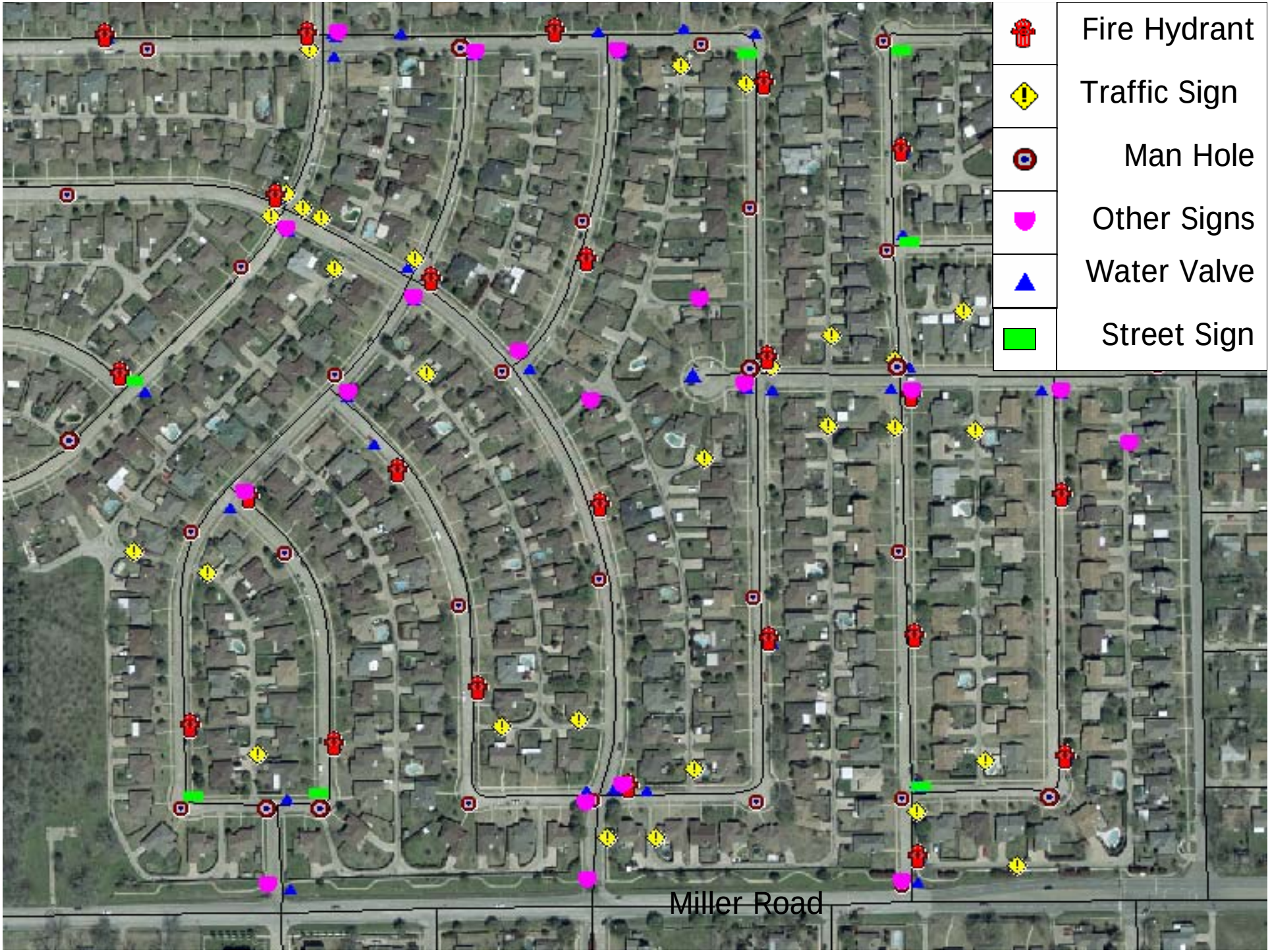
USING LASER OFFSET



- INTERNAL COMPASS NOT USED
  - MAGNETIC INTERFERENCE FROM VEHICLE
- HEADING FROM GPS USED FOR REFERENCE BEARING
  - LASER GUN OPPERATED AT RIGHT ANGLE FROM HEADING


