KS501.03 Compliance of engineering work with laws and regulations.

(d) The following categories of design reports, construction plans and specifications, and other documents prepared by the Natural Resources Conservation Service (NRCS) shall be approved and sealed by a registered professional engineer (PE) who is licensed in Kansas:

(1) All maps, plans, profiles, and specifications for dams and stream obstructions as required by state of Kansas regulations such as the following:

(i) Kansas Administrative Regulations (K.A.R.) 5-40-4 for dams, channel changes, or stream obstructions with consideration of the following exception:

While it is preferable that all stream obstruction plans submitted to the chief engineer of the Division of Water Resources (DWR) be approved by a PE, the above regulation allows a “competent person” to approve them. Therefore, the design may be approved by a person having engineering job approval authority as delegated on Form KS-CPA-1, Kansas Practice Approval Certification, and as described in Section 501.04. This applies to conservation practices such as grassed waterways.

(ii) K.A.R. 5-45-4 for levees and flood plain fills

(2) All maps, plans, profiles, and specifications for the design and construction of waste management (manure and wastewater handling and storage) systems for animal feeding operations (refer to K.A.R. 28-18-12)

(3) All breach analysis reports for dams

(4) All maps and plans prepared for units of government as the project sponsor (such as a watershed district, a city, or a county)

(5) All significant plans approved by an engineer such as Classes IV and V jobs that have a cover sheet

(e) The PE, who shall eventually seal the plans, shall be involved in the design and shall determine the scope of investigation and the criteria and procedures to be used in the design. Usually the PE will visit the site during the design process to make this determination.

KS501.04 Engineering job approval authority.

(b) In-state engineering job . . .

(2) All Natural Resources Conservation Service (NRCS) and non-NRCS employees operating under NRCS technical supervision who provide engineering and/or ecological services are to be issued job approval authority on Form KS-CPA-1, Kansas Practice Approval Certification, that lists the maximum authority for planning, design, and construction application.

The most current version of Form KS-CPA-1 shall be used when initiating or updating job approval authority. Form KS-CPA-1 shall be reviewed at least once every three years. The review may be completed as part of the spot check process or quality assurance review, as initiated by the state/area technical specialist or supervisor, or at the request of the employee.

(3) The Kansas engineering job approval authority chart (Section KS501.09, Exhibit 3) will be used as a guide for delegating engineering job approval authority.

KS501.05 Engineering job review.

(a) Design reviews.

(5) Before construction, all designs and drawings are to be reviewed and checked for accuracy by a qualified individual other than the one preparing them. Staff in one-person field offices may check and approve his or her own work on Classes I and II projects.

(6) Significant changes to engineering plans must be approved by the person who approved the original design. If this approval is done verbally, this conversation must be documented in the file. Significant changes may also require approval from permitting authorities such as the DWR or the Kansas Department of Health and Environment (KDHE).

(7) Designs for Classes VI to VIII jobs will be individually coordinated with the state conservation engineer (SCE). A design review and approval process specific to the job which is in accordance with policy and sound engineering practices will be used.

(8) Classes VI through VIII jobs will be designed, reviewed, and processed in accordance with a resource plan approved by the state conservationist. The resource plan is to identify the problem and recommend a proposed solution; how and when technical assistance will be provided; what personnel will be needed from the field, area, and state offices; and what type of assistance will be needed that will not be provided by the Natural Resources Conservation Service.

(b) Post reviews.

(1) (i) Post review of Classes I through III jobs will be satisfied by the 5 percent engineering spot checks as specified in General Manual (GM) Title 450, Part 407 and Part KS407.

(ii) The state conservation engineer will annually review 5 percent of all Classes IV and V jobs approved by area/field office personnel. The lead engineer in each administrative area will send the SCE a summary list of jobs in this category by October 1 for the jobs that were designed and/or constructed during the past year. The SCE will select jobs to be reviewed. Supporting design folders, drawings, and specifications for those jobs selected for review are to be submitted to the SCE. The material submitted will be checked for conformance to state standards and sound engineering practices. On-site reviews to evaluate construction quality and other features may be scheduled. The state conservation engineer will make a written report to the assistant state conservationist for the area when the review is complete.

