

PART 501 – AUTHORIZATIONS

SUBPART A – REVIEW AND APPROVAL

MO501.00(e)

§MO501.00 General.

(e) To meet quality assurance responsibilities set out in FAR 46.102, each contract acquisition action shall include the quality, quantity and timeliness of inspection requirements and assure trained, competent staff are available to perform the inspection. A quality assurance plan is to be prepared for each construction and engineering services contract. The quality assurance plan will be prepared in accordance with MO512.32.

SUBPART A – REVIEW AND APPROVAL

MO501.01(b)(3)

§MO501.01(b)(3) Scope

Non-NRCS employees in Missouri operating under the technical supervision of an NRCS employee but who are not federal employees and who are not licensed to practice engineering in the state may be assigned job class I or II engineering approval authority for practices defined by the following standards in Section IV of the Technical Guide:

Well Decommissioning (351)

Diversion (362)

Grassed Waterway (412)

Irrigation Land Leveling (464)

Land Smoothing (466)

Pipeline (516)

(Except those connected to a source or supply used for human consumption.)

Precision Land Forming (462)

Spring Development (574)

Subsurface Drain (606)

Surface Drain Field Ditch (607)

Terrace (600)

Trough or Tank (614)

Underground Outlet (620)

Water and Sediment Control Basin (638)

(Maximum fill height of 5 ft. measured from natural ground at centerline of embankment.)

Wetland Restoration (657)

PART 501 – AUTHORIZATIONS

MO501.03(c)(2)(a)

§MO501.03(c) Compliance of engineering work with laws and regulations.

(2)(a) Plans submitted to regulatory agencies for review, approval or granting permits can be approved by persons having an appropriate design approval limit for the practice.

(3)(a) Plans that state law requires be prepared under the direct supervision of a registered professional engineer can be approved by registered professional engineers in Missouri who have an appropriate design approval limit for the practice.

§MO501.04(b)(2) Engineering job approval authority.

(i) Engineering job approval authority is a means of indicating the categories of engineering work an individual has been assigned the authority to approve.

(ii) Except for engineers on the Water Resources staff and the State Conservation Engineer's staff, every person operating under NRCS technical supervision and having responsibility for planning, layout, design and construction inspection will be assigned engineering approval authority.

(iii) It is desirable to check all engineering plans for completeness and accuracy. Where feasible, these checks should be made part of the design process.

(iv) Some designs may be within an individual's engineering approval authority but still have complex features. This may be the result of complex foundation conditions, unusual site features, unique design requirements, or other complicated factors. Persons exercising engineering job approval need to recognize when a review is needed. Reviewers need to determine whether the job has been properly analyzed and correct concepts used.

(v) The person with engineering job approval authority does not need to perform all the functions leading to completion of a job. It is expected that persons lacking engineering approval authority may, within the limitations of their knowledge and abilities, work under the guidance of a person with the required engineering approval authority. A person with the required engineering job approval authority will review and initial documentation of work preformed by a person without the required engineering job approval authority.

SUBPART A – REVIEW AND APPROVAL

MO501.04(b)(3)(i)

§MO501.04(b)(3) Engineering job approval authority

(i) Engineering job approval authority may be provided for inventory and evaluation, design or construction responsibility. (See §501.09)

(ii) Engineering job approval authority will be recommended by an engineer. The recommending engineer will be an engineer other than the administrative supervisor. Generally, the area engineer will recommend engineering job approval authority for field office personnel and the state conservation engineer for area and project engineers. The recommended engineering job approval authority chart for NRCS employees will be approved by the person's administrative supervisor. Job approval charts for non-NRCS employees will be approved by the FOSA team leader or district conservationist and by the organization employing the individual.

(iii) Form MO-ENG-C12 or MO-ENG-C12A will be used to document a person's job engineering authority. Copies of the completed forms will be given to the person receiving engineering job approval and a copy will be filed in the area office. A file copy for all engineers will be maintained by the state conservation engineer. MO-ENG-C12 lists some of the most common practices and can be used for most field office employees. Other practices which are appropriate for a person's engineering job approval authority chart may be transferred from MO-ENG-C12A to MO-ENG-C12. Form MO-ENG-C12A will be used when assigning engineering approval authority for engineers.

