

June 16, 2015



To: Scott County Board of Supervisors  
From: Jon Burgstrum, Engineer; Ray Weiser, GIS Coordinator  
Re: Scott County GPS Control Network Maintenance

The Scott County GPS Control Network is a collection of approximately one hundred monuments that support highly accurate horizontal and vertical survey measurements. The network is used for numerous county projects including federal bridge cross section reports, construction and maintenance on bridges, roads, drainage features and other activities carried out by the Secondary Roads Department and GIS. The GPS Network is also used frequently by Bettendorf and Davenport engineering staff and is a valuable resource for numerous firms that provide engineering, survey and development services throughout the area.

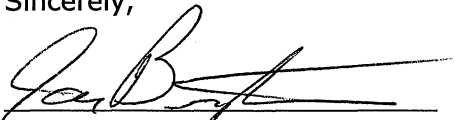
The network was created from a combination of Bettendorf, Davenport and Scott County control monuments in 2005 prior to the first joint aerial photo project. Dan Corbin of DCI and Gary Brown of GB Consulting assisted with that effort. They set several new monuments, collected field measurements and processed the resulting data to create the GPS control network that we use today. However, while the network has served local government, surveyors and others very well over the past 10 years, it is beginning to show its age and is due for maintenance.

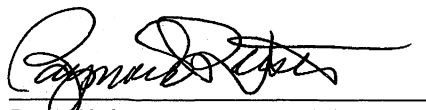
The network requires periodic re-observation to maintain good health. Also, while the majority of monuments are still in good shape, some have been destroyed or disturbed and require repair/replacement. We have received a proposal from DCI, Inc to update and restore the network. Scott County Secondary Roads staff has assessed the condition of monuments so that we have a better idea of which ones may require replacement. Doing this reconnaissance internally saves us \$4,550.

The project cost estimate is \$27,203 plus a unit cost of \$846 per replacement monument and a one-time mobilization cost of \$636. We have secured financial support in the amount of \$4,899 from Bettendorf and Davenport for the project and an understanding that they are responsible for replacing any damaged monuments within their jurisdiction. Please see Attachment A: 'GPS Control Network Cost Summary' and the enclosed proposal for more detail.

We respectfully recommend approval of the ESRI GIS Software Maintenance Renewal request in the amount of \$27,203 plus applicable monument replacement costs. If approved, we propose to pay for the project from contributed city funds, splitting the remaining costs between Secondary Road and GIS.

Sincerely,

  
Jon Burgstrum  
Scott County Engineer

  
Ray Weiser  
Scott County GIS Coordinator

Encl: DCI Quote, Attachment A, Resolution

**Proposal to Re-observe the  
Scott County GPS Survey Control Network  
06-05-2015**

**A. PURPOSE**

The purpose of this contract is to provide all of the labor and materials required to re-observe the existing 2005 Scott County geodetic control network with new static GNSS observations and adjust to the latest National Adjustment of 2011 (NA2011).

**B. INTRODUCTION**

The National Geodetic Survey (NGS) has performed a major adjustment to the Coordinate System used for positioning on the North American Continent. The adjustment has been done using the current NAD83 datum and is referred to as the NAD83(2011) or the NA2011 datum. To keep the Scott County GPS network up-to-date and fully compatible with the Iowa Real-time Network (IaRTN) it is important to have this network readjusted to the new NA2011 datum.

New static GPS field observations will be performed in order to adjust the Scott County network to the NA2011 datum. The new GPS field observations will guarantee the correct positional accuracy of the existing network monuments.

**C. SCOPE OF SERVICES**

Dan Corbin, Inc. (DCI) will provide all of the labor and equipment required to perform a complete post-processed static GPS survey. New static GPS field observations will be collected for the entire network of permanent Scott County GPS monuments. The network will include the existing City of Bettendorf points and the existing City of Davenport points.

A new countywide least squares network adjustment will be completed. All processed data and error factors will be computed using a 95% confidence factor. The minimum and maximum ratios of the fully constrained adjustment shall be included in the report. The network will be directly tied horizontally to the new NA2011 datum and vertically to the existing NAVD88 datum.

A network adjustment summary including the final adjustment statistics, network vector map, AutoCAD drawing with point locations, and a xyz coordinate listing with complete point attributes will be provided in hard copy and digital form.

The GPS field observations and network adjustment will be performed under the direct supervision of Gary G. Brown P.L.S. a duly licensed Land Surveyor in Iowa.

A complete set of the raw GPS observations including the final post-processed network vectors will be archived and saved for any future use by the County. Utilizing the archived observations will greatly reduce the cost of any future network re-adjustments.

