SEMINOLE COUNTY GOVERNMENT
AGENDA MEMORANDUM

SUBJECT: Professional Services: PS-3615-08/RTB - Design Services for Communication Tower Repair and Replacement

DEPARTMENT: Administrative Services **DIVISION:** Purchasing and Contracts

AUTHORIZED BY: Frank Raymond **CONTACT:** Robert Bradley **EXT:** 7113

MOTION/RECOMMENDATION:
Approve ranking list and authorize staff to negotiate rates for PS-3615-08/RTB - Design Services for Communication Tower Repair and Replacement with KPFF Consulting Engineers of Seattle, Washington, and Paul J. Ford and Company of Orlando, FL (Estimated Usage Amount of $500,000.00 over the term of the Agreement).

County-wide Ray Hooper

BACKGROUND:

PS-3615-08/RTB will provide structural design engineering services, from the design phase through the construction phase. These services will include, but not be limited to, value engineering, cost savings measures, structural plans, technical specifications, classification, construction project oversight and all biddable construction documentation for self-supporting or guyed radio towers, their foundations and communication shelters at various sites throughout Seminole County.

The project was publicly advertised and the County received three (3) submittals (listed below alphabetically):

- KPFF Consulting Engineers
- Max Engineering
- Paul J. Ford and Company

The Evaluation Committee, which consisted of Marshall King, Project Coordinator II; Tommy Oliveras, Program Manager II; and Steve Bateman, Systems Coordinator, all from the IT Department, evaluated the submittals and agreed to short-list all three (3) firms. The Evaluation Committee interviewed these firms giving consideration to the following criteria:

- Approach to Work
- Similar Project Experience
- Project Team Qualifications
- Innovative Cost Saving Ideas
- Location of Firm

The attached backup documentation includes the Bid Tabulation, the Presentation Summary & Scoring Sheets, and the Project Scope. The Evaluation Summary Sheet is not included as the Evaluation Committee had agreed to short-list all three (3) firms.

The Evaluation Committee recommends that the Board approve the ranking below and authorize staff to negotiate rates with the top two (2) ranked firms in accordance with F.S. 287.055, the Consultants Competitive Negotiation Act (CCNA)

- KPFF Consulting Engineers
- Paul J. Ford and Company
- Max Engineering

Staff will return to present the final negotiated rates and the Award Agreement for approval and execution by the Board. Authorization for the performance of the services by the Consultants under this Master Agreement shall be in the form of written Work Orders issued and executed by the County, and signed by the Consultants. The work and dollar amount for each Work Order shall be negotiated on an as-needed basis for the specific project, and funded within approved budget amounts that are identified in the project number 00249201 - Communication Tower Replacement.

STAFF RECOMMENDATION:

Staff recommends that the Board approve ranking list and authorize staff to negotiate rates for PS-3615-08/RTB - Design Services for Communication Tower Repair and Replacement with KPFF Consulting Engineers of Seattle, Washington, and Paul J. Ford and Company of Orlando, FL (Estimated Usage Amount of $500,000.00 over the term of the Agreement).

ATTACHMENTS:

1. PS-3615-08_RTB - Backup Documentation

Additionally Reviewed By:

☐ County Attorney Review (Ann Colby)

B.C.C. - SEMINOLE COUNTY, FL
PS TABULATION SHEET

PS NUMBER: PS-3615-08/RTB

PS TITLE : Design Services Communication Tower Repair and Replacement

ALL SUBMITTALS ACCEPTED BY SEMINOLE COUNTY ARE SUBJECT TO THE COUNTY'S TERMS AND CONDITIONS AND ANY AND ALL ADDITIONAL TERMS AND CONDITIONS SUBMITTED BY THE PROPOSERS ARE REJECTED AND SHALL HAVE NO FORCE AND EFFECT. PS DOCUMENTS FROM THE PROPOSERS LISTED HEREIN ARE THE ONLY SUBMITTALS RECEIVED TIMELY AS OF THE ABOVE OPENING DATE AND TIME. ALL OTHER PS DOCUMENTS SUBMITTED IN RESPONSE TO THIS SOLICITATION, IF ANY, ARE HEREBY REJECTED AS LATE.

