

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 practices 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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				Job Class					Maximum Approval Limit		
Code	Practice Name	Controlling Factors	Units	I	II	III	IV	V	I & E	Design	Const.
	Any Practice	Hazard potential as defined in NEM §503	class	Low	Low	Low	Low	Low			
DAMS AND STRUCTURES											
402	Dam	All must have relatively impervious cutoff, simple foundation needs and use standard detail drawings approved by the SCE. Dam classification must be low hazard (formerly class "a") and the product of storage (acre-feet) times effective height (feet) equals 3,000 or less.									
410	Grade Stabilization Structure										
552	Irrigation Pit or Regulating Reservoir										
436	Irrigation Storage Reservoir										
378	Pond (Embankment)										
350	Sediment Basin (other than part of a waste management system)										
587	Structure for Water Control										
	All Dams and Structures:	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	3,000			
		Drainage Area	ac	20	100	250	640	12,800			
	Prefabricated Conduit	Diameter	in	8	12	24	36	48			
	Box Culvert (Standard Design)	End Area	sq ft	-	-	6	9	All			
	Drop Spillway										
	-Box Inlet	Net Drop	ft	2	3	4	5	All			
		Weir Capacity	cfs	50	100	200	300	All			
	-Straight	Net Drop	ft	2	4	5	6	All			
		Weir Depth	ft	1.5	2	2.5	3	All			
			cfs	100	200	300	400	All			
	Chute Spillway										
	-Geotextile Reinforced	Net Drop	ft	3	6	6	6	All ^{3/}			
	Vegetated	Design Capacity	cfs	10	20	20	20	All ^{3/}			
	-Concrete Block	Net Drop	ft	4	6	8	8	All			
		Weir Depth	ft	1.0	1.5	2.0	2.5	All			
		Weir Capacity	cfs	50	75	100	150	All ^{3/}			
	-Rock Riprap	Net Drop	ft	-	-	6	8	All			
		Weir Depth	ft	-	-	1.5	2.0	All			
		Weir Capacity	cfs	-	-	50	100	All			
348	Dam, Diversion	Streamflow (25 yr)	cfs	100	500	1,000	1,500	2,000			
		Flow diverted	cfs	25	50	100	150	200			
		Height of drop	ft	3	3	5	7	8			

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560	Access Road (Private) (Soil or Gravel Surface)	Culvert, inside diameter (includes stormwater conduits not associated with roads)	ft	1	2	4	5	6			
		Monolithic Concrete Opening	sq ft	-	-	-	-	All			
		Bridge Span (standard design)	ft	-	-	-	-	All			
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	ft	-	-	3	6	12			
		Hazard	class	-	-	III	III	III			
362	Diversion	Design Capacity	cfs	50	100	200	500	All			
554	Drainage Water Management	Subsurface Drainage System Inside Diameter	in	8	12	16	24	All			
		Surface Drainage System Acres Drained	ac	40	160	320	640	All			
432	Dry Hydrant	Type	---	Impoundment	Impoundment	Impoundment	In-stream	All			
		Pump Lift	ft	6	8	10	15	All			
		Nominal Diameter	in	6	6	8	8	All			
393	Filter Strip	Distance to Stream, Surface Drain, or Pond Pollutant	ft	1,000	500	200	All	All			
				-	-	Sed	Sed	Sed & Agr 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	40	80	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			