**D. PRE-SURVEY MONUMENT RECONNAISSANCE**

Preceding the GPS field observations, all included monuments will be marked with flagging for easy site recognition during the GPS survey.

1. Physically locate monument in the field.
2. Clean dirt and debris away from the access cover and hinge area.
3. Open the cover and inspect survey cap. Remove debris from the inside of the sleeve if necessary.
4. Close the access cover.
5. Set a 4ft lathe approx. 1ft behind the monument. Flag the lathe and mark the point number on the lathe.
6. Clear all brush and foliage within a couple foot radius of the monument site.

*This document was prepared by Dan Corbin, Inc. for use by Scott County, Iowa.*

- 7. Remove any overhead foliage that blocks sky visibility.
  - 8. Take a digital picture of the site and make a note of the monument's condition.
- Cost (Will be omitted if completed by the Dept. of Secondary Roads) ..... **\$ 4,450**

**E. REPLACE DESTROYED and/or DAMAGED MONUMENTS** (as needed)  
 Install new Berntsen driven rod monuments complete with new survey caps encased in PVC pipes with aluminum access covers. Cost = \$636 per mobilization + \$846 per monument  
 (As an example the cost to replace 2 monuments is: \$636 + (2 x \$846) = \$2,328)

**F. NA2011 NETWORK ADJUSTMENT** (118 points total)  
 Cost ..... **\$ 27,203**

**G. OPTIONAL ITEM**  
 Republish the Monument Records from the 2014 Scott Co. GPS Report with the new point data and attributes. Republish with the existing field ties. Provide two hard copies and two digital copies.  
 Cost ..... **No Charge**

**H. TERMS AND CONDITIONS**  
 The services performed for this project will be invoiced as the work is completed.  
 The costs provided in this contract are good faith estimates. DCI will not exceed these costs without previous consent from the Client. In the event the scope of service does change and require additional work; all additional work will be invoiced at an hourly rate of \$150/hr.  
 Payment terms are as follows: Net 30 days – 1.5% per month on all accounts over 30 days unless otherwise specified by the Client at the time of contract.

**I. LIMITATION OF DAMAGES**  
 In the event of the breach of this Agreement by either party, it's agents or employees, or any claim of damages by one party against the other, based on any legal or equitable claim, the parties agree that the amount of damages that may be recovered by any party shall be limited to a sum no greater than the total amount of the payments to be made pursuant to this Agreement.

**J. SAVING CLAUSE**  
 Should any provisions of this contract be deemed unenforceable by a court of law, all of the other provisions shall remain in effect.

Dan Corbin, Inc.  
 28 River Ridge Lane  
 Cedar Falls, IA 50613  
 Email: dcorbin@cfu.net  
 Ph: (319) 268-1665  
 Fax: (319) 266-3398

Scott County

By: *Dan Corbin*  
 Dan Corbin, President

By: \_\_\_\_\_  
 Scott County

Date 6-5-2015

Date \_\_\_\_\_

## Attachment A: GPS Control Network Cost Summary

Jurisdiction	Area (approximate sq mi)	Area Percentage	Proposed Cost Share
Davenport	62.9	13.45%	\$ 3,660
Bettendorf	21.3	4.55%	\$ 1,239
Scott County Remainder*	383.0	81.99%	\$ 22,304
<i>Totals</i>	467.2	100.00%	\$ 27,203

Monuments	Num Monuments	Cost
Monument placement (Mobilization @ \$636 + \$846 per mon)	-	\$ 636

\* Scott County is conducting recon internally (savings of \$4,550) and will pay for one mobilization @ \$636.

THE COUNTY AUDITOR'S SIGNATURE CERTIFIES  
THAT THIS RESOLUTION HAS BEEN FORMALLY  
APPROVED BY THE BOARD OF SUPERVISORS ON  
\_\_\_\_\_  
DATE  
\_\_\_\_\_  
SCOTT COUNTY AUDITOR

R E S O L U T I O N

SCOTT COUNTY BOARD OF SUPERVISORS

June 18, 2015

APPROVAL OF GPS Control Network Maintenance with DCI, INC.

BE IT RESOLVED BY the Scott County Board of Supervisors as follows:

- Section 1. That the contract in the amount of \$27,203 (plus applicable monument replacement costs) with DCI, Inc. for GPS Control Network Maintenance Services is hereby approved.
- Section 2. That the Chairman is hereby authorized to sign said agreement.
- Section 3. This resolution shall take effect immediately.