DATE: July 30,2008 @ 2:00 PM

RESPONSE -1-	RESPONSE -2-	RESPONSE -3-
KPFF Consulting Engineers 1601 Fifth Avenue, Ste 1600 Seattle, WA 98101 Ralph Iboshi, PE, Vice President Ph: 206-622-5822 Fax: 206-622-8130	Max Engineering 1455 Delbrook Way Marco Island, FL 34145 Robert Winterhalter, Vice Pres. Ph: 239-970-0915 Fax: 239-970-0915	Paul J. Ford and Company 3670 Maquire Blvd., Suite 250 Orlando, FL 32803-3026 Kevin G. Casey Ph: 407-898-9039 Fax: 407-897-3662

Tabulated by : Robert T. Bradley, Procurement Analyst 7/31/08 posted: 11:00 AM
Tabulated by: Robert T. Bradley, Procurement Analyst 8/6/08 (updated)

The County has provided equal preference to all submittals toward this project, and has determined that all respondents shall be short-listed.

Short listed Firms: Paul J. Ford and Company; KPFF Consulting Engineers; Max Engineering
Presentations Date and Time: **Thursday, August 28, 2008 10:00am – 12:00 PM - 1101 E. First Street Room 3208, Sanford, FL 32771**
Schedule and Criteria:

Paul J. Ford and Company **10:00 – 10:30 AM**
KPFF Consulting Engineers **10:45 – 11:15 AM**
Max Engineering **11:30 – 12:00 PM**

[40 points] Project Approach.
[25 points] Similar Project Experience.
[20 points] Project Team Qualifications
[10 points] Innovative Cost Saving Ideas
[5 points] Location

BCC Agenda Date - Request for Approval to Negotiate (Rank) with the top 2 Firms: September 23, 2008
(Updated by R. Bradley at 10:00 AM EST 8/29/2008)

1. **KPFF Consulting Engineers**
2. **Paul J. Ford and Company**
3. **Max Engineering**

BCC Agenda Date - Request to Award to the top 2 Firms: TBD
(Updated by R. Bradley @ 10:30 AM EST 9/3/08)

PRESENTATIONS/INTERVIEWS
PS-3615-08/RTB
Design Services for Communication Tower Repair and Replacement

DATE 8/28/2008 10:00 AM Eastern

	Marshall King	Tommy Oliveras	Steve Bateman	Total	Ranking
Paul J. Ford	2	1	2	5	**2**
KPFF Consulting Engineers	1	2	1	4	**1**
Max Engineers	3	3	3	9	**3**

We approve the above stated ranking :

Marshall King 8/28/08
Marshall King

Tommy Oliveras

8/28/08
Steve Bateman

Presentation Evaluation

SUBJECT: **PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement**

SUBMITTAL COMPANY NAME: **KPFF Consulting Engineers**

QUALIFICATION COMMITTEE MEMBER: Steve Bateman

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

Visuals good, presentations average - good explanation of tools of projects

Score 35 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

Honolulu - install new tower next to old - not cut over

Washington State

Government agencies related towers – no specifics - Fla Wildlife

Score 20 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts).

Tony, Pete, Madison - work on RISA analysis program

27 yrs 4 yrs 15 yrs

Score 15 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

Peer Reviews of work, Standardize work process, retractible standoffs

Score 8 (0-10)

Criteria: Location of Firm: (5 pts)

Seattle Wa, Columbia, SC

Licenced in Florida

Score 1 (0-5)

Ranking_____ **Total Score (0-100)** 79

Presentation Evaluation

SUBJECT: **PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement**

SUBMITTAL COMPANY NAME: **Max Engineering**

QUALIFICATION COMMITTEE MEMBER: Steve Bateman

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

assume Tower ops - Skip explanations - no down time - TURN Key - remove non applicable equip - A&E drawings specialty

Score 20 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

Colocators - cell companies - Build to suit - propagation design Tampa City - ATT

Score 15 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

Strictly Telecom business - compare TO PJF - business zone 35-40 people Largest

15yrs - Dr. Hale MA - PE only - Certified in Fla

Score 10 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

foundation design savings - competitive bids - average carriers

Score 5 (0-10)

Criteria: Location of Firm: (5 pts)

Marco Island, FL home office - TEXAS

Sarasota office - PE location

Score 1 (0-5)

Ranking _____ **Total Score (0-100)** 51

Presentation Evaluation

SUBJECT: PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement

SUBMITTAL COMPANY NAME: Paul J. Ford

QUALIFICATION COMMITTEE MEMBER: Steve Bateman

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

narrative was NOT as precise, package

Score 30 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

NO government

Score 15 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

Experienced Degreed Engineers & member EIA/TIA committee

Score 20 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

had Tools but NO tangible evidence of COST SAVINGS

Score 5 (0-10)

Criteria: Location of Firm: (5 pts)

Local in Orlando

Score 5 (0-5)

Ranking_____ **Total Score (0-100)** 75

Presentation Evaluation

SUBJECT: **PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement**

SUBMITTAL COMPANY NAME: **KPFF Consulting Engineers**

QUALIFICATION COMMITTEE MEMBER: Tommy Oliveras.