§MO501.04(c)(3) Engineering job approval authority

The planning, design, and construction of class VI and higher jobs shall be a coordinated effort between project office personnel, geologists, planning engineers, hydrologists, design engineers, and construction engineers. Project office personnel, geologists, planning engineers, and hydrologists have the primary responsibility for data collection and evaluation and primary design. Information supporting preliminary designs (work plans, etc) will be reviewed by a design engineer and operations geologist prior to final publication. The design report will be available for this review. Planning personnel and operations personnel will meet when a project is approved for operations to transfer the design reports and other available data. The operations geologist and design section personnel are responsible for collecting any additional data and preparing the final design. Check prints, drawings and specifications will be developed for each design and routed to construction engineers, contract personnel, project office personnel and the state office key staff for review and comment. The construction engineer is responsible for evaluating the inspection requirements and inspection personnel for making periodic site visits during construction. As-built plans will be prepared by the project office staff and reviewed by the construction engineer, design engineer, and operations geologist.

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MO501.06

§M0501.06 Engineering work reviewed for other agencies

NRCS review of engineering design parts of plan for cooperating agencies shall be done in accordance with memorandums of understanding with the agency or at the request of the state conservationist or assistant state conservationist (field operations). Review responses are to be signed by a person having adequate design approval authority for the plan features being reviewed. The response shall be transmitted to the agency by the appropriate line officer.

MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

NAME _____ TITLE _____ GRADE _____ LOCATION _____

DELEGATED BY _____ TITLE _____ DATE _____
(Responsible Engineer)

CONCURRED BY _____ TITLE _____ DATE _____
(Line Supervisor)

NOTES

1. Approval is issued based on the individual's training, experience, and demonstrated competence. Increased authorities (based on local needs and individual interest) are encouraged for all individuals.
2. Employees shall not approve designs or certify construction for practices that exceed their maximum approval limit. However, employees (working under the direction of person approving) can complete work on practices above their limit and submit for approval.
3. The Responsible Engineer may recommend approval authority only up to his/her approval authority.
4. The controlling factor that results in the highest classification determines the Job Class. For example, a water and sediment control basin with a fill height of 7 feet (CLASS III) and an underground outlet -- 5 inch diameter (Class I); therefore it is Job Class III.
5. Engineering practices not included in this chart or more complex shall be sent with documentation to the State Conservation Engineer for approval.
6. Engineering approval applies to repair or rehabilitation, as well as new construction. Refer to NEM 501.20-.24 (Subpart A) for repair and rehabilitation or NEM 501.00 -.09 (Subpart A) for new construction, as appropriate.
7. The approving engineer shall have the appropriate approval limit for practices requiring signing and sealing of construction plans by a licensed professional engineer.

8. DEFINITION OF MAXIMUM APPROVAL LIMIT COLUMNS

- Inventory and Evaluation (I&E) - On-site observations of an exploratory nature and preparation of sound alternative solutions of sufficient intensity for the cooperator to make treatment decisions. This may require assistance from higher levels for large or more complex jobs. (See NEM 501 and 510)
- Design - Designing and checking all aspects of the supporting data, drawings, and specifications to ensure that the planned practice will meet the purpose for which it is installed. This also includes setting any specific inspection requirements. Approval signature is required. (See NEM 501 and 511)
- Construction (Const.) - Surveys, layout, staking, inspection of materials and work, and making tests to determine that the job meets specifications. Jobs where letters of appointment for inspection are issued are not included on this chart. Approval signature to certify construction is required. (See NEM 501 and 512)