Distance 23.548 ft, Bearing 122°09'43"T


GPS Pathfinder Office - RUN 03 05.SSF - [Map 1:4,555, <- 3,926 ft ->]
File Edit View Data Utilities Options Window Help
Default
25 GB
US State Plane 1983, Texas North Central 4202, NAD 1983 (Conus), GEOID99 (Conus)
CAP NUM
start
Microsoft PowerPoint ...
GPS Pathfinder Office...
10:36 AM


Fire Hydrant
Traffic Sign
Man Hole
Other Signs
Water Valve
Street Sign
Miller Road

Rowlett
TEXAS

City of Rowlett
GIS

Last Year's Primary Goals

- Water and Sewer Network Development
- GASB 34 Compliance
- Plat and Construction Drawings – Document Management

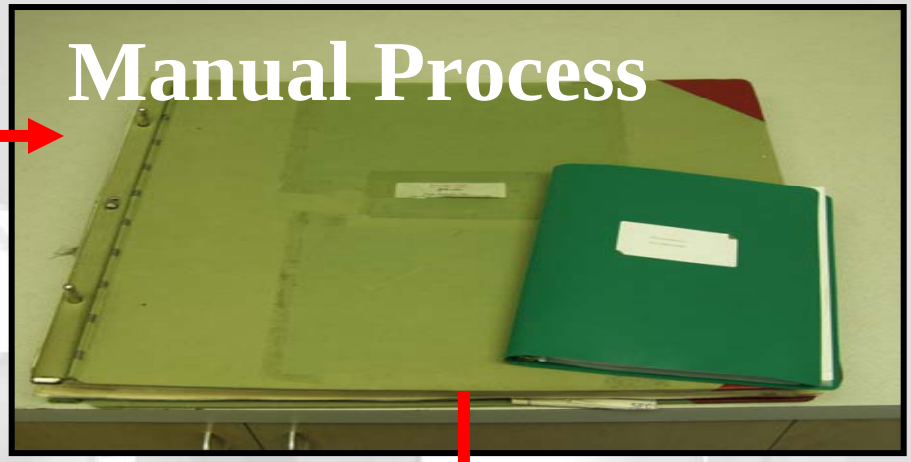
Develop City's Water and Sewer Network:

- Scanning
- Geo-Registration
- Digitization

City of Rowlett GIS

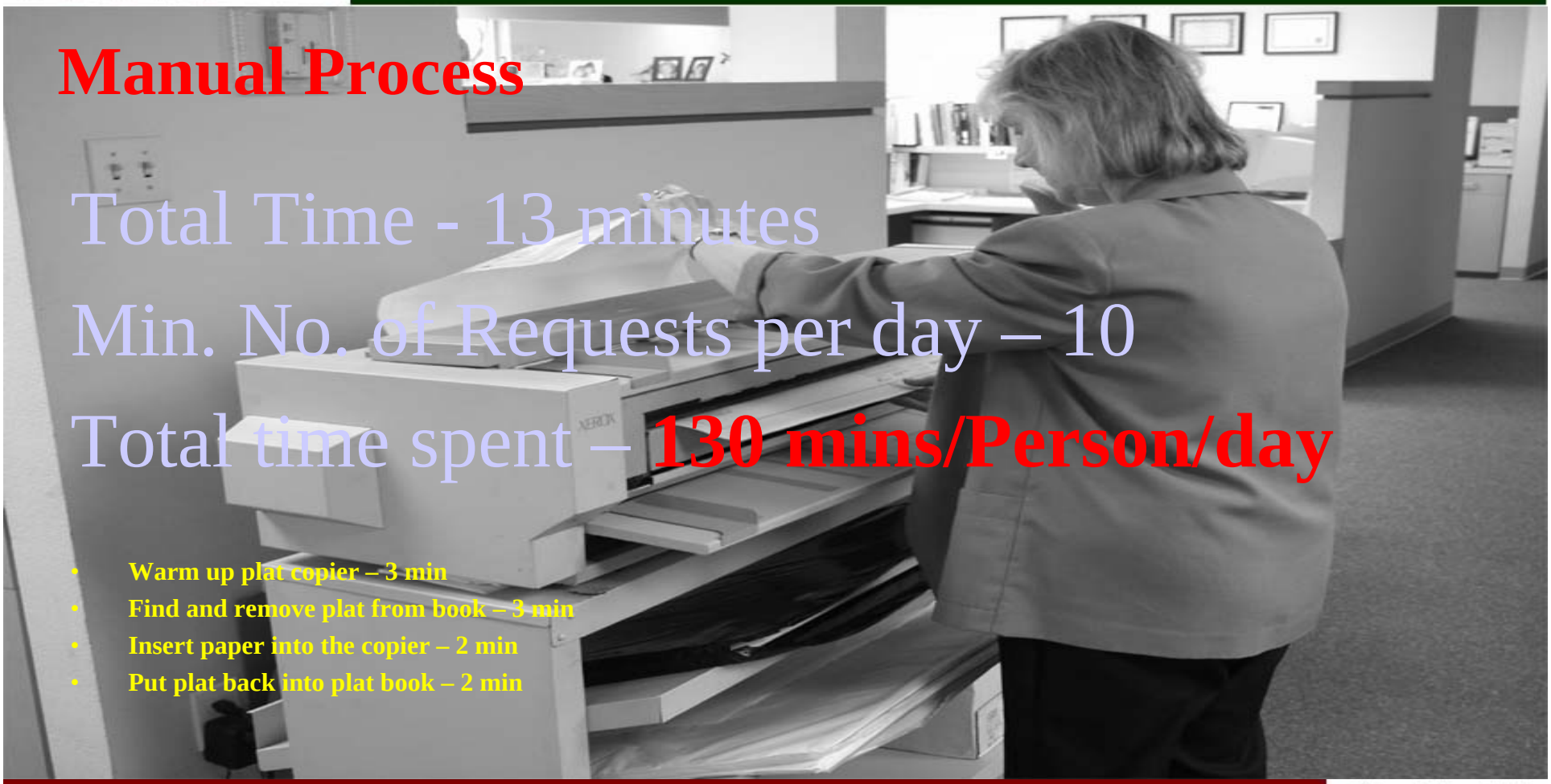
Plat/AsBuilts Reproduction

Manual Process



City of Rowlett GIS

Manual Process



Manual Process

Total Time - 13 minutes

Min. No. of Requests per day – 10

Total time spent – **130 mins/Person/day**

- **Warm up plat copier – 3 min**
- **Find and remove plat from book – 3 min**
- **Insert paper into the copier – 2 min**
- **Put plat back into plat book – 2 min**

