

SUBPART A – REVIEW AND APPROVAL

TN501.04(b)(5)(i)

(3) Each employee responsible for any phase of engineering work shall be delegated engineering job approval authority. Non-NRCS employees may be delegated engineering job approval authority as stated in NEM TN501.01(b)(3). The engineering job approval authority applies to engineering inventory and evaluations, designs, and construction. Individual engineering job approval authority shall be delegated according to the employee's training, experience, and demonstrated competence. Engineers responsible for delegating engineering job approval authority should have reviewed one or more recent designs of each practice prepared (within the last three years) by the employee being considered. Major factors of the practice to be considered in determining the employee's engineering job approval authority are: (1) applicability; (2) accuracy; (3) completeness, including note keeping and record keeping; (4) technical adequacy; and (5) construction applicability.

(i) The Engineering Job Approval Authority, TN-ENG-39 (see TN501.09, Exhibit TN2) and TN-ENG-39-FO (see TN501.09, Exhibit TN3) establishes job type (practice), controlling factors, units, and job approval size (job class) for Tennessee. The engineering job approval authorities apply to all engineering work in all NRCS programs.

(ii) Form TN-ENG-39 or TN-ENG-39-FO shall be prepared by the responsible engineer for each employee who performs engineering work in the state. The employee's administrative supervisor shall concur in the engineering job approval authority and issue a copy to the employee.

(iii) Only those practices for which job approval is being given to an individual need to be listed on form TN-ENG-39. Maximum engineering job approval limits for I&E, design, and construction will be entered in the spaces provided. All spaces will contain an entry. Use a "0" when no engineering job approval authority is assigned.

(iv) Copies of the individual's engineering job approval chart shall be maintained by the employee, the employee's administrative supervisor, and by the engineer delegating the individual's engineering job approval authority.

(4) Professional engineers registered in Tennessee and working under NRCS technical supervision will be delegated engineering job approval authority according to the employee's training, experience, and demonstrated competence.

(5) Delegating engineering job approval authority.

(i) Engineering job approval authority for field personnel (except engineers in grades GS-11 and above) shall be delegated based on a technical determination by the AE and concurred in by the employee's supervisor. Maximum engineering job approval limits cannot be higher than the recommending engineer's engineering job approval authority. The engineering job approval authority of an individual transferred to a different administrative area shall be canceled, and a new engineering job approval authority shall be delegated based on the technical determination of the AE and concurred in by the employee's new administrative supervisor.

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TN501.04(b)(5)(ii)

(ii) Engineering job approval authority for all engineers in grades GS-11 and above shall be delegated based on a technical determination by the SCE and concurred in by the employee's administrative supervisor.

(iii) The responsible engineer shall review the employee's engineering job approval authority at the frequency of not less than that stated in NEM 501.04(b)(5). The review shall include a spot check of the employee's engineering work.

(iv) If a review of an employee's engineering work reveals a need to revise (increase or decrease) an employee's engineering job approval authority, the reasons shall be documented in writing to the employee and the employee's administrative supervisor. The responsible engineer shall send a revised delegated engineering job approval authority to the employee's administrative supervisor. The employee's administrative supervisor shall concur in and reissue in writing to the employee the revised engineering job approval authority.

(c) State Conservation Engineer's engineering job approval (classes VI through VIII).

3. Engineering design assistance, review, and processing for engineering Job Classes VI through VIII will be coordinated by the SCE. The SCE will obtain the required expertise needed from the National Technology Support Centers (NTSC's), National Design, Construction and Soil Mechanics Center (NDCSMC), or other states as appropriate. The State Conservation Engineer (SCE) is responsible for:

(i) Securing assistance and coordinating activities with NRCS specialists outside of Tennessee.

(ii) Providing and coordinating data needed by technical specialists assigned to provide technical assistance to Tennessee.

(iii) Approving the final engineering plans and specifications.

(iv) Installation.

TN501.05 Engineering job review.

(a) (3) Design reviews.

