PART 501 – AUTHORIZATIONS
SUBPART A – REVIEW AND APPROVAL

ND501.0(A) General

(1) The State Conservation Engineer is the Registered Professional Engineer in "responsible charge" of engineering assistance provided by North Dakota NRCS employees. The SCE provides management and oversight for the technical quality of engineering work by ND NRCS employees via the system of Engineering Job Approval Authorities, Engineering Spot Checks, and guidance contained in the Field Office Technical Guide, National Engineering Manual, and Engineering Field Handbook with associated state specific supplements.

(2) ND NRCS policy in regards to planning, design, and inspection of engineering practices applies to all employees regardless of job classification. In all cases, assignment and utilization of job approval authority denotes understanding and acceptance of the Field Office Technical Guide, National Engineering Handbook, and National Engineering Manual as the recognized design standards of the agency.

ND501.1(B) Scope

Non-NRCS employees who are not federal employees, and who are not licensed to practice engineering in North Dakota, may not be assigned engineering job approval authority. This guidance does not restrict a person without job approval authority from providing engineering assistance if someone with appropriate authority is involved in that particular phase of the project and has the ability to review and approve the work. See NEM Part 505 for additional guidance on the use of non-NRCS engineering services in North Dakota.

ND501.3(A) Compliance of Engineering Work with Laws and Regulations

(1) The State Conservation Engineer, State Design Engineer, and each Area Engineer will maintain licensure as a Professional Engineer in the State of North Dakota.

(2) Title 210 of the General Manual, Part 402.5, provides guidance regarding the responsibilities of practicing Professional Engineers employed by the NRCS. Adherence to the National Engineering Manual, Conservation Practice Standards, and appropriate use of NRCS technical references such as the National Engineering Handbook, Engineering Technical Releases, Design Notes, and Technical Notes, will limit the potential for personal liability in the case of a negligence suit.

(3) Prior to providing technical assistance for a practice likely requiring substantial permitting requirements, the cooperator must indicate their willingness to follow through with the process and finance related permitting fees. NRCS may not provide assistance under conditions where the cooperator declines to obtain required permits, or where ongoing litigation exists. When providing assistance to Large Confined Animal Feeding Operations, as classified by EPA under the Clean Water Act, the cooperater must submit for a NPDES permit with the ND Department of Health

The ND Department of Health provides guidelines in Section 2.2 of their Livestock Program Design Manual as to when operations in the Medium or Small AFO category should seek a ND DOH determination of "No Potential to Pollute" to confirm a permit is not required. Given that no potential for direct discharge exists when projects are designed under ND NRCS Practice Standard requirements, only those operations that meet either of the following criteria must contact ND DOH for that determination:

- ✓ Medium AFO's which are located within ¼ mile of a perennial stream or river.
- ✓ Small or Medium AFO's within the 25-year floodplain of a stream or river.

Definitions of Small, Medium, and Large Animal Feeding Operations are provided in the ND DOH Livestock Program Manual at:
http://www.ndhealth.gov/WQ/AnimalFeedingOperations/AFOProgram.htm

ND501.3(C) Compliance of Engineering Work with Laws and Regulations

(4) All engineering work designed by NRCS, other than designs requiring approval by a licensed Professional Engineer, shall, before being furnished to the user, be approved by a qualified ND NRCS employee who is closest to the job. A qualified person is defined as an ND NRCS employee who has the appropriate engineering job approval authority for "design".