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

lessoned learned used for Quality Control.
D.A. review process - internal process.

Score 35 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

Hangtow → Excellent points on cut-over,
they use RISA → software Application.

Score 15 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

~~Hangtow.~~ → P.E.'s on staff.
help develop the industry software Applicchow.

Score 12 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

Design of retractable mount, less rigidity.

Score 5 (0-10)

Criteria: Location of Firm: (5 pts)

Cross Country location.

Score 2 (0-5)

Ranking_____ **Total Score (0-100)** _____

Presentation Evaluation

SUBJECT: PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement

SUBMITTAL COMPANY NAME: Max Engineering

QUALIFICATION COMMITTEE MEMBER: Tommy Olivera

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

Take our specification included them in the design. and send over for your review. I see that they have A & E focus.

Score 35 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

City Tampa, Washington State.

T-mobile, ATT,

Score 15 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

Strong → with A & E drawings.
P.E. license Florida - all other States.
PHd. → 15 years of experience.

Score 12 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

Good example of bonding - "who has crystal ball"
What do you actually need?
Foundation design, steel, concrete.

Score 6 (0-10)

Criteria: Location of Firm: (5 pts)

Fort Myers,
Sarasota - Partners

Score 3 (0-5)
T.O.

Ranking_____ **Total Score (0-100)** _____

Presentation Evaluation

SUBJECT: PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement

SUBMITTAL COMPANY NAME: Paul J. Ford

QUALIFICATION COMMITTEE MEMBER: Tommy Olivera S.

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- 40 Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- 32 Excellent, Very Good, Solid in all respects.
- 24 Good, No major weaknesses, Fully Acceptable as is
- 16 Marginal, Weak, Workable but needs clarifications
- 8 Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

They have a staff member that help with the development of the industry used model.

Score 30. (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

They have a relationship with Crown-Castle a lead tower owner.

Score 20 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

8 Florida P.E.'s One member of their staff sits on the comm. Tee.

Score 20 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

They mentioned some generic ideas but did not mention which project did they use cost saving ideas.

Score 6 (0-10)

Criteria: Location of Firm: (5 pts)

They have a shop in Orlando with 3 P.E.'s

Score 5 (0-5)

Ranking_____ **Total Score (0-100)** 81.

Presentation Evaluation

SUBJECT: **PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement**

SUBMITTAL COMPANY NAME: **KPFF Consulting Engineers**

QUALIFICATION COMMITTEE MEMBER: Marshall Berg

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

Experience w/ mfg's

Flexibility 250 total staff | 3-5 objectives / considers SC's future to PLAN | Plan & Organize, +
8 Eng as flexible staff | provided MS Project detail example | Coordination w/ muni's
Lessons learned | cutover experience (Madison)

Score 40 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

Honolulu 10 towers - G Std + 150MPH (cutover Hot) Florida Wildlife Gaming Commission

Score 20 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

Madison + Tony + Pete | Comm Protocol +
BE 15yrs PE/PM 44yrs PM |
Tower specific 27yrs |
on EIA/TIA peer reviews G Std committe

Score 15 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

Peer reviews, cost analysis; constructability, standardized, ROI antenna mount design

Score 8 (0-10)

Criteria: Location of Firm: (5 pts)

S. Carolina

Score 1 (0-5)

Ranking_____ **Total Score (0-100)** 84

Presentation Evaluation

SUBJECT: PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement

SUBMITTAL COMPANY NAME: **Max Engineering**

QUALIFICATION COMMITTEE MEMBER: Marshall Kay

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

weekly mtgs

Down time, adjacency - skip RF design; Co-location help? (NOT SOW)
Tank Key - ID needed resources; Existing tower RF audit (equip); analyze application (Andrews) steel reduction - (studies?)