(ii) Job Classes I through V. Design reviews will be performed as needed for engineering job Classes I through V. Non-routine and complex jobs (regardless of engineering job class) shall receive a design review by others prior to final approval by the designer. Routine jobs that are within the delegated approval authority of the designer do not necessarily require a design review. Where needed to assure technical quality, the employee approving the job is responsible for obtaining design reviews.

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ENGINEERING JOB APPROVAL AUTHORITY ^{1/}

Name: _____ Title: _____ Grade: _____

Delegated by: _____ Title: _____ Date: _____
(Responsible Engineer)

Concurred By: _____ Title: _____ Date: _____
(Line Officer)

This form will be reviewed with the employee annually and revised as needed. If no significant changes are made, the following table will be used to document that the review has been made by the appropriate engineering personnel.

<u>Reviewed by</u>	<u>Title</u>	<u>Comments</u>	<u>Date:</u>

DEFINITIONS OF MAXIMUM APPROVAL LIMITS COLUMN

Inventory and Evaluation (I&E) - Onsite review of an exploratory nature and preparation of sound engineering alternative solutions of sufficient intensity for the land owner to make treatment decisions. I&E's may require assistance from engineers with higher engineering job approval authority for large or complex jobs.

Design - Designing and checking all aspects of supporting data, drawings, and specifications to ensure that the planned practice will meet the purpose for which it is installed. Also includes determining and setting any specific requirements for the site conditions.

Construction – Includes survey construction layout, inspections of construction materials, and construction inspection including performing required tests to determine that the job meets the requirements of the plans and specifications.

Standard designs noted under practice name are those engineering drawings and design criteria that have been approved and distributed or otherwise approved by the State Conservation Engineer. Standard designs are developed to function satisfactorily based on a set of design parameters. The person responsible for design and approval shall verify that the standard design is adaptable to the site and the design limitations are not exceeded.

^{1/} Approval of engineering work within the limits of the engineering job approval authority places the full responsibility on the individual for planning, design, and construction of the practice. Any engineering practice may involve complexities, such as geology or hydrology, with which the employee may be unfamiliar. Employees shall request assistance when complexities are encountered which exceed their expertise. The employee approving the engineering design shall check the designs, drawings, and specifications and be satisfied that (1) adequate field investigations have been made; (2) the plans conform to NRCS standards and policy; (3) the layout is suitable; and (4) installations, if constructed in accordance with the plans and specifications, will function properly. Each sheet of the engineering plans shall be signed and dated by the person approving the plans. See National Engineering Manual for additional information on engineering job approval authority.

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Name:		Title:							Grade:		
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
--	Any Practice	Hazard Potential as defined in 503 NEM	---	Low	Low	Low	Low	Low.			
560	Access Road	Surface Treatment	kind	Un-surfaced	Gravel	Gravel	Asphalt	All			
		Length	feet	2,000	5,000	10,000	20,000	All			
		Grade	%	3	5	8	10	All			
		Culvert									
		Pipe, I.D.	feet	2	3	4	5	6			
		Fill Height Over Top of Pipe	feet	3	5	8	12	All			
		Other Water Control Structures	2/	2/	2/	2/	2/	2/	2/	2/	2/
702	Agrichemical Handling Facility	Tank Storage Volume for Chemicals	gal	None	None	500	1,000	5,000			
316	Animal Mortality Facility										
	<u>Normal Mortality</u>										
	Composters	Capacity	cu. ft.	1,000	2,000	3000	5000	All			
	Freezers	Capacity	cu. ft	None	None	All	All	All			
	Incinerator	Capacity	lbs.	None	None	All	All	All			
	<u>Catastrophic Mortality Events</u>										
	Burial Pit	Capacity	cu. ft	None	None	All	All	All			
	Composting	Capacity	cu. ft	None	None	All	All	All			
365	Anaerobic Digester – Ambient Temperature	No.	each	None	None	None	All	All			
366	Anaerobic Digester – Controlled Temperature	No.	each	None	None	None	All	All			