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MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class					Maximum Approval Limit	
				I	II	III	IV	V	I&E and Design	Const.
	Any Practice	Hazard potential as defined in NEM §503	class	Low	Low	Low	Low	Low		
560	Access Road (Private)	Culvert, inside diameter (includes stormwater conduits not associated with roads)	ft	1	2	4	5	6		
317	Composting Facility ^{2/}	Capacity - dead animals (standard design)	cu ft	-	1,250	2,500	5,000	all ^{2/}		
356	Dike	Water Height Hazard	ft	-	-	4	6	12		
362	Diversion	Design Capacity	class	-	-	III	III	III		
432	Dry Hydrant	Type	cfs	50	100	200	500	all		
			---	Impound- Ment	Impound- ment	Impound- ment	In-stream	In-stream		
			ft	6	8	10	15	15		
			in	6	6	6	6	8		
410	Grade Stabilization Structure	Conduit type only, see Pond	---							
412	Grassed Waterway	Design Capacity	cfs	100	200	300	500	all		
464	Irrigation Land Leveling	Area Graded	ac	20	40	160	320	all		
466	Land Smoothing	Area Smoothed	ac	20	40	160	320	all		
634	Manure Transfer ^{2/}	Capacity	gpm	-	100	300	500	all		
		Volume	cu ft	-	300,000	500,000	1,000,000	2,000,000		
516	Pipeline	Length	mi	0.25	0.5	1	2	6		
		Diameter	in	1	2	2	3	4		
		Pressure	psi	-	-	60	80	100		
		Delivery System	type	Grav Pump	Grav Pump	Grav, Siphon Pump	Grav, Siphon, Pump	Grav, Siphon, Pump		
378	Pond	Embankment over active fault	---	None	None	None	None	None		
		Effective Height ^{1/}	ft	15	20	25	30	35		
		Product - Storage x Effective Height	ac-sq ft	200	500	1,000	2,000	2,999		
		Principal Spillway -- Diameter	in	8	12	24	36	48		
		Drainage Area	ac	20	100	250	640	1,280		
350	Sediment Basin	SAME AS POND	---							
574	Spring Development	Capacity	gpm	5	10	20	50	all		
606	Subsurface Drain	Inside Diameter	in	8	12	16	24	all		

MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class					Maximum Approval Limit	
				I	II	III	IV	V		
607	Surface Drainage - Field Ditch	Area Drained	ac	40	160	320	640	all	I&E and Design	Const.
608	Surface Drainage - Main or Lateral	Design Capacity Area Drained	cfs ac	40 160	100 320	200 640	400 6,400	500 all		
600	Terrace	Area Controlled in System (total system)	ac	20	40	80	160	all		
614	Trough or Tank	Capacity	gal	200	500	1,000	2,000	all		
620	Underground Outlet	Diameter	in	8	12	18	30	all		
312	Waste Management System ^{2/} Animal Manure and Related Wastes and Polluted Waters (No Agricultural Processing Wastes)	Design Capacity, 1,000 lb Animal Units Distance from Concentrated Livestock Area or Waste Storage to a Stream, Surface Drain, or Pond	AU ft	100 -	300 -	500 greater than 500	1,000 150 to 500	all less than 150		
359	Waste Treatment Lagoon ^{2/}	Anaerobic -- Total Volume ^{4/}	cu ft	-	300,000	500,000	1,000,000	2,000,000		
638	Water and Sediment Control Basin	Fill Height	ft	4	5	8	12	15		
642	Well	Diameter Estimated Depth	in ft	4 -	6 100	8 200	12 300	all all		
351	Well Decommissioning (according to Missouri Well Construction Rules)	Type Diameter Depth	--- in ft	dug, bored, dug, bored, or cistern larger than 48 30	dug, bored, dug, bored, or cistern 24 - 48 80	drilled 12 - 24 100	drilled 6 - 12 200	all less than 6 all		

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1/ Effective Height - Difference in elevation between the auxiliary spillway crest (top of embankment if no auxiliary spillway) and the lowest point in the original cross section along the centerline of the embankment.

2/ Will involve review in a different office from designer and construction certification by a Registered Professional Engineer. It may also include other practices - a part of a waste management plan.

3/ All - Up to maximum limit shown on State Conservation Engineer approved standard drawing.

4/ Other factors are same as for pond.

MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

NAME _____ TITLE _____ GRADE _____ LOCATION _____

DELEGATED BY _____ TITLE _____ DATE _____
(Responsible Engineer)

CONCURRED BY _____ TITLE _____ DATE _____
(Line Supervisor)

NOTES

1. Approval is issued based on the individual's training, experience, and demonstrated competence. Increased authorities (based on local needs and individual interest) are encouraged for all individuals.
2. Employees shall not approve designs or certify construction for practices that exceed their maximum approval limit. However, employees (working under the direction of person approving) can complete work on practices above their limit and submit for approval.
3. The Responsible Engineer may recommend approval authority only up to his/her approval authority.
4. The controlling factor that results in the highest classification determines the Job Class. For example, a water and sediment control basin with a fill height of 7 feet (CLASS III) and an underground outlet -- 5 inch diameter (Class I); therefore it is Job Class III.
5. Engineering practices not included in this chart or more complex shall be sent with documentation to the State Conservation Engineer for approval.
6. Engineering approval applies to repair or rehabilitation, as well as new construction. Refer to NEM 501.20-.24 (Subpart A) for repair and rehabilitation or NEM 501.00 -.09 (Subpart A) for new construction, as appropriate.
7. The approving engineer shall have the appropriate approval limit for practices requiring signing and sealing of construction plans by a licensed professional engineer.

8. DEFINITION OF MAXIMUM APPROVAL LIMIT COLUMNS

Inventory and Evaluation (I&E) - On-site observations of an exploratory nature and preparation of sound alternative solutions of sufficient intensity for the cooperator to make treatment decisions. This may require assistance from higher levels for large or more complex jobs. (See NEM 501 and 510)

Design - Designing and checking all aspects of the supporting data, drawings, and specifications to ensure that the planned practice will meet the purpose for which it is installed. This also includes setting any specific inspection requirements. Approval signature is required. (See NEM 501 and 511)

Construction (Const.) - Surveys, layout, staking, inspection of materials and work, and making tests to determine that the job meets specifications. Jobs where letters of appointment for inspection are issued are not included on this chart. Approval signature to certify construction is required. (See NEM 501 and 512)

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MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class					Maximum Approval Limit I & E and Design	Const.
				I	II	III	IV	V		
560	Any Practice Access Road (Private)	Hazard potential as defined in NEM §503 Culvert, inside diameter (includes stormwater conduits not associated with roads) Monolithic Concrete Opening Bridge Span (standard design)	class ft sq ft ft	Low 1 - -	Low 2 - -	Low 4 - -	Low 5 16 12	Low 6 25 24 ^{1/2}		
326	Clearing and Snagging	Drainage Area	sq mi	-	-	1	4	all		
317	Composting Facility ^{2/}	Capacity-dead animals (standard design)	cu ft	-	1,250	2,500	5,000	all		
356	Dike	Water Height Hazard	ft class	- -	- -	4 III	6 III	12 III		
362	Diversion	Design Capacity	cfs	50	100	200	500	all		
432	Dry Hydrant	Type	---	Impound- ment 6	Impound- ment 8	Impound- ment 10	Impound- ment 15	In-stream 15		
393	Filter Strip	Nominal Diameter Distance to Stream, Surface Drain, or Pond Pollutant	ft ft	6 6 1,000	6 6 500	6 6 200	6 6 200	8 8 all	Sed & Agric Waste	
412	Grassed Waterway	Design Capacity	cfs	100	200	300	500	all		
561	Heavy Use Area Protection	Surface Protection Method	type	Veg	Gravel	Gravel	Asphalt	all		
464	Irrigation Land Leveling	Area Graded	ac	20	40	160	320	all		
441	Irrigation System, Drip	Area Irrigated	ac	-	-	10	40	all		
442	Irrigation System, Sprinkler	Area Irrigated	ac	20	40	80	all	all		
443	Irrigation System, Surface and Subsurface	Area Irrigated	ac	20	40	80	all	all		
447	Irrigation System, Tailwater Recovery	Acres Served	ac	20	40	80	all	all		