(5) For the situations listed below, ND NRCS employees who are Registered Professional Engineers in North Dakota shall seal plans for works within their job approval authority and technical proficiency.

a. Projects that require submittal to a regulatory agency for review, approval, or the granting of permits.
b. Public works projects for which the estimated construction cost exceeds the sum as set forth in the North Dakota Century Code ($100,000 per Code 43-19.1-28).
c. Designs for the following conservation practices:
   - ✓ 366: Anaerobic Digester
   - ✓ 316: Animal Mortality Facility
   - ✓ 360: Closure of Waste Impoundments
   - ✓ 317: Composting Facility
   - ✓ 402: Dam
   - ✓ 348: Dam, Diversion
   - ✓ 356: Dike (Class V)
   - ✓ 362: Diversion (Class III and higher)
   - ✓ 410: Grade Stabilization Structure
   - ✓ 552: Irrigation Regulating Reservoir
   - ✓ 436: Irrigation Storage Reservoir
   - ✓ 582: Open Channel
   - ✓ 378: Pond, Embankment (Class III and higher)
   - ✓ 367: Roofs and Covers
   - ✓ 632: Solid/Liquid Waste Separation System
   - ✓ 584: Stream Channel Stabilization
   - ✓ 578: Stream Crossing (Culverts Class III and higher, all Bridges)
   - ✓ 580: Streambank Protection (Class IV and higher)

- ✓ 587: Structure for Water Control (Class IV and higher)
- ✓ 313: Waste Storage Facility
- ✓ 359: Waste Treatment Lagoon

ND501.4(B) Engineering Job Approval Authority

(2) Form ND-ENG-57 outlines the controlling factors, by practice standard, by project phase, for engineering job approval authority to be utilized by ND NRCS employees.

a. Planning job approval authority is required for completing, or approving the work of others, steps 3 through 6 of the conservation planning process, typically done in the process of developing a program contract. Planning documentation for engineering practices will contain a determination of job approval authority for each practice involved, and an indication of who provided approval for that. See Part 510 for additional requirements related to planning engineering practices.

b. Design job approval authority is required to complete, or approve, a design package prior to providing it to a producer/contractor. The design documentation will include clear documentation of job approval authority, by practice, and a signature of the approving individual. See Part 511 for additional requirements.

c. Inspection job approval authority is required to inspect, or supervise the inspection of, construction of an engineering practice and to provide final approval prior to certification for payment. See Part 512 for additional requirements.

d. Assignment of engineering job approval authority will be made to field office employees by the Area Engineer, on the basis of demonstrated competency in planning, design, and/or inspection of the specific practice. A general rule of thumb is that the employee should have successfully completed the technical work independently, on at least 2 projects prior to assigning JAA. When employees transfer from another Area, or State, samples of their previous work may be utilized for that review.

e. Assignment of engineering job approval authority will be made to Area Engineers, as well as State Office engineers and other technical employees, by the State Conservation Engineer.

Form ND-ENG-57, Rev 10/2014

NRCS - North Dakota Engineering Job Approval Authority

Employee Name: _____ Title: _____ Grade: _____ Location: _____

Delgated By: _____ Title: _____ Date: _____
(Responsible NRCS-North Dakota Engineer)

Concurred: _____ Title: _____ Date: _____
(Supervisor)

NOTES

1. Engineering job approval authority is delegated based on the NRCS North Dakota employee's training, experience, and demonstrated competence.
2. NRCS North Dakota employees shall not approve the planning, design, or construction of engineering practices that exceed their individual job approval authority for the practice by project stage.
3. Engineering job approval authority for field office employees may only be delegated by the responsible Area Engineer. Engineering job approval authority will be granted to Area Engineers, and state office employees, by the State Conservation Engineer.
4. The controlling factor that results in the highest classification determines the Job Class. The listed quantity is the maximum allowed under that job class. For example, an irrigation pipeline with a design capacity of 2,200 gpm and maximum design pressure of 45 psi is a Job Class IV.
5. Planning, design, or construction of engineering work not incorporated into a ND Practice Standard, or more complex than a Job Class 5, must be approved by the State Conservation Engineer.
6. All jobs to be constructed under a formal (FAR) contract must be approved by the State Conservation Engineer.
7. Job Class I-V for all practices is limited to low hazard potential as defined in NEM Part 503.
8. Planning documentation, design drawings, and asbuilt/inspection notes shall include clear documentation of the practices involved, job class for each, and the approving ND NRCS employee.
9. Evaluations of existing components for Comprehensive Nutrient Management Plans may be approved only when the practices involved are within the ND NRCS employees individual job approval authority for Planning.
10. NRCS NEM policy regarding checking must be followed at the design phase of the project, regardless of JAA.