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Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
575	Animal Trails and Walkways	Area	acres	0.5	2	5	10	All			
450	Anionic Polyacrylamide (PAM) Erosion Control	Area	acres	1	20	40	80	All			
397	Aquaculture Ponds	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Surface Area	acres	1	2	5	10	All			
310	Bedding	Area	acres	10	40	160	320	All			
584	Channel Stabilization	Design Capacity	cfs	10	100	300	400	500			
		Design Velocity	fps	2	2.5	3	5	10			
326	Clearing & Snagging	Length of Reach	feet	500	1,500	2,500	All	All			
360	Closure of Waste Impoundments	Surface Area	acres	0.5	1.0	3.0	10	All			
317	Composting Facility (Std. Design)	Design Capacity	cu. ft.	1,000	2,000	3,000	5,000	All			
656	Constructed Wetland	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Area	acres	0.5	1	5	20	All			
402	Dam	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Storage	ac-ft	1	10	50	100	All			
348	Dam, Diversion	Stream Flow (25 yr. freq.)	cfs	100	500	1,000	1,500	2,000			
		Flow Diverted	cfs	10	50	100	150	200			
		Height of Drop	feet	2	3	5	7	8			
356	Dike	Water Height	feet	1	2	3	5	12			
		Hazard	class	III	III	III	III	III			
362	Diversion	Drainage Area	acres	5	20	40	100	All			
554	Drainage, Water Management	Area	acres	40	80	160	640	All			
432	Dry Hydrant	Capacity	gpm	500	1,000	2,000	All	All			
393	Filter Strip	Surface Area	acres	0.5	1	5	All	All			

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Name:			Title:						Grade:			
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits			
				I	II	III	IV	V	I&E	Design	Constr.	
398	Fish Raceway or Tank	Length	feet	500	1,000	2,000	3,000	All				
		Capacity	cfs	1	3	5	10	All				
410	Grade Stabilization Structure	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
412	Grassed Waterway	Design Capacity	cfs	25	50	100	250	All				
561	Heavy Use Area Protection	Area Treated	acres	0.25	0.5	1.0	All	All				
		Surface Treatment	kind	Gravel	Gravel	Asphalt/ Concrete	All	All				
320	Irrigation Canal or Lateral	Design Capacity	cfs	10	25	100	300	500				
388	Irrigation Field Ditch	Design Capacity	cfs	1	5	10	25	All				
464	Irrigation Land Leveling	Design Area	acres	40	80	160	640	All				
552	Irrigation Regulating Reservoir (Std. Design)	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
		Storage	ac-ft	5	10	20	40	All				
436	Irrigation Storage Reservoir	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
		Storage Capacity	ac-ft	5	10	20	40	All				
441	Irrigation System, Microirrigation	System Area	acres	10	40	80	160	All				
		Slope	%	0.5	2	5	All	All				
442	Irrigation System, Sprinkler	System Area	acres	10	40	80	160	All				
		Slope	%	2	5	10	All	All				
443	Irrigation System, Surface and Subsurface	<u>All surface systems</u>		System Area	acres	20	40	80	160	All		
		<u>Subsurface systems</u>										
		Crown Flood	System Area	acres	20	80	160	320	All			
		Flow Through	System Area	acres	20	80	160	320	All			
		Fully Enclosed	System Area	acres	20	40	80	320	All			
		Open Channels	System Area	acres	20	80	160	320	All			
		Underground Conduits	System Area	acres	10	20	80	160	All			

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(210-V-NEM, Amend. TN16, March 2007)