Rowlett TEXAS

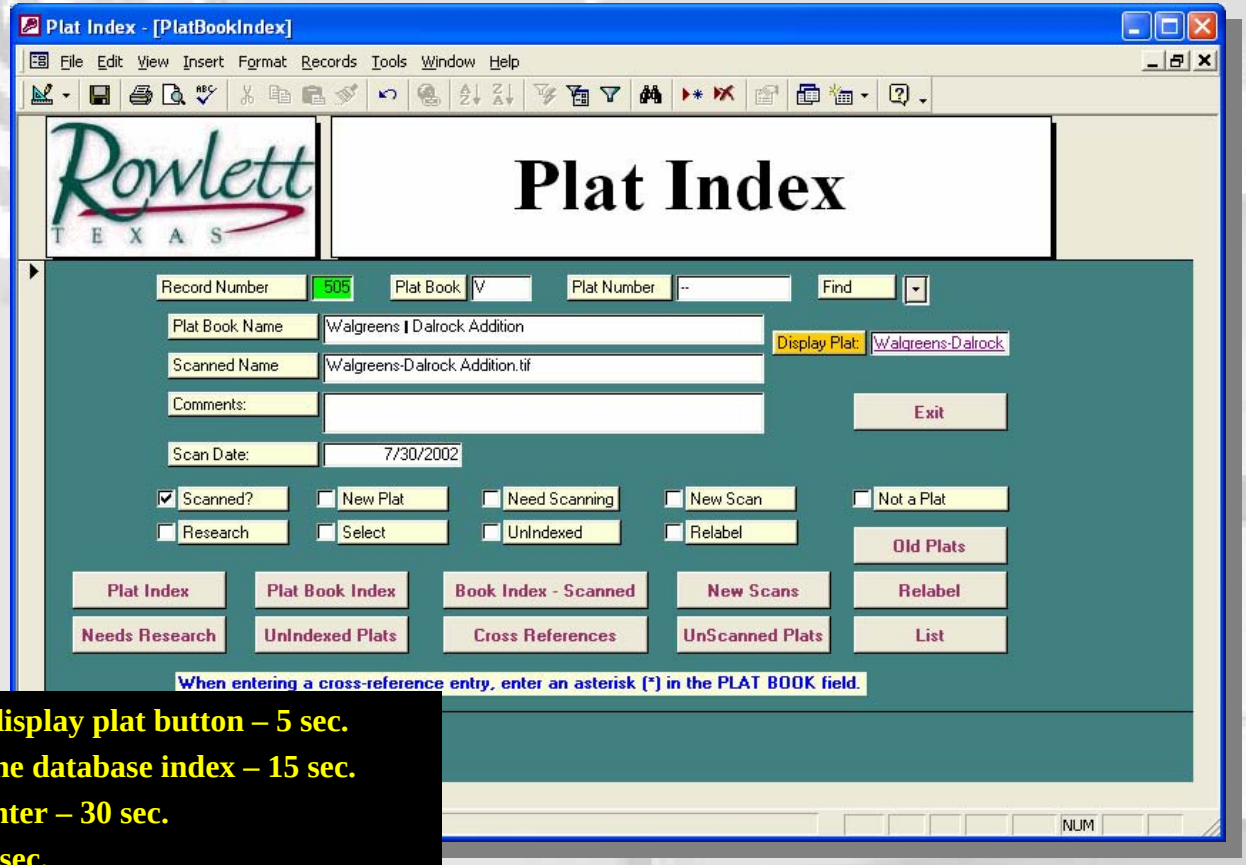
Plat/AsBuilt/Construction Drawings Digital Conversion

Issues:

Resolution	**150, 300, 600 dpi**	**(Printing)**
File Format	***.jpg, *.gif, *.tiff**	**(Web and Printing)**
Nomenclature	**Plat/AsBuilt Name + Block + Lot No. + Phase No**	**(Identification)**