REVIEW REQUIREMENTS

Individual Engineering Job Approval Authority will be reviewed with the ND NRCS employee as required by policy in NEM501 and revised as needed. If no significant changes are made, the following table will be used to indicate the review has been made by the appropriate ND NRCS engineer.

Chart Reviews

Initials _____

Date

DEFINITIONS OF INDIVIDUAL ENGINEERING JOB APPROVAL AUTHORITY CATEGORIES

Planning – Technical work required to complete steps 3 through 6 of the conservation planning process, for alternatives that include engineering practices. May include field investigations, evaluation of existing infrastructure, planning level survey work, and preliminary computations required to determine feasibility, technical eligibility, material quantities, and estimate costs for engineering alternatives. Typically considered at the level of a 'conceptual design' in the engineering profession. May require assistance, or review and approval, from higher levels for complex or unusual practices. NEM 501, 510

Design – All work required to produce final design documents for engineering practices in accordance with practice standards and other agency engineering requirements. Includes final survey work, field investigations, engineering analysis (hydrologic, hydraulic, structural, geotechnical, ect.) as necessary to produce final design report, drawings, construction specifications, inspection plan, and operation and maintenance plan. May require assistance, or review and approval, from higher levels for complex or unusual practices. NEM 501, 511

Construction - Technical work required to determine that construction of conservation practices has or is being performed in accordance with design drawings and specifications. Includes surveys for construction staking, layout, materials evaluation/testing, recording inspection notes, and producing final asbuilts and certification quantities. May require assistance, or review and approval, from higher levels for complex or unusual practices. NEM 501, 512

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
	Any Practice	Hazard Potential per 501.7C	CLASS	Low	Low	Low	Low	Low			
560	Access Road	Road Length	MI	0.5	1	2	3	All			
366	Anaerobic Digester, Controlled Temperature	Daily Treatment Volume	CFT	None	None	None	None	All			
575	Animal Trails and Walkways	Length	FT	None	500	1,000	2,000	All			
316	Animal Mortality Facility	Capacity-Dead Animals	CFT	1,250	2,500	5,000	All	All			
450	Anionic Polyacrylamide (PAM)	Application Area	AC	None	10	40	All	All			
396	Aquatic Organism Passage	See Stream Crossing for JC Criteria									
		Drainage Area	SQMI	10	20	50	100	All			
326	Clearing and Snagging	Linear Ft. of Channel	FT	None	None	500	2,000	All			
360	Closure of Waste Impoundments	Volume	CYD	None	2,000	5,000	10,000	All			
		Capacity-Dead Animals	CFT	1,250	2,500	5,000	All	All			
317	Composting Facility	Litter/Manure	CFT	10,000	20,000	50,000	All	All			
		Effective Height of Fill	FT	None	None	3	6	All			
		Storage Volume at Top of Fill	AC-FT	None	12.5	25	50	All			
656	Constructed Wetland	Drainage Area	AC	None	100	320	640	All			
402	Dam	1/									
		Streamflow(25yr.Freq.)	CFS	None	200	500	1,000	2,000			
		Flow Diverted	CFS	None	50	100	150	200			
348	Dam, Diversion	Height of Drop	FT	None	2	4	6	8			
		Water Height	FT	None	2	4	6	12			
356	Dike	Hazard	CLASS	None	III	III	III	III			
362	Diversion	Design Capacity	CFS	10	50	100	200	500			
554	Drainage Water Management	Area	AC	20	40	80	160	All			
410	Grade Stabilization Structure	1/									
412	Grassed Waterway	Design Capacity	CFS	10	50	100	200	500			
		Area Protected									
		Vegetative Cover	AC	None	2	6	10	All			
561	Heavy Use Area Protection	Paved Surfacing	AC	None	0.5	2	4	All			
320	Irrigation Canal or Lateral	Design Capacity	CFS	None	None	50	100	500			
388	Irrigation Field Ditch	Design Capacity	CFS	3	5	10	15	50			
		Average Volume / AC	CY/AC	None	500	750	1,000	All			
464	Irrigation Land Leveling	Max Cut	IN	None	6	12	18	All			
436	Irrigation Storage Reservoir	1/									
430	Irrigation Pipeline	Design Capacity	GPM	None	None	1,500	3,000	3,500			
		Design Pressure	PSI	None	None	80	160	All			
428	Irrigation Water Conveyance	Design Capacity	CFS	None	10	50	100	500			
	Ditch & Canal Lining	Design Velocity	FPS	None	2	4	6	8			
466	Land Smoothing	Design Area	AC	None	40	80	All	All			
		Drainage Area	AC	None	None	300	640	All			
468	Lined Waterway Outlet	Capacity	CFS	None	None	50	100	All			
576	Livestock Shelter Structure	Preapproved Portable Shelter - Height	Ft	All	All	All	All	All			
		Permanent Structure – Height	Ft	None	None	8	10	All			