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Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
447	Irrigation System, Tailwater Recovery	Pump-back Capacity	gpm	500	1,000	2,500	5,000	All			
		Area Served	acres	20	80	160	320	All			
543	Land Reconstruction, Abandoned Mined Land	Area	acres	0.5	10	40	160	All			
428	Irrigation Water Conveyance, Ditch & Canal Lining	Design Capacity	cfs	2	5	50	100	200			
430	Irrigation Water Conveyance, Pipeline	Pipeline Capacity ≥ 50 psi	gpm	300	600	1,200	2,000	3,500			
		Pipeline Capacity ≤ 50 psi	gpm	300	600	1,200	2,000	5,000			
449	Irrigation Water Management	Area Served	acres	10	40	80	320	All			
460	Land Clearing	Area Cleared	acres	5	10	40	All	All			
455	Land Reclamation, Toxic Discharge Control	Flow	cfs	None	None	None	None	None			
466	Land Smoothing	Area Smoothed	acres	40	80	160	320	All			
468	Lined Waterway or Outlet	Design Capacity	cfs	10	50	100	300	All			
634	Manure Transfer	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
500	Obstruction Removal	Hazard to Public During Removal									
		None	acres	0.5	1	3	All	All			
		Moderate to High	acres	None	None	None	None	None			
582	Open Channel	Design Capacity (Subcritical TNow Only)	cfs	50	100	300	500	1,000			
		Design Velocity	fps	2	2	3	5	10			
516	Pipeline	Operating Pressure	psi.	60	80	125	200	300			
		Inside Diameter	in.	2	3	4	6	8			

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Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits			
				I	II	III	IV	V	I&E	Design	Constr.	
378	Pond											
	Embankment	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
	Excavated	Water Surface Area	acres	0.25	0.50	1.0	All	All				
521	Pond Sealing or Lining	Area Lined	acres	0.25	0.5	2	5	All				
533	Pumping Plant	<u>Axial Flow Pump</u>										
		Design Capacity	gpm	1,000	2,500	10,000	30,000	50,000				
		Static Head	feet	10	10	10	12	15				
		<u>Mixed Flow Pump</u>										
		Designed Capacity	gpm	1,000	5,000	10,000	30,000	50,000				
		Head	feet	10	10	15	30	40				
		<u>Centrifugal Pump</u>										
		Design Capacity	gpm	300	500	2,000	2,500	3,500				
		Static Head	feet	75	150	300	350	350				
		<u>Turbine Pump</u>										
		Design Capacity	gpm	300	500	1,500	2,500	3,500				
		Static Head	feet	75	150	300	350	500				
566	Recreation Land Grading & Area Graded Shaping		acres	4	10	40	160	All				
568	Recreation Trail and Walkway	Length	feet	1,000	5,000	10,000	All	All				
		Surface Treatment	kind	No Treat.	Wood Chips	Gravel	All	All				
558	Roof Runoff Structure	Roof Area	sq. ft.	2,000	10,000	All	All	All				
350	Sediment Basin	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
572	Spoil Spreading	Area Receiving Spoil	acres	0.25	0.50	3.0	All	All				
578	Stream Crossing	Drainage Area	Acre	500	1,000	2,000	5,000	All				
		Height of Bank	Feet	4	6	10	14	All				
		Culvert Size (inside diameter)	Inches	18	24	48	60	72				

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(210-V-NEM, Amend. TN16, March 2007)

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Name:		Title:							Grade:		
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
574	Spring Development	Spring Flow	gpm	10	50	300	450	All			
580	Streambank and Shoreline Protection	Shorelines, Revetments, Bulkheads									
		Water Height Above Shoreline	feet	None	None	None	None	3			
		Bank full Capacity	cfs	None	None	200	500	5,000			
		Bank Full Velocity	fps	None	None	3	5	10			
587	Structure for Water Control	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Design Capacity	cfs	10	50	100	300	All			
606	Subsurface Drain	Design Area	acres	10	40	160	640	All			
		Diameter	in.	4	8	12	24	All			
607	Surface Drainage, Field Ditch	Drainage Area	acres	2	5	10	All	All			
608	Surface Drainage, Main or Lateral	Design Capacity	cfs	10	50	100	300	1,000			
		Design Velocity	fps	1.5	2.0	3.0	5	10			
600	Terrace	Area of System	acres	25	50	100	All	All			
620	Underground Outlet	Pipe Diameter	in.	6	8	10	18	All			
367	Waste Facility Cover	Area of Cover	acres	None	None	None	All	All			
313	Waste Storage Facility (Std. Design)	<u>Structure</u>									
		<u>Wall Height</u>									
		Above Ground	feet	0	3	6	10	16			
		Below Ground	feet	0	3	5	8	8			
		<u>Tank Span</u>									
		Above Ground	feet	0	0	0	All	All			
		Below Ground	feet	0	0	0	14	16			
		<u>Storage Capacity</u>	cu. ft. (thous)	0	0	0	1,000	2,000			
		<u>Roof Clear Span</u>	feet	None	None	30	40	All			
		<u>Impoundment</u>									
Storage Volume	ac. ft.	5	10	40	100	All					
Effective Height of Dam	feet	5	10	15	25	35					