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430 AA, DD, EE	Irrigation Water Conveyance	Pipeline Capacity greater than 50 psi	gpm	-	300	500	1,500	3,500			
		Pipeline Capacity 50 psi or less	gpm	-	500	1,000	2,500	5,000			
468	Lined Waterway	Design Capacity	cfs	-	50	100	200	All			
634	Manure Transfer ^{2/}	Capacity	gpm	-	100	300	500	All			
		Volume	cu ft	-	300,000	500,000	1,000,000	All			
516	Pipeline	Length	mi	0.25	0.5	1	2	All			
		Diameter	in	1	2	2	3	All			
		Pressure	psi	-	-	60	80	300			
		Delivery System	type	Grav Pump	Grav Pump	Grav, 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 A,B,C	Pond Sealing or Lining	Surface Area at Design Depth	ac	-	-	0.2	0.5	All			
		Design Depth	ft	-	-	8	10	All			
533	Pumping Plant for Water Control	Axial flow pump capacity	gpm	-	-	-	10,000	50,000			
		Centrifugal & turbine pump 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			
350	Sediment Basin ^{2/} (Part of Animal Waste Management System)	Effective Height of Dam	ft	8	10	15	30	35			
		Design Capacity – 1000 lb. Animal	AU	20	50	100	500	All			
574	Spring Development	Capacity	gpm	5	10	20	50	All			
580	Streambank and Shoreline Protection,	Bankfull Capacity	cfs	-	-	500	1,000	5,000			
		Bankfull Velocity	fps	-	-	5	7	10			
		Channel Depth (low bank)	ft	-	-	6	8	All			
		Drainage Area	sq mi	-	-	10	25	All			
		Water height above shoreline	ft	-	-	-	-	3			
606	Subsurface Drain	Inside Diameter	in	8	12	16	24	All			
607	Surface Drainage - Field Ditch	Area Drained	ac	40	160	320	640	All			

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608	Surface Drainage – Main or Lateral	Design Capacity	cfs	40	100	200	400	1,000			
		Velocity	cfs	3	5	8	10	10			
		Area Drained	ac	160	320	640	640	640			
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			
313	Waste Storage Facility ^{2/} ^{4/}	Design Capacity, 1,000 lb Animal Units	AU number	100	300	500	1,000	All			
		EARTHEN									
		Volume	cu ft	-	100,000	300,000	500,000	2,000,000			
		Fill Height	ft	-	-	8	15	35			
		FABRICATED									
		Below Ground									
		- Wall Height	ft	-	-	4	8	All			
		- Tank Span (beam span, with slats or solid cover)	ft	-	-	10	12	All			
		Above Ground									
- Wall Height	ft	-	4	10	12	All					
- Tank Span (beam span, with slats or solid cover)	ft	-	-	40	60	All					
Roof - clear span		-	-	-	40	All					
359	Waste Treatment Lagoon ^{2/} ^{4/} (Refer to Dams and Structures)	Aerobic - Surface Area	ac	-	-	6	8	25			
		Anaerobic - Volume	cu ft	-	300,000	500,000	1,000,000	2,000,000			
633	Waste Utilization	Refer to Nutrient Management (590) Standard (Consult Nutrient Management Specialist)									
638	Water and Sediment Control Basin	Fill Height	ft	4	5	8	12	All			
642	Water Well	Diameter	in	4	6	8	12	All			
		Estimated Depth	ft	-	100	200	300	All			

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351	Well Decommissioning (according to MO Well Construction Rules)	Type		dug, bored, or cistern	dug, bored, or cistern	drilled	drilled	All			
		Diameter	in	≥48	≥24	≥12	≥6	All			
		Depth	ft	30	80	100	200	All			
657	Wetland Restoration	Non-Levee Protected System ^{5/}									
658	Wetland Creation	Height of Wetland Management Dike	ft	---	---	3	4	All			
659	Wetland Enhancement	Drainage Area to Pool Area ratio ^{6/ 7/}	ac:ac	---	---	5	20	All			
		Total Wetland Complex Pool Area ^{8/}	ac	10	40	160	300	All			
		Levee Protected System ^{5/}									
		Height of Wetland Management Dike	ft	3	3	4	5	All			
		Drainage Area to Pool Area ratio ^{6/ 7/}	ac:ac	3	3	5	20	All			
		Total Wetland Complex Pool Area ^{8/}	ac	10	50	200	500	All			

^{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 Missouri 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.

^{5/} Flood protection levees, not wetland management dikes, that will be maintained for flood protection after wetland restoration is complete.

^{6/} Excludes excavated pools without management berms.

^{7/} Drainage area includes the pool area plus all of the land area that drains to the pool.

^{8/} Total wetland pool complex is the sum of the surface areas at the highest water control structure crest elevation(s) of all pools associated with the site.