KS501.07 Classification of engineering jobs.

(f) The Kansas engineering job approval authority chart for Classes I through V jobs is shown in Section KS501.09, Exhibit 3.

KS501.09 Exhibit 3 - Kansas engineering job approval authority chart.

Practice Code	Practice Name	Limiting Factors	Units	Job Class I	Job Class II	Job Class III	Job Class IV	Job Class V	Maximum Approval Authority Design	Maximum Approval Authority Construction
	Any Engineering Practice	Hazard potential as defined i NEM Section 503	class	Low	Low	Low	Low	Low		
560	Access Road (Private Only)	Culvert pipe - inside diameter	feet	1	2	3	4	All		
		Length	miles	0.5	1	3	5	All		
316	Animal Mortality Facility	Animal feeding operation (AFO) capacity served	animal units	100	300	500	1000	All		
360	Closure of Waste Impoundments	Area of pond	sq ft	10000	20000	40000	80000	All		
656	Constructed Wetland	Surface area	acres	1	2	5	10	25		
		Water table - below bottom	feet	>10	>10	>10	5-10	All		
402	Dam	Embankment over active fault		None	None	None	None	None		
		Effective height	feet	8	15	25	30	35		
436	Irrigation Storage Reservoir	Drainage area	sq mi	0.1	0.25	1	5	20		
		Conduit spillway (single)	inches	10	15	24	36	All		
350	Sediment Basin	inside diameter								
		Storage x height	ac ft²	100	500	1500	3000	All		
587	Structure for Water Control									
410	Grade Stabilization Structure Embankment Dams									
397	Aquaculture Ponds									
378	Pond - Embankment									
348	Dam, Diversion	Streamflow (25-year frequency)	cfs	None	200	500	1000	2000		
		Flow diverted	cfs	None	50	100	150	200		
		Height of drop	feet	None	2	4	6	8		
356	Dike	Water height	feet	None	3	5	8	12		
362	Diversion									
	Level	Storage volume	cu ft (1000)	500	1000	2500	5000	All		
	Gradient	Capacity	cfs	25	75	150	300	All		
	Underground Outlet	Storage volume	cu ft (1000)	10	50	100	250	All		
432	Dry Hydrant	Head loss	feet	6	8	10	12	All		
		Diameter	inches	4	6	8	10	All		
410	Grade Stabilization Structure	Net drop	feet	4	6	8	10	All		
	Full Flow	Total capacity	cfs	50	100	200	300	All		
412	Grassed Waterway	Design capacity	cfs	50	100	300	500	All		
561	Heavy Use Area Protection	Area protected - paved surfacing	acres	None	0.5	2	4	All		
320	Irrigation Canal or Lateral	Design capacity	cfs	25	50	100	300	500		
388	Irrigation Field Ditch	Design capacity	gpm	750	1500	3000	4000	All		
464	Irrigation Land Leveling	Design area	acres	40	80	160	320	All		
		Depth of cut	feet	2	3	4	6	All		
466	Land Smoothing	Excavated volume	cu yd/ac	50	200	500	750	All		
462	Precision Land Forming									

KS501.09 Exhibit 3 - Kansas engineering job approval authority chart (continued).