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Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
359	Waste Treatment Lagoon	Aerobic-Surface Area	acres	0.25	0.50	1.0	8	25			
		Anaerobic Volume	cu. ft. (thous)	50	100	500	1,000	2,000			
		Effective Height of Dam	feet	5	5	15	25	35			
635	Wastewater Treatment Strip	Area	acres	1	2	5	10	All			
633	Waste Utilization	Area	acres	20	40	160	All	All			
638	Water and Sediment Control Basin	Drainage Area	acres	5	10	20	All	All			
		Fill Height	feet	5	10	12	15	All			
614	Watering Facility	Tank Capacity (System)	gal.	50	150	300	All	All			
		Reservoir Capacity	gal.	500	1000	1500	All	All			
642	Water Well	Diameter	in.	4	6	8	16	All			
351	Well Decommissioning	Diameter	in.	4	6	8	All	All			
755	Well Plugging	Diameter	in.	4	6	8	10	All			
658	Wetland Creation	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Area	acres	0.25	0.50	5	20	All			
659	Wetland Enhancement	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Area	acres	10	20	40	All	All			
657	Wetland Restoration	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Area	acres	10	20	40	All	All			
648	Wildlife Watering Facility	Surface Area	acres	0.25	0.50	1	All	All			
		Capacity of Fabricated Structure	gal	100	200	1000	All	All			

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				I	II	III	IV	V	I&E	Design	Constr.
---	^{2/} Dams and Structures	Hazard Class	---	low	low	low	low	low			
		Drainage Area	acres	20	99	500	1000	2000			
		^{3/} Effective Height	feet	10	15	25	30	35			
		Embankment over active fault	---	None	None	None	None	None			
		<u>Open Channel Spillways</u>									
		slope > 0.5%	acres	40	80	640	960	12,800			
		slope < 0.5%	sq. mi.	0.25	1	5	10	20			
		<u>Principal Spillway Prefabricated Conduit (Single)</u>									
		<u>Corrugated Metal</u>									
		Inside Diameter	in.	12	24	36	42	48			
		^{4/} Total Head	feet	10	15	25	30	All			
		<u>Concrete</u>									
		Inside Diameter	in.	None	12	24	36	48			
		^{4/} Total Head	feet	None	10	20	30	All			
		<u>HDPE</u>									
		Inside Diameter	in.	12	24	36	42	48			
		^{4/} Total Head	feet	3	5	10	15	All			
		<u>Plastic (PVC)</u>									
		Inside Diameter	in.	8	12	15	18	48			
		^{4/} Total Head	feet	5	10	15	20	All			
		Storage x Height	ac-ft ²	500	1,000	2,000	3,000	3,000			
		<u>Straight Drop Spillways (Std Design)</u>									
		Net Drop	feet	None	4	6	8	8			
		Weir Capacity	cfs	None	100	300	400	500			
		<u>Box Inlet Drop Spillways Open or to Conduit</u>									
		Net Drop	feet	None	3	4	5	6			
		Weir Capacity	cfs	None	100	300	400	500			
		<u>Chutes (Std. Design)</u>									
		Net Drop	feet	None	4	8	10	12			

^{2/} Dams & Structures - All with relatively impervious cutoff, simple foundation needs, and standard or proven designs not exceeding the limits of effective height and total head set forth above in the above table.

^{3/} Effective height of dam is the difference in elevation in feet between the lowest open channel auxiliary spillway crest and the lowest point in the original profile along the centerline of the dam. If there is no open channel auxiliary spillway, the top of the dam becomes the upper limit.

