PART 587 - IRRIGATION WATER CONVEYANCE, PIPELINE - 430EE

§KS587.00 Design Criteria

Design in accordance with the criteria listed in the Kansas Standard and Specifications for Irrigation Water Conveyance, Pipeline - 430EE, National Handbook for Conservation Practices, Irrigation Water Conveyance, Low Pressure, Underground, Plastic Pipeline - 430EE, and Part 9 Irrigation Practice Design, Kansas Irrigation Guide. The pipeline should be installed at the location and serve the area as shown on the Irrigation Development Plan or plan map for the irrigation system.

§KS587.01 Surveys

(a) Run a ground surface profile survey along the centerline of the proposed pipeline using standard engineering notes. Record notes on loose-leaf field notebook sheets (Forms SCS-ENG-28 and SCS-ENG-29), or field note sheets (Forms KS-ENG-37 and KS-ENG-37a). Take and record ground elevation shots at 100-foot intervals. Also, take shots on all significant high or low points (±0.5 foot) that occur between the regular stations. When tying on and extending existing pipelines, obtain ground elevations along these lines at all critical locations if this information is not known.

(b) Set at least one permanent bench mark (tie back to the bench mark used on the Irrigation Development Plan). Also, set reference or working hubs as needed.

(c) Take and record a shot of the elevation at the water delivery point of the underground pipe system.

(d) Locate and identify any special conditions such as buried utility lines which may affect the design and installation of the pipeline.

§KS587.02 Design and Plans

(a) Develop the design in accordance with the criteria listed in §KS587.00.

(b) The underground irrigation pipeline plan should show:

(1) A ground surface profile along the centerline outlined in §KS587.01(a). Identify and show ground elevations at all fixture locations such as pump stands, air and vacuum relief valves, pressure relief valves, and any line gate valves.

(2) The design of the system at the maximum operating condition. Show the hydraulic grade line when the pipeline is operating at this condition. Plot extra grade lines as needed for lateral lines or special conditions. Calculate and list the maximum head or pressure in the pipeline. Also check and list the standing or static head in any connecting pipelines that are subjected to pressure under the maximum operating condition.

(3) A plan of the proposed pipeline showing station and important fixture locations.

(4) A table of quantities listing in detail the kinds and amounts of materials used in the installation.

(5) Any special instructions needed for installing the pipeline.

(6) Name of person(s) doing the design and dates completed.

(7) Signature, title, and date of engineering approval.

§KS587.03 Layout

Ordinarily, sufficient stations, alignment, and grade stakes will be set on the design survey. In some cases it will be necessary to set special reference stakes along the line after design and prior to pipe installation. Standard engineering notes shall be prepared to document this work.

§KS587.04 Checkout

Complete Form KS-ENG-372 and record the following:

(1) Depth of cover over the pipeline

(2) Length and size of line installed along with type of material

(3) Location and dimensions of all important fixtures on the pipeline

(4) Signature of person doing the checkout and the date

§KS587.05 Sample of Form SCS-ENG-28, field notes for underground irrigation pipline

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD Blackdirt Co. Date 5-31-90

Field Office Clay City

Name Waters Farms

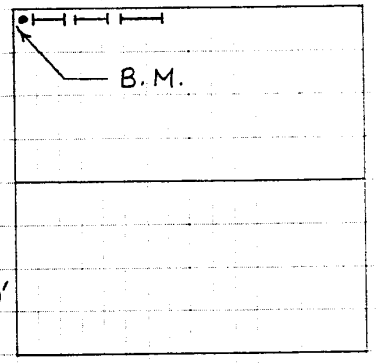
(Individual) Group Unit of Govt.
(circle one)

Job Underground Irrig. Pipeline

Design Sur. ✓ Const. Layout ✓

Const. Check Other

Ident. No. Field No.



Scale
1" - 1320'

Legal Description

W½ NW¼ Sec 10 T 11 R 12

or

Location:

SCS-ENG-28 REV. 5-75

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§KS587.06 Sample of Form SCS-ENG-29, field notes for underground irrigation pipeline - design survey

Waters Farms
Undergrd. Irrig. Pipeline
Design & Const. Layout
5-31-90 ①
T. P. Bobb
& S. Spade

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.	
B.M. 1	6.90	56.90		50.0	Top of SW corner of conc. well slab
0+00			6.4	50.5	Next to well - west end
1+00			5.7	51.2	
2+00			5.1	51.8	
3+00			4.5	52.4	
4+00			4.1	52.8	
5+00			3.9	53.0	
6+00			3.4	53.5	
7+00			4.0	52.9	
8+00			4.4	52.5	
9+00			4.5	52.4	
10+00			4.4	52.5	End of underground pipeline
11+00			3.4	53.5	
12+00			2.4	54.5	
13+00			1.9	55.0	End of field - east end
B.M. 1			6.89	50.01	O.K.
					P.B.