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
441	Microirrigation	Area Irrigated	AC	None	None	None	10	All			
353	Monitoring Well	Well Plan	EACH	None	None	None	None	All			
500	Obstruction Removal	No Hazard to Public Area to be Treated	AC	None	All	All	All	All			
582	Open Channel	Design Capacity	CFS	None	None	100	200	500			
		Design Velocity	FPS	None	None	3	5	10			
516	Pipeline	Length	MI	None	0.5	2	5	30			
		Diameter	IN	None	1.5	2	4	8			
		Pressure	PSI	None	125	160	200	300			
378	Pond (Embankment)	1/									
		Storage	CYD	1,000	1,500	2,000	2,500	All			
521	Pond Sealing or Lining										
521A	Flexible Membrane	Maximum Water Depth	FT	None	8	12	15	All			
521B	Soil Dispersant	Maximum Water Depth	FT	None	None	None	8	All			
521C	Bentonite Sealant	Maximum Water Depth	FT	None	8	12	15	All			
521D	Cutionic Emulsion	Maximum Water Depth	FT	None	None	None	None	All			
521E	Asphalt Sealed Fabric	Maximum Water Depth	FT	None	8	12	15	All			
462	Precision Land Forming	AC Treated	AC	None	None	20	80	160			
533	Pumping Plant	*Centrifigual Pump*									
		Design Capacity	GPM	500	1000	1800	3000	3500			
		Static Head	FT	100	165	205	265	350			
		Low Volume Pump									
		Design Capacity	GPM	None	5	10	20	30			
		Static Head	PSI	None	100	200	300	400			
		Turbine Pump									
		Design Capacity	GPM	500	1000	1,800	3,000	3,500			
		Static Head	PSI	100	165	265	400	500			
		Manure Pit Pump									
		Pipeline Length	FT	None	None	500	1,500	All			
		Design Capacity	GPM	None	None	None	400	800			
		Static Head	PSI	None	None	80	100	125			
555	Roof Runoff Structure	Roof Area	SQFT	None	1,000	5,000	10,000	All			
367	Roofs and Covers	Seasonal	SQFT	None	None	5,000	10,000	All			
		Permanent- Max Span	FT	None	None	50	100	All			
		Floating Pond Covers	SQFT	None	None	8,000	20,000	All			
350	Sediment Basin	1/									
632	Solid/Liquid Waste Separation Facility	Settling Basin Capacity	CUFT	None	None	100,000	200,000	All			
		Mechanical Methods	Types	None	None	None	None	All			
574	Spring Development	Capacity	GPM	None	5	10	All	All			
442	Sprinkler	Area Irrigated	AC	None	None	160	640	1280			
584	Stream Channel Stabilization	Design Capacity	CFS	None	None	200	500	1000			
		Design Velocity	FPS	None	None	6	8	10			
578	Stream Crossing	Ford- Max Design Velocity	FPS	None	2	4	6	All			
		Culvert - Max Horiz Span	FT	2	4	8	12	26			
		Bridge - Clear Span	FT	None	None	None	16	30			
580	Streambank Protection	Design Flood Flow	CFS	150	300	500	1,000	2,000			