^{4/} Total head is measured from crest of auxiliary spillway to elevation at the top of pipe outlet.

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ENGINEERING JOB APPROVAL AUTHORITY ^{1/}

Name: _____ Title: _____ Grade: _____

Delegated by: _____ Title: _____ Date: _____
(Responsible Engineer)

Concurred By: _____ Title: _____ Date: _____
(Line Officer)

This form will be reviewed with the employee annually and revised as needed. If no significant changes are made, the following table will be used to document that the review has been made by the appropriate engineering personnel.

Reviewed by	Title	Comments	Date:

DEFINITIONS OF MAXIMUM APPROVAL LIMITS COLUMN

Inventory and Evaluation (I&E) - Onsite review of an exploratory nature and preparation of sound engineering alternative solutions of sufficient intensity for the land owner to make treatment decisions. I&E's may require assistance from engineers with higher engineering job approval authority for large or complex jobs.

Design - Designing and checking all aspects of supporting data, drawings, and specifications to ensure that the planned practice will meet the purpose for which it is installed. Also includes determining and setting any specific requirements for the site conditions.

Construction – Includes survey construction layout, inspections of construction materials, and construction inspection including performing required tests to determine that the job meets the requirements of the plans and specifications.

Standard designs noted under practice name are those engineering drawings and design criteria that have been approved and distributed or otherwise approved by the State Conservation Engineer. Standard designs are developed to function satisfactorily based on a set of design parameters. The person responsible for design and approval shall verify that the standard design is adaptable to the site and the design limitations are not exceeded.

^{1/} Approval of engineering work within the limits of the engineering job approval authority places the full responsibility on the individual for planning, design, and construction of the practice. Any engineering practice may involve complexities, such as geology or hydrology, with which the employee may be unfamiliar. Employees shall request assistance when complexities are encountered which exceed their expertise. The employee approving the engineering design shall check the designs, drawings, and specifications and be satisfied that (1) adequate field investigations have been made; (2) the plans conform to NRCS standards and policy; (3) the layout is suitable; and (4) installations, if constructed in accordance with the plans and specifications, will function properly. Each sheet of the engineering plans shall be signed and dated by the person approving the plans. See National Engineering Manual for additional information on engineering job approval authority.

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Name:			Title:						Grade:			
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits			
				I	II	III	IV	V	I&E	Design	Constr.	
--	Any Practice	Hazard Potential as defined in 503 NEM	---	Low	Low	Low	Low	Low.				
560	Access Road	Surface Treatment	kind	Un-surfaced	Gravel	Gravel	Asphalt	All				
		Length	feet	2,000	5,000	10,000	20,000	All				
		Grade	%	3	5	8	10	All				
		Culvert Pipe, I.D.	feet	2	3	4	5	6				
		Fill Height Over Top of Culvert	feet	3	5	8	12	All				
		Other Water Control Structures	2/	2/	2/	2/	2/	2/	2/	2/	2/	
316	Animal Mortality Facility <u>Normal Mortality</u>	Composters	Capacity	cu. ft.	1,000	2,000	3000	5000	All			
		Freezers	Capacity	cu. ft.	None	None	All	All	All			
		Incinerator	Capacity	lbs.	None	None	All	All	All			
		<u>Catastrophic Mortality Events</u>	Burial Pit	Capacity	cu. ft.	None	None	All	All	All		
			Composting	Capacity	cu. ft.	None	None	All	All	All		
			Animal Trails and Walkways	Area	acres	0.5	2	5	10	All		
		397	Aquaculture Ponds	2/	2/	2/	2/	2/	2/	2/	2/	2/
Surface Area	acres			1	2	5	10	All				
584	Channel Stabilization	Design Capacity	cfs	10	100	300	400	500				
		Design Velocity	fps	2	2.5	3	5	10				
326	Clearing & Snagging	Length of Reach	feet	500	1,500	2,500	All	All				
360	Closure of Waste Impoundments	Surface Area	acres	0.5	1.0	3.0	10	All				
317	Composting Facility (Std. Design)	Design Capacity	cu. ft.	1,000	2,000	3,000	5,000	All				