Practice Code	Practice Name	Limiting Factors	Units	Job Class I	Job Class II	Job Class III	Job Class IV	Job Class V	Maximum Approval Authority Design	Maximum Approval Authority Construction
552	Irrigation Regulating Reservoir	Design capacity	ac ft	1	5	15	30	All		
447	Irrigation System - Tailwater Recovery									
441	Irrigation System - Microirrigation	Design capacity	gpm	5	100	1000	2000	All		
428	Irrigation Water Conveyance - Ditch and Canal Lining	Design capacity	cfs	10	20	50	100	200		
430	Irrigation Water Conveyance - Pipeline	Design capacity at 50 psi or more	gpm	800	1200	1800	2400	3500		
		Design capacity less than 50 psi	gpm	800	1200	1800	2400	5000		
442	Irrigation System - Sprinkler									
443	Irrigation System - Surface and Subsurface									
449	Irrigation Water Management	Irrigated area	acres	80	160	320	640	All		
460	Land Clearing	Design area	acres	5	10	50	100	All		
455	Land Reclamation, Toxic Discharge Control	Flow	cfs	2	5	10	50	100		
543	Land Reconstruction - Abandoned Mined Land	Design area	acres	5	10	50	100	All		
544	Land Reconstruction - Currently Mined Land									
468	Lined Waterway or Outlet	Design capacity	cfs	10	20	50	100	200		
634	Manure Transfer	AFO capacity served	animal units	100	300	1000	5000	All		
582	Open Channel	Design capacity	cfs	50	100	300	500	1000		
		Design velocity	fps	3	4	5	6	10		
516	Pipeline	Length	miles	0.1	1	5	10	All		
		Pressure	psi	50	100	150	200	300		
378	Pond - Excavated	Volume	cu yd	1000	5000	10000	25000	All		
	Pond Sealing or Lining	Surface area sealed or lined	acres							
521A	Flexible Membrance			1	2	3	5	All		
521B	Soil Dispersant Treatment			1	2	5	10	All		
521C	Bentonite Treatment			1	2	5	10	All		
521D	Compacted Clay Treatment			1	2	5	10	All		
	(This criteria for non-313/359 only)									
533	Pumping Plant	Axial flow pump capacity	gpm	500	2000	8000	20000	50000		
		Centrifugal and turbine pump capacity	gpm	100	300	1000	2000	3500		
		Centrifugal pump static head	feet	10	25	50	100	350		
		Turbine pump static head	feet	10	25	50	200	500		
566	Recreation Land Grading and Shaping	Area	acres	5	20	50	100	All		

KS501.09 Exhibit 3 - Kansas engineering job approval authority chart (continued).

Practice Code	Practice Name	Limiting Factors	Units	Job Class I	Job Class II	Job Class III	Job Class IV	Job Class V	Maximum Approval Authority Design	Maximum Approval Authority Construction
568	Recreation Trail and Walkway	Length	feet	500	1000	2000	5000	All		
575	Animal Trails and Walkways									
558	Roof Runoff Structure	Roof area, total	sq ft	2000	5000	10000	50000	All		
632	Solid/Liquid Separation Facility									
	Earthen Structure	Drainage area	acres	5	10	20	50	All		
	Concrete Structure	AFO capacity served	animal units	50	100	300	500	All		
574	Spring Development	Collection length	feet	20	50	100	All	All		
578	Stream Crossing	Drainage area of stream	sq mi	2	5	20	50	All		
580	Streambank and Shoreline Protection	Bankfull capacity	cfs	100	200	500	2000	5000		
		Bankfull velocity	fps	4	5	6	8	10		
		Water height above shoreline	feet	1	1.5	2	2.5	3		
606	Subsurface Drain	Pipe diameter	inches	4	6	8	12	All		
607	Surface Drainage Field Ditch	Design capacity	cfs	10	20	50	100	500		
		Design velocity	fps	2	3	5	7	10		
608	Surface Drainage Main or Lateral	Design capacity	cfs	50	100	250	500	1000		
		Design velocity	fps	2	3	5	7	10		
600	Terrace									
	Gradient	Flow length	feet	1000	1600	3500	All	All		
	Level	Individual length	feet	1000	3500	7000	All	All		
	Underground Outlet	Storage volume	cu ft (1000)	10	50	100	250	All		
620	Underground Outlet	Pipe capacity	cfs	2	5	10	20	All		
635	Vegetated Treatment Area	Drainage area	acres	0.5	1	3	5	All		
313	Waste Storage Facility									
	Pond (Includes 521A - 521D)	Effective height of dam	feet	8	15	25	30	35		
		Storage volume	cu ft (1000)	50	150	300	1000	2000		
		Water table - below bottom	feet	>10	>10	>10	5 to 10	All		
	Structure	Storage capacity	cu ft (1000)	0.5	10	20	100	2000		
		Wall height	feet	3	4	5	6	All		
		Tank span - above ground	feet	6	8	10	12	All		
		Tank span - below ground	feet	6	8	10	12	All		
359	Waste Treatment Lagoon (Includes 521A - 521D)	Aerobic - surface area	acres	1	2	5	10	25		
		Anaerobic - volume	cu ft (1000)	50	150	300	1000	2000		
		Water table - below bottom	feet	>10	>10	>10	5 to 10	All		
638	Water and Sediment Control Basin	Height	feet	4	6	9	12	15		
614	Watering Facility	Design capacity	gallons	1000	3000	7500	10000	All		
640	Waterspreading	Drainage area diverted	acres	40	80	160	640	All		
642	Water Well	Depth	feet	150	300	500	1000	All		
351	Well Decommissioning									
	Drilled	Depth	feet	50	150	250	500	All		
	Hand Dug	Diameter	feet	3	5	10	25	All		
658	Wetland Creation	Area ponded	acres	1	5	25	100	All		
		Water depth - impounded	feet	1	2	3	4	All		
659	Wetland Enhancement									
657	Wetland Restoration									

