

## Facility Management and the Roof Consultant

### Duke Energy's Roof Management Program

BY JIM STREETMAN

*Editor's Note: We asked Jim Streetman, manager of the Duke Energy Corp. Roof Management Program, to explain how roof consultants can work together with facility managers to maintain a large roof inventory. The following article is the result.*

**F**ACILITY ROOF MAINTENANCE FOR THE property owner and facility manager can be overwhelming. For many, it becomes a reactive game of leak chasing and emergency repair/reroof. The goal of the facility manager is to become proactive so that unscheduled maintenance and reroofing can be reduced if not avoided.

Duke Energy Corporation owns and maintains over 10 million square feet of roof in the states of North and South Carolina, comprised of over 1000 buildings and 5000 different roof sectors. To properly maintain these assets would require a large staff or partnering with qualified consultants. Current trends indicate more property owners are outsourcing much of this work instead of hiring more staff. Duke Energy Corporation has optimized the use of its current staff while outsourcing in areas such as design and construction administration to level workload. In the area of roof management, Duke Energy utilizes two full-time employees to manage the "Roof Management Program" through coordination of all activities with site contacts. Duke Energy Corporation Roof Management Program controls and levels workload through outsourcing design to roof consultants and all construction (reroofing and repairs/maintenance) to roof contractors.

The roof consultant plays a major role in the implementation of Duke Energy's Roof Management Program. The "Program's" purpose is to cost-effectively provide every company facility with watertight roof conditions. The "Program" is designed to protect and preserve not only the roofing assembly asset, but also other company assets, such as the structure and all facility equipment located underneath roofs. The program was established to:

1. Cost-effectively maintain and promptly repair existing roofing assemblies as necessary.
2. Provide company facilities the most cost effective roofing

assemblies available.

3. Standardize roofing systems to the greatest extent possible to facilitate roof system maintenance.

4. Develop roofing/reroofing specifications criteria which minimizes roof system maintenance to the greatest extent possible and/or provide roofing assemblies which are most effective to maintain and repair.

Roof consultants are utilized to provide technical guidance and direction while roofing contractors perform hands-on work for actual repair/maintenance and reroofing activities. The program is designed to assure roof assembly term of performance is extended to its design life and beyond, thereby reducing capital and operation and maintenance (O&M) expenditures.

### Roof Consultant General Requirements

Duke Energy Corporation establishes long-term (3-year) contracts with roof consultants for performance of services through type pricing as indicated below:

1. Annual roof inspections/audits - fixed price (\$/SF).
2. Annual roof inspection minor emergency repair - time and material.
3. Guidance, direction, and coordination of maintenance and repair work - either time only (smaller, undefined projects) or negotiated fixed prices (larger, well-defined scope projects).
4. Reroofing - Annually negotiated fixed prices.

These long-term contracts assure Duke is obtaining services at minimum cost while reducing time and costs associated with the "learning curve" of Duke Energy requirements and expectations.

All consulting firms must have e-mail capability to facilitate communications. Every firm shall implement and administer an alcohol/drug abuse policy acceptable to Duke Energy and at least as stringent as that of Duke Energy. Also, minimum insurance (workers compensation, comprehensive general liability, comprehensive automobile liability, and professional

liability) requirements are established.

Every firm shall have on staff at least one RRC (Registered Roof Consultant) who is registered by the Roof Consultants Institute or PE (Professional Engineer) who is licensed in the state where work is being performed.

The "Project Manager" (RRC or PE) shall perform all work or shall directly supervise others within the firm who are providing consulting services. All inspections, observations, and repair/maintenance coordination shall be performed, at a minimum, by an RRO (Registered Roof Observer) who is registered by the Roof Consultants Institute or equivalent certification by RIEI (Roofing Industry Educational Institute) or IRWC (International Roofing and Waterproofing Consultants). Every firm shall have at least one staff person who is licensed/authorized to sample for asbestos testing. This person shall be a licensed Roofing Asbestos Supervisor in the state where work is being performed. All personnel performing work at any Duke Energy site shall possess an OSHA 10-hour card. Bi-weekly (every other week) status reports are submitted summarizing all current work.

## Annual Roof Inspections/Audits

Consultants perform roof inspections/audits of assigned facilities during the first quarter of every year utilizing Duke Energy's roof database and associated forms. These inspections/audits consist of a visual inspection and generation of inspection reports. The objectives of the consultant are to identify needs and provide recommendations to cost effectively provide every facility with a watertight roof. Reports contain the following information:

1. Site/region facility list.
2. Roof data sheet.
3. Pictures.
4. Annual evaluation report sheet.
5. Site/region five year plans (Capital and O&M).

These reports are submitted to Duke Energy and are utilized to establish plans/budgets for reroofing and maintenance/reports.

## Maintenance and Repair

Consultants provide services in two major areas of roof maintenance and repair:

1. Items identified during annual inspections.
2. Leak repairs.

Minor emergency roof repairs are performed by consultants during annual inspection. All other repairs/maintenance items identified during annual inspections are coordinated by consultants with roofing contractors. The consultant completes a "Roof Work Authorization" form providing specific information on work to be performed by the roofing contractor. This form is utilized to track performance and costs of work.

Data are input to the Duke Energy roof database by the consultant for historical tracking information or repairs/maintenance performed per roof.

Consultants are called with all roof leak reports. The consultant is responsible for coordinating all leak repairs similar

to annual inspection maintenance work. The consultant input of data to track repairs and maintenance provides historical information on roof performance. This information is a key factor utilized by the consultant during annual inspection to evaluate roof condition, determine if additional repairs are cost effective, and determine remaining roof life.

## Reroofing

Roof consultants are expected to utilize their professional experience and judgement in providing Duke Energy Corporation with reroofing technical guidance and direction to insure excellent quality with cost efficient roof systems that are competitive with roofing industry best practices. Services provided to Duke Energy generally are:

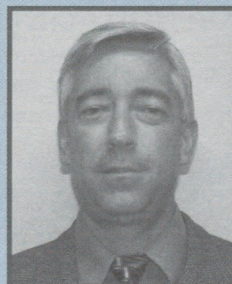
1. Project specification—complete, accurate and specific enough to obtain pricing from roof contractors.
2. Assist with pre-bid meetings and issue meeting minutes.
3. Assist with pre-construction meetings and issue meeting minutes.
4. Attend contractor crew safety meeting and issue meeting minutes.
5. Periodically observe construction for compliance with specification and issue inspection reports.
6. Perform final inspection and issue a punch list.
7. Issue project "close-out" book, which contains all project information, to Duke Energy for record keeping.
8. Revise Duke Energy roof database with new roof information.

All contractor invoices, reroofing and maintenance/repair, are routed through the consultant for review and approval. This assures Duke Energy subject work is complete and performed per directions of the consultant. The consultant also inputs repair/maintenance cost data into Duke Energy roof database at this time. The consultant then forwards approved invoice to Duke Energy for final approval and processing.

## Conclusion

The roof consultant provides many valuable services to Duke Energy. The consultant's experience and knowledge of the roofing industry has proven to be beneficial to Duke Energy in assuring roofs continue to perform and appropriate roof systems are utilized.

## About The Author



Jim Streetman

**Jim Streetman** graduated from Auburn University in 1980 with a degree in Civil Engineering. He is a licensed PE in both North and South Carolina. Streetman began his career with Duke Energy Corporation in 1980 as a structural engineer. He is currently a senior engineer with responsibility for the Duke Energy Roof Management Program, which he developed and implemented in 1992. Jim is a Facility Manager member of RCI.