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(210-V-NEM, Amend. TN16, March 2007)

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Name:				Title:					Grade:		
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
362	Diversion	Drainage Area	acres	5	20	40	100	All			
432	Dry Hydrant	Capacity	gpm	500	1,000	2,000	All	All			
393	Filter Strip	Surface Area	acres	0.5	1	5	All	All			
412	Grassed Waterway	Design Capacity	cfs	25	50	100	250	All			
561	Heavy Use Area Protection	Area Treated	Acres	0.25	0.5	1.0	All	All			
		Surface Treatment	kind	Gravel	Gravel	Concrete	All	All			
436	Irrigation Storage Reservoir	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
		Storage Capacity	ac-ft	5	10	20	40	All			
441	Irrigation System, Microirrigation	System Area	acres	10	40	80	160	All			
		Slope	%	0.5	2	5	All	All			
442	Irrigation System, Sprinkler	System Area	acres	10	40	80	160	All			
		Slope	%	2	5	10	All	All			
447	Irrigation System, Tailwater Recovery	Pump-back Capacity	gpm	500	1,000	2,500	5,000	All			
		Area Served	acres	20	80	160	320	All			
430	Irrigation Water Conveyance, Pipeline	Pipeline Capacity ≥ 50 psi	gpm	300	600	1,200	2,000	3,500			
		Pipeline Capacity ≤ 50 psi	gpm	300	600	1,200	2,000	5,000			
460	Land Clearing	Area Cleared	acres	5	10	40	All	All			
466	Land Smoothing	Area Smoothed	acres	40	80	160	320	All			
468	Lined Waterway or Outlet	Design Capacity	cfs	10	50	100	300	All			
500	Obstruction Removal	Hazard to Public During Removal									
		None	acres	0.5	1	3	All	All			
		Moderate to High	acres	None	None	None	None	None			
516	Pipeline	Operating Pressure	psi.	60	80	125	200	300			
		Inside Diameter	in.	2	3	4	6	8			

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Name:			Title:					Grade:			
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	I&E	Design	Constr.
378	Pond Embankment Excavated	Water Surface Area	acres	0.25	0.50	1.0	All	All			
521	Pond Sealing or Lining	Area Lined	acres	0.25	0.5	2	5	All			
533	Pumping Plant	<u>Centrifugal Pump</u>									
		Design Capacity	gpm	10	20	50	100	All			
		Static Head	feet	75	150	300	350	350			
568	Recreation Trail and Walkway	Length	feet	1,000	5,000	10,000	All	All			
		Surface Treatment	kind	No Treat.	Wood Chips	Gravel	All	All			
558	Roof Runoff Structure	Roof Area	sq. ft.	2,000	10,000	All	All	All			
572	Spoil Spreading	Area Receiving Spoil	acres	0.25	0.50	3.0	All	All			
578	Stream Crossing	Drainage Area	Acre	500	1,000	2,000	5,000	All			
		Height of Bank	Feet	4	6	10	14	All			
		Culvert Size (inside diameter)	Inches	18	24	48	60	72			
574	Spring Development	Spring Flow	gpm	10	50	300	450	All			
580	Streambank and Shoreline Protection	<u>Shorelines, Revetments, Bulkheads</u>									
		Water Height Above Shoreline	feet	None	None	None	None	3			
		Bank Full Capacity	cfs	None	None	200	500	5,000			
		Bank Full Velocity	fps	None	None	3	5	10			
587	Structure for Water Control	Design Capacity	cfs	10	50	100	300	All			
606	Subsurface Drain	Design Area	acres	10	40	160	640	All			
		Diameter	in.	4	8	12	24	All			
600	Terrace	Area of System	acres	25	50	100	All	All			
620	Underground Outlet	Pipe Diameter	in.	6	8	10	12	All			

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(210-V-NEM, Amend. TN16, March 2007)