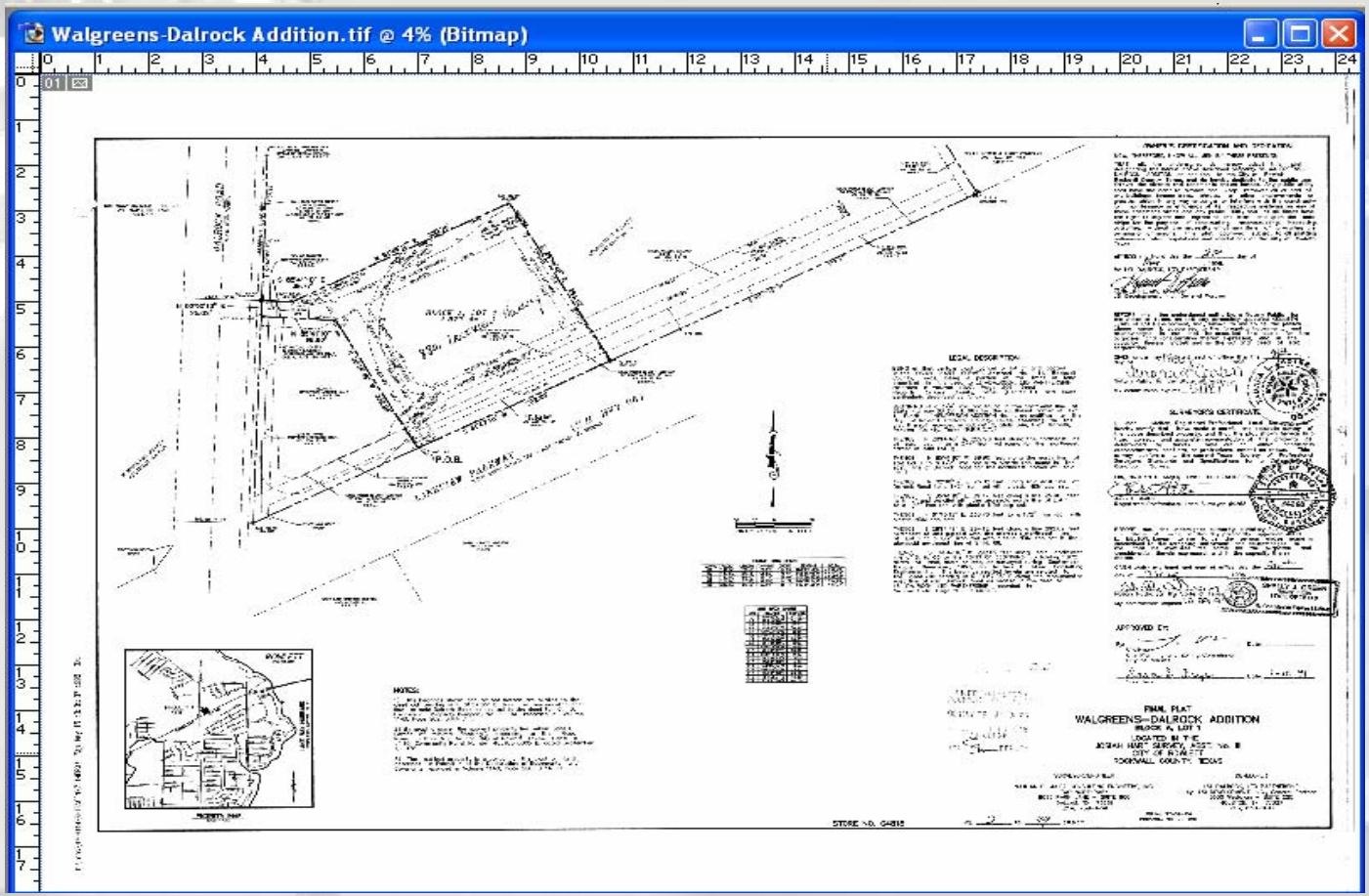
City of Rowlett GIS

Automated Process



- **Click on the display plat button – 5 sec.**
- **Find plat in the database index – 15 sec.**
- **Setup the printer – 30 sec.**
- **Printing – 30 sec.**

Automated Process



City of Rowlett GIS

Rowlett
TEXAS

Prepared by: Rowlett Geographic Information Systems
Project: Water Network (GASB 34 Valuation)
Data Source: Finance, Public Works and Utilities, GIS

Calculation Notes and Assumptions:
Material Useful Life (yrs) for Transmission and Distribution Line(s): 25
Deflation Index is obtained from Engineering News Record "Construction Cost Index History"
Also, refer to the enclosed Detailed Calculations and Assumptions Sheet