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
		Design Flood Velocity	FPS	2	4	6	8	10			
		Eroded Bank Height	FT	3	5	10	15	25			
	Shoreline Protection	Water Height above Shoreline	FT	None	None	None	2	3			
587	Structure for Water Control	1/									
606	Subsurface Drain	Diameter	IN	None	8	16	24	All			
443	Surface & Subsurface Irrigation	Area Irrigated	AC	None	None	80	160	640			
		Gated Pipe- Max Head	FT	None	None	10	15	25			
		Gated Pipe- Min Head	FT	None	None	5	3	1			
607	Surface Drainage, Field Ditch	Design Capacity	CFS	None	None	5	10	All			
608	Surface Drainage, Main or Lateral	Design Capacity	CFS	10	25	100	500	1000			
		Design Velocity	FPS	None	None	None	5	10			
447	Tailwater Recovery	Design Capacity	CFS	None	None	1	3	All			
628	Underground Outlet	Inside Diameter	IN	None	8	16	24	All			
635	Vegetated Treatment Area	Infiltration Area	AC	1	2	5	10	All			
630	Vertical Drain	Design Capacity	CFS	None	10	50	100	All			
313	Waste Storage Facility	Storage Capacity	CFT	None	None	500,000	1 Million	2 Million			
	Storage Pond	Embankment Height	FT	None	None	15	20	35			
		Depth to Groundwater	FT	None	None	6	4	All			
	Below Ground Storage Tank	Wall Height	FT	None	None	6*	8*	All			
		Span	FT	None	None	12*	20*	All			
	Above Ground Storage Tank	Wall Height	FT	None	None	6*	10*	All			
		Width-Rectangular Structure	FT	None	None	12*	18*	All			
		Diameter-Circular Structure	FT	None	None	60*	80*	All			
	Stacking Facility	Wall Height	FT	None	None	6*	8*	All			
634	Waste Transfer		GPM	None	100	300	500	All			
		Volume	CFT	None	300,000	500,000	1 Million	All			
359	Waste Treatment Lagoon	Aerobic-Surface Area	AC	None	None	None	10	25			
		Anaerobic-Volume	CFT	None	None	None	1 Million	2 Million			
		Effective Height of Dam	FT	None	15	25	30	35			
614	Watering Facility	Stock Tank Capacity	GAL	None	1200	3000	6000	All			
		Storage Tank (Cistern) Capacity	GAL	None	None	8000	20000	All			
636	Water Harvesting Catchment	Area	SQFT	2,000	10,000	25,000	40,000	All			
638	Water and Sediment Control Basin	Fill Height - Dist.from Top of Ridge to Ground Surface Straight Line	FT	None	4	6	10	All			
		Drainage Area	AC	None	80	160	640	All			
642	Water Well	Depth of Well	FT	None	100	250	500	All			
658	Water Well Testing	Testing Plan	EACH	None	None	None	None	All			
658	Wetland Creation	Effective Height of Fill	FT	None	None	3	6	All			
		Storage Volume at Top of Fill	AC-FT	None	12.5	25	50	All			
		Drainage Area	AC	None	100	320	640	All			
351	Well Decommissioning	Well Diameter	IN	None	≥10	≥ 4 & < 10	< 4	All			
		Well Depth	FT	None	50	100	250	All			

