Design, Construction and Implementation of a Statewide Real Time Kinematic GPS Network

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Design Considerations

- Monument Stability
- Signal Quality
- Continuous Power
- Lightning Protection
- Vandal Resistant
- Station Locations
- Network Connections

- Single Point Control
- Uniformity
- Connectivity
- Environmental Factors
- Maintenance
Monument Design
Form Design

Front View

Side View

3/4in-7Ply - Marine Grade Plywood (x4)
1ft across top
2ft-1.5in across bottom
9ft tall

1.25in DIA washer

3.5in x 1.5in steel plate (x20)

.5in DIA all thread (x2)
cut to width of form plus 14in (7in extension per side)

2in x 4in x 9ft TYP wood (x8)

2in x 4in cut to fit
TYP wood (x10)
(see fig. 1-1 & 1-2)

2ft-1.5in
2ft-5.5in

1ft-4in
1ft-9in
1ft-10.5in
1ft

1ft-3in
1ft-0.5in
8ft

ground level

1ft-3.5in
11in

1ft-4in
1ft-9in

Cabinet Design

CT Cabinet

1.5in conduit
18in x 4in mount for screen
fan
filter (mounted on outside)
Plywood bolted to back of cabinet (used for mounting)
light switch
thermostat
outlet
UPS power unit

3'-0"
2'-6"
3'-0"
2'-9"

front view

July 20, 2000
R.L.L.
Site Plan
Location Design (Phase 1)
Location Design (Phase 2)
Location Design (Phase 3)
Construction

We elected to construct the entire system ourselves to ensure quality control, modify the design as needed and have a complete understanding of the system for maintenance activities.
CORS Crew

L to R: Dave Beiter, Tim Burkholder, John Ray, Dave Albrecht, Rick Hentz, Jim Stafa & Greg Gerst
Construction Testing Location for Data Quality
Construction
Test Hole
Construction
Drilling Hole
Construction
Set Reinforcing Steel
Construction
Ditch
Construction
Electrical Box
Construction
Set Forms
Construction
Pouring Concrete
Construction
Antenna Mount
Construction
Placing Antenna Mount
Construction
Completed Monument (Classic)
Construction
Completed Cabinet (Classic)
Construction
CORS Lite Mount
Construction
CORS Lite Cabinet
Implementation

Rover Equipment
Implementation
Telecommunications Solution
Implementation
Network Adjustment
Implementation

- User Agreements Pending!
Implementation

User Access

Each user will be assigned an “IP” address with a unique user log-on and password for authentication.
Numerous training sessions and public presentations are planned to make potential users aware of what is available.
Implementation
System Management

- Daily monitoring
- Website updates
- NGS coordination
- Software Upgrades
- Hardware Upgrades
- Future planning
- Etc.
Implementation
Cooperation with other entities

- University
- City
- Private Company
- County
- County (outside Ohio)
Preventative maintenance as well as emergency repairs will be performed to ensure maximum availability.