Note: For dams and structures, this delegated engineering job approval authority applies only to sites with relatively impervious cutoff and simple foundation needs that use the standard engineering drawings. More complicated foundations or non-standard structural plans require the approval of the state conservation engineer.

KS501.30 General.

In some cases, compensating conditions may justify a variance from a conservation practice standard. The request for a variance on an engineering practice shall be made by the responsible area engineer or project engineer on a case-by-case basis and in accordance with General Manual Title 450, Section KS401.13, and Form KS-TCH-1, Variance Request. The decision to grant a variance must be based upon complete documentation showing that the variance is justified and will result in an effective and acceptable practice. The detail and extent of the documentation should be commensurate with the size and estimated cost of the proposed project.

In some cases, a variance will result in increased levels of operation and maintenance and a decreased level of protection. The owner/sponsor must understand the level of protection being provided and their responsibility for maintenance and repair.

Variances will not be granted where:

- Failure of a structural measure due to a high-intensity storm would create an immediate hazard to life or result in serious damage to building(s), residence(s), road(s), or other high-value property.
- Installation of the proposed measure would have significant adverse effects on the environment or other natural or cultural resources.

KS501.52 Coordination with Corps of Engineers.

(c) The Natural Resources Conservation Service (NRCS) can provide assistance in controlling streambank erosion if all the following conditions are met:

(1) The problem is not on a major river or water course under the jurisdiction of the U.S. Army Corps of Engineers. (See Section 501.52.)

(2) All revetments, bulkheads, or groins and their related components are to be stable at the water depths of the design storm. The actual design storm used should be consistent with the hazard involved and possible threat to life and damage to properties, utilities, etc.

(3) Installation of the recommended measures will have no significant adverse effects on the environment or other natural and cultural resources.

KS501.53 Requirements for assistance.

(d) Streambank erosion control

(1) The level of protection must be consistent with the hazards involved should the protection level be exceeded or the protection fail.

(2) The use of multiple materials in the protection system is permissible and may be the most feasible design approach such as a riprapped toe and lower slope with a vegetated upper slope up to the recommended protection level. Each segment of the projection system must be stable up to and including the design storm flow.

(e) Lake shore erosion control

(1) The NRCS should limit technical assistance to natural lakes, and our assistance shall be coordinated with appropriate state agencies such as the Kansas Department of Wildlife and Parks. Technical assistance on the shores of man-made lakes should be provided by the public entity that created the lake.

(2) The request for lake shore erosion technical assistance shall be made to the state conservation engineer. The request shall include an evaluation report consisting of the following:

(i) Location and lake name

(ii) Description of the proposed site and exposures to the lake (offshore shapes, littoral drift direction and magnitude, fetch, etc.)

(iii) Description of the recommended protection (height, rock size, filters, engineering properties of material proposed, etc.)

(iv) Evaluation of the proposed protection's performance, O&M history, repair, and whether it has been tested to the design level recommended.