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Name:		Title:							Grade:			
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits			
				I	II	III	IV	V	I&E	Design	Constr.	
313	Waste Storage Facility (Std. Design)	<u>Structure</u>										
		<u>Wall Height</u>										
		Above Ground	feet	0	3	6	10	16				
		Below Ground	feet	0	3	5	8	8				
		<u>Tank Span</u>										
		Above Ground	feet	0	0	0	All	All				
		Below Ground	feet	0	0	0	14	16				
		<u>Storage Capacity</u>	cu. ft. (thous)	0	0	0	1,000	2,000				
		<u>Roof Clear Span</u>	feet	None	None	30	40	All				
		<u>Impoundment</u>										
	Storage Volume	ac. ft.	5	10	40	100	All					
	Effective Height of Dam	feet	5	10	15	25	35					
635	Wastewater Treatment Strip	Area	acres	1	2	5	10	All				
633	Waste Utilization	Area	acres	20	40	160	All	All				
638	Water and Sediment Control Basin	Drainage Area	acres	5	10	20	All	All				
		Fill Height	feet	5	10	15	All	All				
614	Watering Facility	Tank Capacity (System)	gal.	50	150	300	All	All				
		Reservoir Capacity	gal.	500	1000	1500	All	All				
642	Water Well	Diameter	in.	4	6	8	16	All				
351	Well Decommissioning	Diameter	in.	4	6	8	All	All				
755	Well Plugging	Diameter	in.	4	6	8	10	All				
658	Wetland Creation	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	
		Area	acres	0.25	0.50	5	20	All				
659	Wetland Enhancement	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	
		Area	acres	10	20	40	All	All				
657	Wetland Restoration	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	
		Area	acres	10	20	40	All	All				
648	Wildlife Watering Facility	Surface Area	acres	0.25	0.50	1	All	All				
		Capacity of Fabricated Structure	gal	100	200	1000	All	All				

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Name:				Title:					Grade:			
Prac. Code	Practice Name	Controlling Factors	Units	Job Class					Max. Approval Limits			
				I	II	III	IV	V	I&E	Design	Constr.	
---	^{2/} Dams and Structures	Hazard Class	---	low	low	low	low	low	low	low	Low	
	<u>Practices Covered Under this Section</u>	Drainage Area	acres	20	99	500	1000	20.0				
402	Dams	^{3/} Effective Height	feet	10	15	25	30	35				
410	Grade Stabilization Structure	Embankment over active fault	---	None	None	None	None	None				
350	Sediment Basin	Storage	ac-ft	25	50	100	200	All				
		<u>Open Channel Spillways</u>										
		slope > 0.5%	acres	40	80	640	960	12,800				
		slope < 0.5%	sq. mi.	0.25	1	5	10	20				
		Principal Spillway Prefabricated Conduit (Single)										
		<u>Corrugated Metal</u>										
		Inside Diameter	in.	12	24	36	42	48				
		^{4/} Total Head	feet	10	15	25	30	All				
		<u>HDPE</u>										
		Inside Diameter	in.	12	24	36	42	48				
		^{4/} Total Head	feet	3	5	10	15	All				
		<u>Plastic (PVC)</u>										
		Inside Diameter	in.	8	12	15	18	48				
		^{4/} Total Head	feet	5	10	15	20	All				
		<u>Straight Drop Spillways (Std Design)</u>										
		Net Drop	feet	4	4	4	6	8				
		Weir Capacity	cfs	50	100	150	400	500				
		<u>Chutes (Std. Design)</u>										
		Net Drop	feet	None	4	8	10	12				

^{2/} Dams & Structures - All with relatively impervious cutoff, simple foundation needs, and standard or proven designs not exceeding the limits of effective height and total head set forth above in the above table.

^{3/} Effective height of dam is the difference in elevation in feet between the lowest open channel auxiliary spillway crest and the lowest point in the original profile along the centerline of the dam. If there is no open channel auxiliary spillway, the top of the dam becomes the upper limit.

^{4/} Total head is measured from crest of auxiliary spillway to elevation at the top of pipe outlet.