Score 15 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

Propagation design; ? City of Tampa ATT Hillsborough Cty

Score 5 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

Maint Eng is not eng. design firm

A&E drawings, telecom business exclusively, smallest firm, (narrow & specialized)
35-40 FT staff In house analysis, (structural)

Score 10 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

3-5
* Foundations, cycle times, specs of foundations (20% on foundations from Crown Castle Corp) & steel design;

Score 3 (0-10)

Criteria: Location of Firm: (5 pts)

Marco Island & Sarasota

Score 1 (0-5)

Ranking_____ **Total Score (0-100)** 34

Presentation Evaluation

SUBJECT: PS-3615-08/RTB – Design Services for Communication Tower Repair and Replacement

SUBMITTAL COMPANY NAME: Paul J. Ford

QUALIFICATION COMMITTEE MEMBER: Marshall Kay

INSTRUCTIONS: Score each criterion up to the number of points allotted for each. The total number of points for all criterion will equal 100 points based on the following general guidelines:

- Outstanding, out-of-the-box, Innovative, Cost/Time Savings
- Excellent, Very Good, Solid in all respects.
- Good, No major weaknesses, Fully Acceptable as is
- Marginal, Weak, Workable but needs clarifications
- Unacceptable, Needs major help to be acceptable

Please describe any strengths, weaknesses and deficiencies to support your assessment for each of the above stated evaluation criteria.

Criteria: Approach to Project –Discuss detail plan review; Representatives are to provide samples or examples of documentation, of tools, techniques, processes and procedures to provide The County with tangible evidence of their abilities. (40 pts)

Provided narrative of there supply chain process w/ vendors

Score 30 (0-40)

Criteria: Similar Project Experience: - Pick a Similar project and elaborate on it (25 pts)

all private enterprise experience

Score 15 (0-25)

Criteria: Project Team Qualifications: - Identify specific qualifications of team members that support our project. (20 pts)

EIA TIA Standard Committee Member

Score 20 (0-20)

Criteria: Innovative Cost Saving Ideas - Pick one from your submittal and elaborate on how it relates to this project. (10 pts)

Failed to provide tangible evidence of full capabilities but did explain how to expand & add additional capacity

Score 5 (0-10)

Criteria: Location of Firm: (5 pts)

Score 5 (0-5)

Ranking_____ **Total Score (0-100)** 75

Seminole County, Florida Tower Replacement Project Scope of Work:
Seminole County, Florida has determined a need to design tower foundations and towers and construct new towers at several of their communication sites.

Project requirements and objectives:

Achieve design cost savings through the experience of Design, Construction, Engineering, and Inspection Services, project management methodology and minimal operational and maintenance cost such as use of tools or equipment that may compromise the structural integrity during construction and installation activities.

Design shall follow EIA/TIA 222-G Standards, and all County Construction/building code. Towers shall be free standing, self supporting and use Class III.

Structural design engineering services to include value engineering and cost savings measures, structural plans, technical specifications, classification, and all biddable construction documentation for self-supporting or guyed radio towers and their foundations and communication shelters at several sites throughout Seminole County. This includes installation of, antennae, transmission lines, grounding, lights, and any and all hardware necessary to integrate new towers into Seminole County's existing telecommunication network at these sites. Construction, Engineering, and Inspection services are to be included at all sites. Demolition and removal or salvage of the existing radio towers, equipment, and structural foundation system are to be included at all sites.
Scope includes support after the design phase by providing documentation, advice, and response to questions to generate construction and bidding packages for Seminole County.

Examples of Seminole County sites needing design may include Sanford Courthouse, Geneva, Chuluota, Sable Point/Longwood, Altamonte Springs, Five Points, Dike Road, Paola.

Seminole County communication towers are located at the following sites:

Sanford Courthouse Lat 28 48 30.97288 Long 81 16 1.63205 301 Park Ave. Sanford, Fl 32771	**Geneva** Lat 28 44 6.97934 Long 81 06 59.82191 201 N Oak St. Geneva, Fl 32732
Chuluota Lat 28 37 34.59261 Long 81 06 59.82569 1301 Tropical St. Chuluota, Fl 32766	*Sable Point/Longwood* Lat 28.70136 Lon -81.41764 930 Wekiva Springs Road Longwood, FL
Altamonte Springs Lat 28 39 31.59240 Long 81 21 19.04659 3606 Newburyport Ave. Altamonte Springs, Fl 32701	***Five Points*** Lat 28.74324 Lon -81.29953 144 Bush Loop Sanford, FL 32773
Dike Road Lat 28.63892 Lon -8128172 3574 Dike Road Winter Park, FL 32792	***Paola*** Lat 28.81015 Lon -8134074 4905 Wayside Drive **Paola, FL**

Tower Loading shall be as follows:

The following items shall be attached to the tower:
Ice Bridges for all towers
Tower top lighting for all towers

Sanford Courthouse:
2 each 110' of 7/8" Andrew Corp LDF5-50A transmission line
2 each 80' ½" Andrew Corp LDF4-50A transmission line
2 each 110' of Andrew Corp EW 63 Elliptical Waveguide
1 each RFS 10017-1 10 dB gain 800 Mhz Omni Antenna
1 each Andrew Corp 5 dB gain VHF Omni Antenna(Sheriffs Net)
2 each Andrew Corp P6-65D Microwave Dish
1 each 800 Mhz Yagi Antenna
1 each TX/RX 421-86A-10-18-16 Tower Top Amp System
Motorola R56 Grounding Spec with bonding equipment for tower and transmission lines

Geneva:
2 each 200' of 7/8" Andrew Corp LDF5-50A transmission line
4 each 200' of 1 5/8" Andrew Corp LDF7-50A transmission line

2 each 110' of Andrew Corp EW 63 Elliptical Waveguide
1 each RFS 10017-1 10 dB gain 800 Mhz Omni Antenna
3 each RFS 10017-3 10 dB gain 800 Mhz Omni Antenna
1 each Andrew Corp DB224A 6 dB gain VHF Omni Antenna
1 each TX/RX 101-90-08-0-03N 8dB gain Omni antenna
2 each Andrew Corp P6-65D Microwave Dish
1 each 800 Mhz Yagi Antenna
1 each TX/RX 421-86A-10-18-16 Tower Top Amp System
1 each GPS antenna
Motorola R56 Grounding Spec with bonding equipment for tower and transmission lines

Chuluota:
4 each 220' of 7/8" Andrew Corp LDF5-50A transmission line
4 each 240' of 1 5/8" Andrew Corp LDF7-50A transmission line
2 each 60'' of ½" Andrew Corp LDF2-50A transmission line
2 each 140' of Andrew Corp EW 63 Elliptical Waveguide
1 each RFS 10017-1 10 dB gain 800 Mhz Omni Antenna
3 each RFS 10017-3 10 dB gain 800 Mhz Omni Antenna
1 each Andrew Corp DB224E 6 dB gain Omni Antenna(RACES)
1 each TX/RX 101-90-08-0-03N 8dB gain Omni antenna
2 each Andrew Corp P6-65D Microwave Dish
1 each 800 Mhz Yagi Antenna
1 each UHF Yagi Antenna (RACES)
1 each TX/RX 421-86A-10-18-16 Tower Top Amp System
1 each GPS antenna
Motorola R56 Grounding Spec with bonding equipment for tower and transmission lines

Altamonte Springs:
3 each 200' of 7/8" Andrew Corp LDF5-50A transmission line
3 each 200' ½" Andrew Corp LDF4-50A transmission line
2 each 120' ½" Andrew Corp LDF4-50A transmission line
2 each 60' ½" Andrew Corp LDF4-50A transmission line
2 each 140' of Andrew Corp EW 63 Elliptical Waveguide
1 each RFS 10017-1 10 dB gain 800 Mhz Omni Antenna
2 each Andrew Corp DB264 6 dB gain VHF Omni Antenna(RACES)
2 each VHF Omni Antenna(RACES)
1 each VHF 220 Mhz Omni Antenna(RACES)
2 each Andrew Corp ASP-711 Unity dB gain UHF Omni Antenna(RACES)
2 each Andrew Corp P6-65D Microwave Dish
1 each 800 Mhz Yagi Antenna
1 each UHF Yagi Antenna (RACES)
1 each TX/RX 421-86A-10-18-16 Tower Top Amp System
Motorola R56 Grounding Spec with bonding equipment for tower and transmission lines

Five Point Site

Existing Antennas	
(2) PD 10017 (Sim.) On 6' SA	(2) 1-5/8"
PD1151 (Sim.) On 6' SA	1-5/8"
PD 10017 (Sim.) On 6' SA	7/8"
18" x 18" Box on Mount	---
PD 1151 (Sim.) On 1.5' SA	7/8"
PD 10204 (Sim.) On 1.5' SA	7/8"
DB 806 (Sim) on 6' SA	7/8"
DB803 (Sim.) On 1.5' SA	1-1/4"
2.5-Ft. HP Dish	½"
4-Ft. Std. Dish	(2) ½"
DB 806 (Sim.) On 6' SA	7/8"
DB224 (Sim.) On 1' SA	½"
PD1151 (Sim.) On 2' SA	7/8"
PD 1151 (Sim.) on 1.5' SA	7/8"
PD 1151 (Sim.) On 2' SA	7/8"
DB 420 (Sim.) On 1.5' SA	7/8"
6-Ft. Dish with Rad.	EW 63
6-Ft. Grid Dish	7/8"
6-Ft. Dish with Rad.	EW 63
DB212 (Sim.)	7/8"