MISSOURI ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class					V	Maximum Approval Limit I & E and Design	Const.
				I	II	III	IV	V			
430	Irrigation Water Conveyance	Pipeline Capacity greater than 50 psi	gpm	-	300	500	1,500	3,500			
468	Lined Waterway	Pipeline Capacity 50 psi or less	gpm	-	500	1,000	2,500	5,000			
634	Manure Transfer ^{2/}	Design Capacity	cfs	-	50	100	200	all			
		Capacity Volume	gpm cu ft	-	100	300	500	all			
				-	300,000	500,000	1,000,000	2,000,000			
516	Pipeline	Length	mi	0.25	0.5	1	2	6			
		Diameter	in	1	2	2	3	4			
		Pressure	psi	-	-	60	80	100			
		Delivery System	type	Grav Pump	Grav Pump	Siphon Pump	Grav, Siphon, Pump	Grav, Siphon, Pump			
378	Pond (Excavated)	Surface Area at Design High Water	ac	0.2	0.5	1	2	all			
521	Pond Sealing or Lining	Surface Area at Design Depth	ac	-	-	0.2	0.5	1			
		Design Depth	ft	-	-	8	10	15			
533	Pumping Plant for Water Control	Axial flow pump capacity	gpm	-	-	-	10,000	50,000			
		Centrifugal & turbine capacity	gpm	-	-	-	1,000	3,500			
		Centrifugal pump static head	ft	-	-	-	200	350			
		Turbine pump static head	ft	-	-	-	300	500			
568	Recreation Trail and Walkway	Length	mi	0.2	0.5	1	2	all			
558	Roof Runoff Management	Roof Area	sq ft	2,500	5,000	all	all	all			
574	Spring Development	Capacity	gpm	5	10	20	50	all			
580	Streambank and Shoreline Protection, Mechanical Protection	Capacity (bankfull)	cfs	-	-	500	1,000	2,000			
		Drainage Area	sq mi	-	-	10	25	100			
		Channel Depth (low bank)	ft	-	-	6	8	10			
606	Subsurface Drain	Inside Diameter	in	8	12	16	24	all			
607	Surface Drainage - Field Ditch	Area Drained	ac	40	160	320	640	all			
608	Surface Drainage - Main or Lateral	Design Capacity	cfs	40	100	200	400	500			
		Area Drained	ac	160	320	640	6,400	all			
600	Terrace	Area Controlled (total system)	ac	20	40	80	160	all			
614	Trough or Tank	Capacity	gal	200	500	1,000	2,000	all			
620	Underground Outlet	Diameter	in	8	12	18	30	all			

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Code	Practice Name	Controlling Factors	Units	Job Class						Maximum Approval Limit
				I	II	III	IV	V	I & E and Design	
312	Waste Management System 2/ - Animal Manure and Related Wastes and Polluted Waters(NO Agricultural Processing Wastes)	Design Capacity, 1,000-lb Animal Units Distance from Concentrated Livestock Area or Waste Storage to a Stream, Surface Drain, or Pond	number ft	100 -	300 -	500 greater than 500	1,000 150 to 500	all less than 150	/	/
313	Waste Storage Facility 2/ 4/	Design Capacity, 1,000 lb Animal Units EARTHEN Volume Fill Height FABRICATED Below Ground - Wall Height - Tank Span (beam span, with slats or solid cover) Above Ground - Wall Height - Tank Span (beam span, with slats or solid cover) Roof - clear span	number cu ft ft ft ft ft	100 - - - - -	300 100,000 - - 4 -	500 300,000 8 4 10 10 40 -	1,000 500,000 15 8 12 12 60 40	all 2,000,000 35 8 16 16 all all		
359	Waste Treatment Lagoon (Refer to Dams and Structures)	Aerobic - Surface Area Anaerobic - Volume	ac cu ft	- -	- 300,000	6 500,000	8 1,000,000	10 2,000,000		