SCS-ENG-29 (2-80) GPO : 1982 O - 369-853

Valves & Risers located at Sta. 0+00, 3+00, 6+00 & 10+00

(KS210-KNKDM, June 1990)

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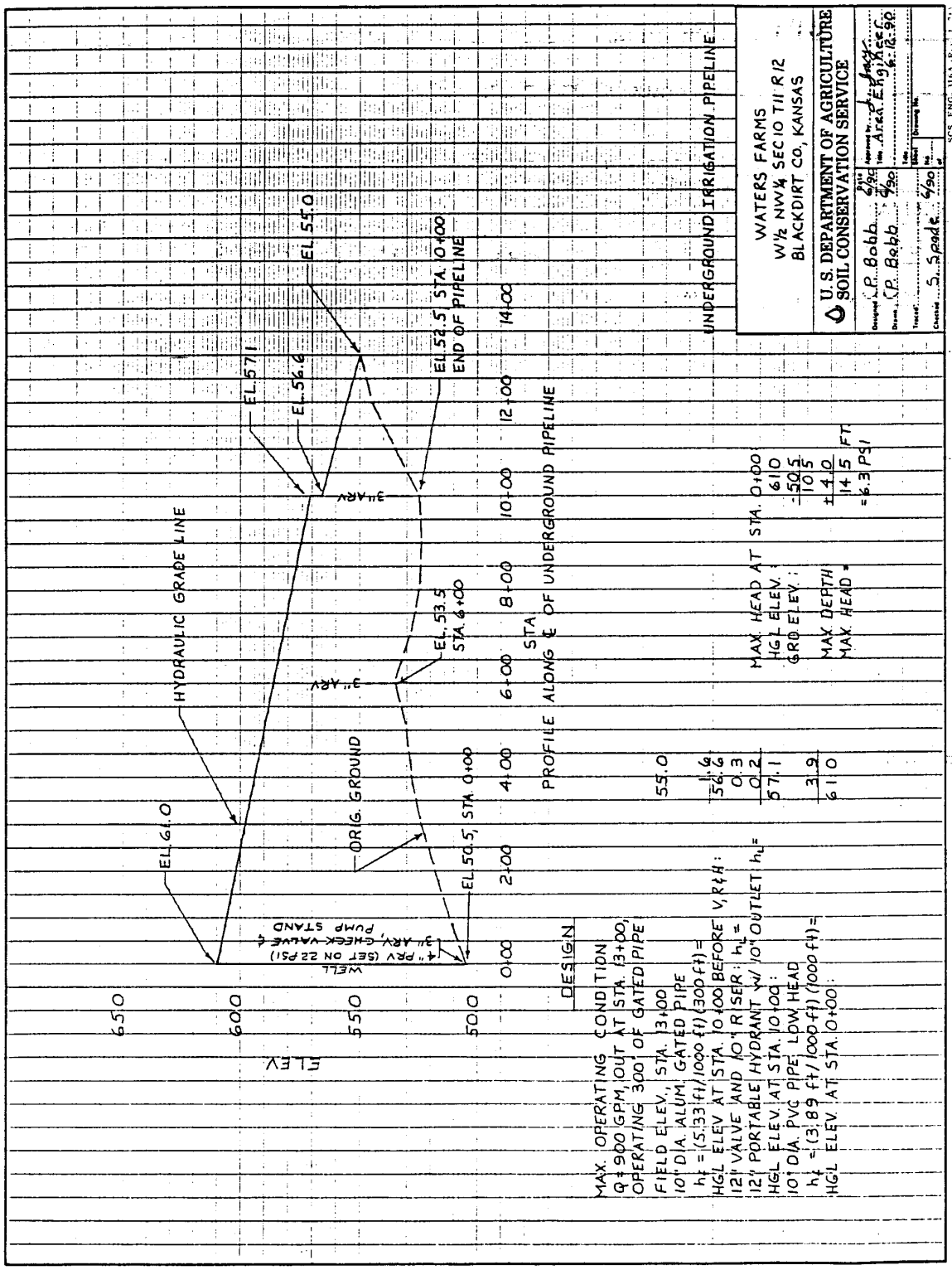
§KS587.07 Typical plan for an underground irrigation pipline