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
		Effective Height of Fill	FT	None	None	3	6	All			
		Storage Volume at Top of Fill	AC-FT	None	12.5	25	50	All			
659	Wetland Enhancement	Drainage Area	AC	None	100	320	640	All			
		Effective Height of Fill	FT	None	None	3	6	All			
		Storage Volume at Top of Fill	AC-FT	None	12.5	25	50	All			
657	Wetland Restoration	Drainage Area	AC	None	100	320	640	All			

* Designs incorporate the use of Standard Detailed Drawings without structural modification of the drawings.

Note: When the defined limit is exceeded the project is considered to be in the next job class.

Definitions

Maximum fill height is the maximum difference in elevation between the top of the dam (on centerline including allowance for settlement) and the lowest point in the channel (on centerline).

Effective height of dam is the difference in elevation in FT between the lowest open channel emergency spillway crest and the lowest point in the original cross section on the centerline of the dam. If there is no open channel emergency spillway, the top of the dam becomes the upper limit.

Drainage area includes all areas that contribute runoff to the structure or project site.

Diameter is the inside diameter of the pipe or conduit. For pipe drop inlets, it is the diameter of the barrel.

Drop is the vertical distance in FT between the crest of the inlet or weir and invert of the outlet. This is not to be confused with hydraulic head above any point in the structure.

Pumping lift is the vertical distance between the water surface at the pump intake and the discharge water surface.

Code No.	Practice	Controlling Factors	Units	Job Classes					RESPONSIBILITY LIMITS		
				I	II	III	IV	V	Planning	Design	Construction
1/ All with relatively impervious cutoff, simple foundation needs, and standard or proven designs not exceeding the limits set forth below:											
		Hazard Class	None	Low	Low	Low	Low	Low			
		Embankment Over Active Fault	None	None	None	None	None	None			
		Effective Height	FT	8	15	25	30	35			
		Drainage Area	SQMI	0.1	0.25	1	3	20			
		Conduit Spillway (Single) Inside Diameter	IN	None	15	24	36	48			
		Box Culvert, Area of Opening	SQFT	None	None	None	12	16			
		Storage X Height	Factor	100	200	1,000	2,000	3,000			
		Reinforced Concrete Structural Spillways (Type B, C, or F)									
		Net Drop	FT	None	None	4	6	8			
		Weir Depth	FT	None	None	2	3	4			
		Weir Capacity	CFS	None	100	150	300	500			
		Box Inlet Drop Spillways									
		Net Drop	FT	None	None	None	4	6			
		Weir Capacity	CFS	None	100	150	300	500			
		Toe Walls									
		Net Drop	FT	None	None	2	3	4			
		Weir Capacity	CFS	None	None	100	200	300			
		Structures									
		Chutes*									
		Reinforced or Formless of Standard Designs with Straight Inlets									
		Net Drop	FT	None	6	8	10	12			
		Weir Depth	FT	None	1.5	2	2	3			
		Weir Capacity	CFS	None	50	75	100	300			
		Riprap									
		Net Drop	FT	None	8	10	12	12			
		Weir Depth	FT	None	1.5	2	2	2			
		Weir Capacity	CFS	None	50	75	150	300			
		Sod									
		Net Drop	FT	None	3	5	7	12			
		Weir Depth	FT	None	1.5	1.5	2	2.5			
		Weir Capacity	CFS	None	25	50	100	300			
		Slide Gate									
		Head < 10 FT	CFS	None	20	50	100	200			
		Head > 10 FT	CFS	None	20	50	100	500			
		Siphon									
		Head	FT	None	None	None	5	10			
		Capacity	CFS	None	None	None	50	100			
		Siphon Per 100 Ft.	FT	None	None	None	0.5	0.5			
		Long Span Supported Pipe, Capacity	CFS	None	None	None	None	10			