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Code	Practice Name	Controlling Factors	Units	Job Class					Maximum Approval Limit I & E and Design	Const.
				I	II	III	IV	V		
	DAMS AND STRUCTURES									
402	Dam, Floodwater Retarding	All must have relatively impervious cutoff, simple foundation needs and use standard detail drawings approved by the SCE. Dam classification must be Class "a" and the product of storage (acre-feet) times effective height (feet) equals 3,000 or less.		None	None	None	None	None	None	
349	Dam, Multiple-Purpose			15	20	25	30	35		
410	Grade Stabilization Structure			200	500	1,000	2,000	3,000		
552	Irrigation Pit or Regulating Reservoir			20	100	250	640	1,280		
436	Irrigation Storage Reservoir			8	12	24	36	48		
378	Pond (Embankment)		-	6	9	16				
350	Sediment Basin									
587	Structure for Water Control									
		Embankment over active fault	-	None	None	None	None	None	None	
		Effective Height ^{1/}	ft	15	20	25	30	35		
		Product - Storage x Effective Height	ac-sq ft	200	500	1,000	2,000	3,000		
		Drainage Area	ac	20	100	250	640	1,280		
		Prefabricated Conduit - Diameter	in	8	12	24	36	48		
		Box Culvert, Area (Standard Design)	sq ft	-	-	6	9	16		
	Drop Spillway									
	- Box Inlet ^{2/}	Net Drop	ft	2	3	4	5	6		
		Weir Capacity	cfs	50	100	200	300	500		
	- Straight ^{2/}	Net Drop	ft	2	4	5	6	8		
		Weir Depth	ft	1.5	2	2.5	3	4		
		Weir Capacity	cfs	100	200	300	400	500		
	Chute Spillway	Net Drop	ft	3	6	6	6	all ^{3/}		
	Geotextile Reinforced Vegetated ^{2/}	Design Capacity	cfs	10	20	20	20	all ^{3/}		

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Code	Practice Name	Controlling Factors	Units	Job Class					V	Maximum Approval Limit I & E and Design	Const.
				I	II	III	IV	V			
348	DAMS AND STRUCTURES (continued) Chute Spillway - Concrete Block ^{2/} - Rock Riprap	Net Drop Weir Depth Weir Capacity Net Drop Weir Depth Weir Capacity Streamflow (25 yr) Flow diverted Height of drop	ft ft cfs ft ft cfs cfs cfs ft	4	6	8	8	10			
				1.0	1.5	2.0	2.5	3.0			
				50	75	100	150	all ^{2/}			
				-	-	6	8	10			
				-	-	1.5	2.0	3.0			
				-	-	50	100	300			
633	Dam, Diversion	Streamflow (25 yr) Flow diverted Height of drop	cfs cfs ft	100	500	1,000	1,500	2,000			
				25	50	100	150	200			
				3	3	5	7	8			
638	Waste Utilization	Refer to Nutrient Management (590) Standard									
642	Water and Sediment Control Basin	Fill Height	ft	4	5	8	12	15			
				4	6	8	12	all			
351	Well	Diameter Estimated Depth Type	in ft -	-	100	200	300	all			
				dug, bored, or cistern	dug, bored, or cistern	drilled	drilled	all			
				larger than 48	24 - 48	12 - 24	6 - 12	less than 6			
351	Well Decommissioning (according to Missouri Well Construction Rules)	Diameter	in	larger than 48	24 - 48	12 - 24	6 - 12	less than 6			
				30	80	100	200	all			
		Depth	ft								

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Code	Practice Name	Controlling Factors	Units	Job Class					Maximum Approval Limit		
				I	II	III	IV	V	I & E and Design	Const.	

- 1/ Effective Height - Difference in elevation between the auxiliary spillway crest (top of embankment if no auxiliary spillway) and the lowest point in the original cross section along the centerline of the embankment.
- 2/ Will involve review in a different office from designer and construction certification by a Registered Professional Engineer. It may also include other practices - a part of a waste management plan.
- 3/ All - Up to maximum limit shown on State Conservation Engineer approved standard drawing.
- 4/ Other factors are same as for pond.