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§KS587.08 Sample of Form KS-ENG-10

USDA
SCS

KS-ENG-10
Rev. 3/84

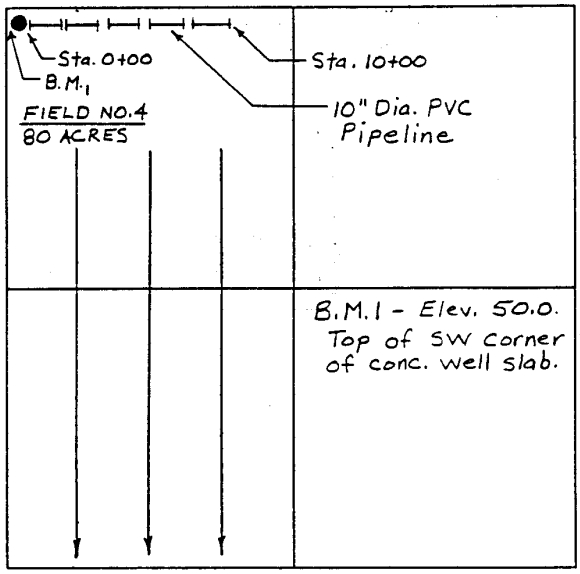
FIELD SHEET UNDERGROUND IRRIG. PIPELINE - 430EE
(Practice)

Owner WATERS FARMS Ident. No. T 369

Legal Desc. W1/2 NW1/4 Sec. 10 T 11 R 12 County BLACKDIRT

TABLE OF QUANTITIES

Item	Unit	Design Quan.	Install Quan.
Pipe, 10" Dia., PVC 1120, 22 PSI PIP	Lin. Ft.	1000	
Pipe Risers, 10" Dia., PVC 1120, w/ Fixtures	Each	4	
Alfalfa Valves, 10" x 12"	Each	4	
Pump Stand, 20" x 100" x 10"	Each	1	
Check Valve (at Pump)	Each	1	
Pressure Relief Valve, AA9*4", w/ Fixtures	Each	1	
Air-Vacuum Relief Valve, AV-150*, 3", w/ Fix.	Each	3	
Aluminum Gated Pipe, 10" Dia., w/ 30" Row Sp.	Lin. Ft.	400	
Hydrant, Portable Aluminum, 12" x 10"	Each	1	
* May substitute other equivalent models			



LOCATION MAP
Scale 1" 660'

Remarks Install valves & risers at Sta. 0+00, 3+00, 6+00 & 10+00. Depth of cover over pipe: 3.0' min, 4.0' max.

N

P. Bobb — Design By — 6-3-90 Date

S. Spade — Design Checked By — 6-4-90 Date

J. Jay — Design Approved By — 6-12-90 Date

Bobb & Spade — Layout By — 5-31-90 Date

Checkout By — Date

★ U S GPO 1987-757-509

(KS210-KNKDM, June 1990)

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§KS587.09 Sample of Form KS-ENG-372

USDA
SCS

KS-ENG-372
Rev. 1/82

FIELD SHEET: CHECKOUT OF UNDERGROUND IRRIGATION PIPELINE

Owner WATERS FARMS Ident. No. T 369

Legal Desc. W½ NW¼ Sec. 10 T 11 R 12 County BLACKDIRT

1. Type of Material X Plastic; ____ Conc.; ____ Steel; ____ Asbestos Cem.
   SDR ____ Pressure Rating 22 psi, 50 ft.
2. Pipeline located according to plan X yes ____ no
3. Pipeline ____ open or X closed to atmosphere
4. Depth of cover over line 3 ft.
5. Length of pipeline installed; 1000 ft. of 10" dia.
   ____ ft. of ____ dia.
6. Air/Vacuum Relief Valves at; Sta. 6+00, dia. 3 in.
   Sta. 10+00, dia. 3 in.
7. Pump Stand(s)

No. 1 Dia. 20 in.	No. ____ Dia. ____ in.
Pressure Relief Valve 4 in.	Pressure Relief Valve ____ in.
22 psi, Model No. AA9	____ psi, Model No. ____
Air/Vacuum Relief Valve	Air/Vacuum Relief Valve
3 in., Model No. AV-150	____ in., Model No. ____

8. Hub end gates or gate valves located according to plan
   — yes — no.
9. Alfalfa valves located according to plan X yes ____ no
10. Remarks; Audited by: P. Bolt 7-1-90

Checkout By; Alvin Trencher Date 6-31-90
Title Contractor - Clay City Irrigation & Supply

(KS210-KNKDM, June 1990)