VALUATION SUMMARY TABLE

YEAR	APPROX. 2003 REPLACEMENT COST	APPROX. VALUE AT ACQUISITION	ANNUAL DEPRECIATION	APPROX. CURRENT VALUE	ACCUMULATED DEPRECIATION
1983	$6,899,855.10	$4,291,019.88	$171,640.80	$1,029,844.77	$3,261,175.11
1984	$10,447,932.26	$6,625,033.85	$265,001.35	$1,855,009.48	$4,770,024.37
1985	$7,492,294.43	$4,807,056.10	$192,282.24	$1,538,257.95	$3,268,798.15
1986	$14,873,062.82	$9,770,114.97	$390,804.60	$3,517,241.39	$6,252,873.58
1987	$3,339,310.78	$2,250,361.53	$90,014.46	$900,144.61	$1,350,216.92
1988	$501,892.14	$346,907.85	$13,876.31	$152,639.45	$194,268.39
1989	$41,638.23	$29,392.42	$1,175.70	$14,108.36	$15,284.06
1990	$430,936.13	$311,911.57	$12,476.46	$162,194.02	$149,717.55
1991	$1,153,060.62	$852,688.32	$34,107.53	$477,505.46	$375,182.86
1992	$636,755.68	$485,526.21	$19,421.05	$291,315.73	$194,210.48
1993	$1,891,569.02	$1,507,391.35	$60,295.65	$964,730.47	$542,660.89
1994	$7,261,739.78	$6,006,911.15	$240,276.45	$4,084,699.58	$1,922,211.57
1995	$1,962,077.26	$1,641,866.25	$65,674.65	$1,182,143.70	$459,722.55
1996	$3,198,916.83	$2,749,788.91	$109,991.56	$2,089,839.57	$659,949.34
1997	$3,768,650.40	$3,358,244.37	$134,329.77	$2,686,595.50	$671,648.87
1998	$5,893,455.96	$5,336,524.38	$213,460.98	$4,482,680.48	$853,843.90
1999	$2,352,427.21	$2,179,994.29	$87,199.77	$1,918,394.98	$261,599.32
2000	$8,121,430.85	$7,727,541.46	$309,101.66	$7,109,338.14	$618,203.32
2001	$4,578,510.00	$4,442,070.40	$177,682.82	$4,264,387.58	$177,682.82
2002	$872,838.49	$853,374.20	$34,134.97	$853,374.20	$0.00
2003	$1,155,324.10	$1,155,324.10	$46,212.96	$1,155,324.10	$0.00
Grand Total	$103,832,183.73	$73,103,048.79	$2,924,121.96	$41,179,664.66	$32,285,568.54

City of Rowlett GIS

Rowlett TEXAS

Prepared by: Rowlett Geographic Information Systems
Project: Water Network (GASB 34 Valuation)
Data Source: Finance, Public Works and Utilities, GIS

Calculation Notes and Assumptions:
Material Useful Life (yrs) for Transmission and Distribution Line(s): 25
Deflation Index is obtained from Engineering News Record "Construction Cost Index History"
Also, refer to the enclosed Detailed Calculations and Assumptions Sheet

ALTMAN ADDITION NO. 2 **1979** **DEF. FAC. 0.4593**

LINE SIZE	LINE LGTH.	2003 UNIT CST	APPROX. 2003 REPLACEMENT COST	APPROX. VALUE AT ACQUISITION	ANNUAL DEPRECIATION	CURRENT VALUE	ACCUMULATED DEPRECIATION
6"	20.60	$85.00	$1,750.80	$804.14	$32.17	$64.33	$739.81
8"	1,200.04	$90.00	$108,003.22	$49,605.88	$1,984.24	$3,968.47	$45,637.41
Sub Total	1,220.63		$109,754.02	$50,410.02	$2,016.40	$4,032.80	$46,377.22

Notes:
1.Material useful lives were obtained from Public Works and Utilities Department
2.Construction Cost Deflation Indices were obtained from data provided by Engineering News-Record (www.enr.com), part of the McGraw-Hill Construction Companies. The ENR Construction Cost Index is comprised of labor costs, steel costs, concrete costs, and lumber costs.
3.Cost estimates are provided by NRB Engineers and are based on their experience and judgment
4.Existing asset quantities were obtained from Rowlett GIS Water and Sewer Network databases that are under development. These databases account for approximately 95% of the assets and are in the Quality Control phase of the data development process.