Paola Site

Existing Antennas

14'± Whip on 6' Side Arm	7/8"
12'± Whip on 6' Side Arm	7/8"
8'ϕ Dish with Radome	EW63
Unused 3' Side Arm	---
12'± Whip on 6' Side Arm	1-5/8"
6'ϕ Dish with Radome	EW63
12'± Whip on 6' Side Arm	Amplifie
Amplifier	7/8"
DB264 (Similar) on 18" Side Arm	7/8"
3'± Yagi on 3' Side Arm	3/8"ϕ

Sable Point

Existing Antennas

Large Nest Platform	---
(2) 14' Whips	Disconnected
(2) EMS RV90-14 (Similar)	(2) 1-5/8" & Amps
(2) DB878H (Similar)	(2) 1-5/8"
(2) Amplifiers	(2) 1-5/8"
(1) Sector Mount	---
(2) DB834R-F (Similar)	(2) 1-5/8"
(1) Unknown Panel Antenna	(2) 1-5/8"
(1) Unknown Panel Antenna	(2) 1-5/8"
(1) Sector Mount	---
(2) Unknown Panel Antennas	(4) 1-5/8"
(2) DB834R-F (Similar)	(2) 1-5/8"
(1) Sector Mount	---
Unused Dish Mount	---
Broken Whip Antenna on 3' Side Arm	1/2"
6'ϕ Dish with Radome	EW63
PD220 (Similar) on 18" Side Arm	1/2"
3' Whip on 18" Side Arm	1/2"
DB264 (Similar) on 18" Side Arm	1/2"
6'ϕ Dish with Radome	EW63
2' Wire Whip on 3' Side Arm	1/2"

Dike Road

Existing Antennas

Disconnected Transmission Line	1-5/8"
(2) DB878H (Similar)	(2) 1-5/8"
(2) EMS RV90-14 (Similar)	(4) 1-5/8"
(1) Sector Mount	—
Disconnected Transmission Line	1-5/8"
(2) DB878H (Similar)	(2) 1-5/8"
(2) EMS RV90-14 (Similar)	(4) 1-5/8"
(1) Sector Mount	—
Amplifier	7/8"
15' Whip Antenna on 6' Side Arm	Amplifier
(2) Unknown Panel Antennas	(4) 1-5/8"
(2) DB874H (Similar)	(2) 1-5/8"
(1) Sector Mount	—
3' Yagi	1/2"
(2) Vertical Square Tubes (Tie-Back Connections)	—
DB264 (Similar) on 18" Side Arm	7/8"
8' Standard Dish	EW63
6' Standard Dish	EW63
6'ϕ Dish with Radome	EW63
Small Elliptical Dish	1/4"ϕ
3' Yagi	—
6'ϕ Dish with Radome	EW63
12" X 12" Panel Antenna & Amplifier on Pipe Mount	1/4"ϕ
3' Whip Antenna on 4' Side Arm	7/8"
2' Wire Antenna on 3' Side Arm	1/2"

Equipment Loading On Seminole County Towers

Average additional weight loading for each Cellular Co.

1. 24 transmission lines of 1 5/8” cabling - .67 lbs per foot x 200’x 24= 3216 lbs.
2. 6 gate booms - 1 boom 650lbs x 6 = 3900 lbs.
3. Associated installation equipment such as ladder trays and cabling clamping accessories - 600 lbs.

Average additional weight loading for additional antennas and microwave dishes for county use.

1. Omni directional antenna - 25 lbs
2. Antenna transmission line - 1 5/8” cabling - .67 lbs per ft x 200’x 1 = 134 lbs.
3. 72” Stand off bracket - 115 lbs.
4. 6’ Microwave dish - 250 lbs.
5. Microwave dish mounting bracket including stiff arm - 120 lbs
6. EW63 elliptical wave guide line - .51 lbs per ft x 200 x 2 per tower = 204 lbs.
7. Associated installation equipment such as ladder trays and cabling clamping accessories - 400 lbs

None of the above include the wind load factor on the tower structure just equipment weight.