

REQUEST FOR A/E SERVICES

Lightning Protection and Grounding System Improvement Jackson Correctional Institution (JCI)

DFD PROJECT NO. 14E5H

Agency: Department of Corrections

Facility Location:
N6500 Haipek Rd.
Black River Falls, WI 54615

Introduction and Background:

Jackson Correctional Institution (JCI) is an adult medium-security prison located East of Black River Falls, Wisconsin. It was originally opened in 1996.

Lightning strikes at JCI have caused numerous occurrences of damaged electrical components. Most recently a series of lightning strikes in 2012 damaged stun fences, disabled security lighting (perimeter and high mast), communication equipment, surveillance equipment and damaged door and gate controls. Circuit boards were damaged that are difficult and expensive to replace. Outages in secure areas require added Correctional Officer patrols, often using overtime.

Lightning follows the path of least resistance to ground. The institution's electrical system has grounding and surge suppression installed throughout, but the resistance to ground at the grounding electrodes (e.g. ground rods) is so great that there is no good path for lightning to follow due to the very sandy soil. Since the path to ground has high resistance the lightning tends to follow lower resistance paths on copper wiring, often to sensitive equipment, which then results in damage and/or outages.

Project Description:

The intent of this project is to provide a reliable grounding system to minimize equipment damage and/or outage and security breaches resulting from lightning strikes at the facility.

Institution grounding electrode system needs to be assessed and improved throughout, to include the main electrical service equipment, high mast light poles, perimeter light poles, poles for exterior cameras, stun fence, and at buildings. Use of static charge dissipaters should be evaluated to reduce the likelihood of lightning strikes.

Separating exterior cameras via fiber optic cable from the recording system to reduce potential damage to the system due to lightning should also be evaluated as a means of damage mitigation.

This project shall include pre-design services to assess the condition of the existing grounding system and identify needed improvements. After completion of the assessment and Preliminary

Design documents, DOC intends to go to the Building Commission to request approval to complete design services and construct the improvements.

Scope of Services and Project Deliverables:

The State of Wisconsin is looking for an Architect/Engineering firm to provide complete technical consultation and preliminary design at JCI as follows:

- Provide pre-design assessment of existing conditions and recommend needed improvements.
- Provide Preliminary Design documents, including a Design Report following the format in the *DFD Policy & Procedure Manual for Professional Services* describing code analysis, budget costs and options for installation of lightning protection and grounding system improvements, including life cycle analysis of options considered.
- Provide a detailed work plan to allow construction of recommendations to be completed with minimal disruption of existing inmate and staff daily activity.
- Provide a riser diagram of existing and proposed grounding system. Risers should show all existing and proposed electrode paths in the grounding system.

Skills and Knowledge:

A qualified firm would have an appropriately staffed team with thorough knowledge, understanding, licensing and experience with the following:

- Evaluation and design of electrical grounding systems and lightning protection systems.
- Fiber optic network design.
- Standards for design and construction for state-owned correctional buildings.

PROJECT BUDGET/SCHEDULE:

Construction	\$	SBC Project Approval	Dec 2014
Design (8%)	\$	A/E Selection	July 2014
Management	\$	Bid Opening	May 2015
Contingency (15%)	\$	Start Construction	June 2015
TOTAL	\$1,000,000	Substantial Completion	Nov 2015
		Final Completion	Dec 2015

Agency Contact:

Larry Bonner – JCI B&G Superintendent