City of Rowlett GIS

Rowlett TEXAS

SEWER LINE			WATER LINE	
Size	Cost		Size	Cost
4 inches	130.00		2 inches	75.00
16 inches	157.00		3 inches	78.00
20 inches	163.00		4 inches	80.00
21inches	165.00		10 inches	95.00
			18 inches	115.00
			21 inches	?
			42 inches	250.00

FORMULA(S):

REP_CST = *[UNIT_CST]*SHAPE_LGTH*

Where,
REP_CST = Replacement Cost in the year 2003
UNT_CST = Cost of a linear feet of Water/Sewer line based on the size (Ref. Table A)
SHAPE_LGTH = Length of the Water/Sewer line is feet

[VAL_ACQ_03] = *[REP_CST]*DEF_FAC_1*

Where,
ANUL_DEP = Annual Depreciation
VAL_ACQ = Value at Acquisition
DEF_FAC_1 = Deflation Index
Assumed life of Transmission and Distribution Water/Sewer Lines = 25 years

ANUL_DEP = *[VAL_ACQ_03]/25*

Where,
ANUL_DEP = Annual Depreciation
VAL_ACQ = Value at Acquisition
Assumed life of Transmission and Distribution Water/Sewer Lines = 25 years

CUR_VAL = *[VAL_ACQ_03]-((2002-([Year_No]+1))* [ANUL_DEP])*

Where,
CUR_VAL = Current Value

ACC_DEP = *[VAL_ACQ_03] - [CUR_VAL]*

Where,
ACC_DEP = Accumulated Depreciation

1958	759	0.1161
1959	797	0.1219
1960	824	0.1260
1961	847	0.1296
1962	872	0.1334
1963	901	0.1378
1964	936	0.1432
1965	971	0.1485
1966	1019	0.1559
1967	1074	0.1643
1968	1155	0.1767
1969	1269	0.1941
1970	1381	0.2112
1971	1581	0.2418
1972	1753	0.2681
1973	1895	0.2898
1974	2020	0.3090
1975	2212	0.3383
1976	2401	0.3672
1977	2576	0.3940
1978	2776	0.4246
1979	3003	0.4593
1980	3237	0.4951
1981	3535	0.5407
1982	3825	0.5850
1983	4066	0.6219
1984	4146	0.6341
1985	4195	0.6416
1986	4295	0.6569
1987	4406	0.6739

Construction cost deflation indices were obtained from data provided by Engineering News-Record (www.enr.com), part of the McGraw-Hill Construction Companies.

Field	Description	Type	Precision
UNT_CST_03	Unit Cost of the material in the Year 2003	SHORT	4
VAL_ACQ_03	Value of the Water/Sewer line at Acquisition	DOUBLE	4
CUR_VAL	Current Value of the Water/Sewer line	DOUBLE	19
REP_CST_03	Replacement Cost of the Water/Sewer line in the Year 2002	DOUBLE	19
ANUL_DEP	Annual Depreciation of the Water/Sewer line	DOUBLE	19
DEF_FAC	Deflation Index obtained from Engineering News Record	DOUBLE	13
ACC_DEP	Accumulated Depreciation	DOUBLE	19

City of Rowlett GIS

GASB 34 Compliance: Made Easy

QUESTIONS?

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City of Rowlett, Texas
kveeragandham@ci.rowlett.tx.us

Acknowledgements:
Under the supervision of Dr. Carlos Aiken, Professor, UT Dallas - Graduate Student Cody Cantral, collected most of the GPS data and related pictures. Lance Singleton, Sr. GIS Technician and Pete Frye, GIS Intern with the City of Rowlett worked on various segments of this project.