

## Instructions for Completing Form KS-ENG-201

### **Page 1:**

This sheet is to be filled out by Natural Resources Conservation Service (NRCS) personnel or the Technical Service Provider (TSP) with information obtained from the supplier of the center pivot (CP) sprinkler and/or nozzle package. The designer and supplier should have the most current NRCS standard for reference.

Name - Name of landowner/operator requesting design assistance

Ident. No. - Field or unit obtained from NRCS field office staff

Legal Desc. - Legal description of location where CP or nozzle package is being installed

County - County

Designed by - Designer

Checked by - Person who checks this data sheet

Approved by - NRCS employee with proper engineering job approval authority or private Professional Engineer in accordance with Conservation Practice Standard 442, Irrigation System, Sprinkler, (in the electronic Field Office Technical Guide [eFOTG], Section IV)

Date - Enter date when each item is signed. ("Designed by," "Checked by," and "Approved by")

### **System Requirements and Information**

Water right - State water right for the land to be irrigated by the center pivot

Irrigated area - Number of acres to be irrigated by the center pivot sprinkler

Pump design flow rate - The reliable continuous water flow rate that will be available for the center pivot throughout the growing season. If the producer is unable to provide results from a pump test taken during the irrigation season within the past 3 years, then use a maximum of 80 percent of the pump flow rate provided. This should improve the probability of the nozzles functioning properly and maintaining the designed nozzle system Coefficient of Uniformity (CU) throughout the irrigation season.

Minimum wetted diameter of outside sprinkler required - This number (in feet) is obtained from the results of the CPNozzle (Center Pivot Nozzle) or CPED (Center Pivot Evaluation and Design) computer program. It can also be approximated from nozzle charts and discussion with the system supplier.

System length - The exact length must be obtained from the supplier. An approximate length may have been used in the CPNozzle or CPED analysis and is adequate if it is not significantly different from the exact length provided by the supplier.

System capacity - This number (in gallons per minute) is obtained from the results of the IWR (Irrigation Water Requirements) computer program and/or Form KS-ENG-22, Center Pivot Sprinkler Design, assuming a full-circle pivot. If an end gun or cornering system is incorporated, the vendor will need to increase the system capacity to account for this extra flow rate.

Ground elevations:

Maximum - The highest field elevation the sprinkler must pass over (typically at the end of the lateral obtained from survey data) - The elevation should be obtained from a field survey whenever possible. If taking elevations from a U.S. Geological Survey (USGS) quadrangle map, increase the elevation by  $\frac{1}{2}$  of the contour interval as a safety factor.

Minimum - The lowest field elevation that any point of the sprinkler lateral must pass over (obtained from a field survey)

At the pivot - The elevation of the pivot point (obtained from a field survey)

Location of maximum ground elevation if not at end of pivot - If the high point occurs at any place other than the end of the pivot, list the location. The high point is needed for determining the minimum pressure available for nozzle design.

Sprinkler placement - Check the option selected. See guidance provided in Conservation Practice Standard 442 (in eFOTG, Section IV).

Typical sprinkler height above ground - This number, in feet, is selected according to the guidance provided in Conservation Practice Standard 442.

Height of the pivot - Feet above ground

Plan map of system - Map must show locations of pivot, well and pumping plant, flow meter, pipelines, cleaning devices, and all other appurtenances needed for the system to function.

Form KS-ENG-22 - Center Pivot Sprinkler Design spreadsheet (used to check if design package is capable of meeting minimum water requirements)

Form KS-ENG-394 - Irrigation Water Management Crop and Water Requirement spreadsheet (used to check if there is sufficient water to meet average water management requirements each month of the growing season for the crop/crops receiving water from the water source)

Remarks - Record any other pertinent information.

**Page 2:**

Supplier/dealer is to provide a computer printout. Mark the listed items.

Is the sprinkler design printout attached? Obtain a copy of the supplier's nozzle design printout. Check the appropriate box.

Does the sprinkler design meet required design criteria? Compare with the criteria listed in the standard. Check the appropriate box.

**“Designed” Column**

Supplier/dealer is to provide the following design information:

Coefficient of Uniformity (CU) (such as the Heermann-Hein CU) - The sprinkler package CU as supplied by the sprinkler vendor or as generated through the CPED program or versions thereof

Sprinkler type and manufacturer - Type of sprinklers (sprays, rotators, nutators, I-wobs, etc.) and brand of the nozzles

Number of sprinklers - Number of nozzles designed

Number of pressure regulators - Number of pressure regulators

Pressure regulator rating - Pressure rating for the regulators in pounds per square inch (psi)

Sprinkler height above ground - Typical sprinkler height above ground (also recorded on Page 1)

Wetted diameter of outer nozzle - Wetted diameter of outer nozzle (in feet) from vendor's performance charts for actual nozzle type, size, and height (may have to interpolate)

Center pivot manufacturer - Brand of the pivot, not the nozzles - List the brand of the pivot controller (if different brand than the pivot).

Number of towers - Number

Length of system lateral - In feet

Outside diameters (O.D.) of system lateral - O.D. of the system lateral pipe

**“As Installed” Column**

Use column to document the installation of the pivot and/or its components after field inspection. The installed values will be as verified in the field by the person completing the checkout.

Sprinkler type and manufacturer - Type of sprinklers (sprays, rotators, nutators, I-wobs, etc.) and brand of the nozzles

Number of sprinklers - Actual number of nozzles installed

Number of pressure regulators - Actual number of pressure regulators

Pressure regulator rating - Pressure rating marked on the regulators in psi

Sprinkler height above ground - As installed, typical sprinkler height based upon field measurement

Wetted diameter of outer nozzle - Wetted diameter of outer nozzle (in feet) from vendor’s performance charts for actual nozzle type, size, and height (may have to interpolate)

Center pivot manufacturer - Brand of the center pivot - List the brand of the pivot controller (if different brand than the pivot).

Number of towers - Number

Length of system lateral - in feet

Outside diameters (O.D.) of system lateral - Based on visual observation or measurement of the O.D. of the pipe.

Does the checkout of the system installation agree with the design? Check the appropriate box.

Explain or describe any discrepancies in the design versus installed pivot or its components.

Checkout by - The person completing the checkout is to sign and date

Audited by - The person reviewing the checkout for certification is to sign and date