

ENGINEERING JOB APPROVAL AUTHORITY

Name: _____ Title: _____ Grade: _____
 Location: _____ Date: _____
 Delegated By: _____ Title: _____ Date: _____
 (Responsible Engineer)
 Concurred: _____ Title: _____ Date: _____
 (Supervisor)

Practice Code	Job Type	Controlling Factors	Units	Job Class					Max. Approval Limits	
				I	II	III	IV	V	Design	Constr.
	Any Practice ¹	Hazard Potential as defined in NEM 503	class	low	low	low	low	low	---	---
313	Waste Storage Facility	1000 lb animal live weight	no.	80	250	500	1000	all	---	---
		Storage capacity	cu. ft. (thous.)	100	250	500	1000	2000	---	---
		Total height of dam	feet	8	15	25	30	35	---	---
		Concrete wall height								
		Std approved drawing	feet	2	4	6	8	8	---	---
		Custom design	feet	0	0	4	6	8	---	---
320	Irrigation Canal or Lateral	Design Capacity	cfs	0	25	100	300	500	---	---
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	---	---
349	Dam, Multiple-Purpose	See Structure Criteria on page 5								
356	Dike	Water height	feet	none	3	5	8	12	---	---
359	Waste Treatment Lagoon	Aerobic-surface area	acres	1	3	5	10	25	---	---
		Anaerobic - Total volume	million cubic feet	0.2	0.5	1	1.5	2	---	---
		Total height of dam	feet	8	15	25	30	35	---	---
362	Diversion	Drainage Area	acres	20	40	160	320	all	---	---
		Total Fill Height	feet	3	6	8	all	all	---	---
378	Pond; Embankment	See Structure Criteria on page 5								
	Pond, Excavated	Area served Volume	acres cu. yd.	none none	40 1000	100 2000	300 3000	all all	---	---
388	Irrigation Field Ditch	Design capacity	gpm	750	1500	3000	4000	all	---	---
400	Floodwater Diversion	Design Capacity	cfs	0	25	100	400	500	---	---
		Water Height	ft	0	3	4	5	6	---	---
402	Dam, Floodwater Retarding	See Structure criteria on page 5								
404	Floodway	Design Capacity	cfs	50	100	300	500	1000	---	---
410	Grade Stabilization Structure	See Structure criteria on page 5								
412	Grassed Waterway or Outlet	Design Capacity	cfs	50	100	300	500	all	---	---
		Drainage Area	acres	80	160	320	640	all	---	---
428	Irrigation Water Conveyance – Ditch and Canal Lining									
428A	Nonreinforced Concrete	Design Capacity	cfs	2	5	10	50	100	---	---
428B	Flexible membrane	Design Capacity	cfs	2	5	10	50	100	---	---

¹ Several practices are required to be designed under the direction of a licensed engineer, as specified in the NEM - NE501, Subpart A.

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Practice Code	Job Type	Controlling Factors	Units	Job Class					Max. Approval Limits	
				I	II	III	IV	V	Design	Constr.
430	Irrigation Water Conveyance – Pipeline									
	Gravity Flow System	Design Capacity	gpm	500	1000	1500	2500	3500	---	---
		Max. Operating Pressure ²	psi	50	80	100	150	300	---	---
		Minimum Working Pressure at Outlet	feet	>10	>5	>2	all	all	---	---
	Pumped Flow System	Design Capacity	gpm	500	1000	1500	2500	3500	---	---
		Max. Operating Pressure	psi	50	80	100	150	300	---	---
	Approved Material Types	Aluminum Tubing	Y or N	all	all	all	all	all	---	---
		Concrete	Y or N	all	all	all	all	all	---	---
Plastic		Y or N	all	all	all	all	all	---	---	
Steel		Y or N	all	all	all	all	all	---	---	
	Rigid Gated Pipe	Y or N	all	all	all	all	all	---	---	
436	Irrigation Storage Reservoir	See Structure Criteria on page 5								
441	Irrigation System - Trickle	System Design Capacity	gpm	50	150	300	750	all	---	---
		Individual lateral line length	feet	300	500	750	1000	all	---	---
(380)	Windbreak Supplemental Water	Design Capacity	gpm	1	5	10	15	all	---	---
		Individual Lateral Line Length	feet	300	500	750	1000	all	---	---
442	Irrigation System - Sprinkler	Design capacity	gpm	500	1000	2000	3000	all	---	---
		Length of main line	feet	500	1500	3000	5000	all	---	---
		Pressure at nozzle	psi	>30	>20	>10	all	all	---	---
443	Irrigation System - Surface and Subsurface	Design capacity	gpm	1000	2000	3000	4000	all	---	---
		Area served	acres	160	320	640	1280	all	---	---
447	Irrigation System, Tailwater Recovery	Area served	acres	160	320	640	1280	all	---	---
		Capacity	ac. ft.	1	2	5	15	all	---	---
449	Irrigation Water Management	Area Served	acres	160	320	640	1280	all	---	---
460	Land Clearing	Design area	acres	40	160	320	640	all	---	---
462	Precision Land Forming	Area shaped	acres	40	80	160	320	all	---	---
		Excavated Volume	cu yd/acre	50	200	500	750	all	---	---
464	Irrigation Land Leveling									
		Plane bench	Design area	acres	40	80	160	320	all	---
	Excavated Volume		cu yd/acre	200	500	750	1000	all	---	---
	Contour bench	Design area	acres	40	80	160	320	all	---	---
		Percent slope	%	2	4	6	8	all	---	---
Excavated Volume		cu yd/acre	200	500	750	1000	all	---	---	
466	Land Smoothing	Design Area	acres	40	80	160	320	all	---	---
516	Pipeline (All Systems)	Length	miles	1	3	5	10	30	---	---
		Diameter	inches	1.5	2	4	6	8	---	---
	Gravity Flow System	Max. Operating Pressure	psi	50	80	100	150	300	---	---
		Min. working pressure at Outlet	feet	>30	>10	>5	>2	all	---	---
Pumped Flow System	Max. Operating Pressure	psi	50	80	100	150	300			

² Maximum Operating Pressure includes surge pressures.

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Practice Code	Job Type	Controlling Factors	Units	Job Class					Max. Approval Limits	
				I	II	III	IV	V	Design	Constr.
521	Pond Sealing or Lining Method of Sealing/Lining									
521A	Flexible Membrane	Surface Area	acres	0.5	2	3	5	all	---	---
521B	Soil Dispersant	Surface Area	acres	1	3	5	8	all	---	---
521C	Bentonite Sealant	Surface Area	acres	1	3	5	8	all	---	---
521D	Cationic Emulsion	Surface Area	acres	1	3	5	8	all	---	---
521E	Asphalt-Sealed Fabric	Surface Area	acres	0.5	2	3	5	all	---	---
533	Pumping Plant for Water Control	Axial flow pump capacity	gpm	none	1000	3000	10000	50000	---	---
		Propeller pump Static head	feet	none	8	12	15	15	---	---
		Mixed flow pump Static head	feet	none	10	15	25	50	---	---
		Centrifugal pumps								
		Design capacity	gpm	none	none	1000	2000	3500	---	---
		Static head	feet	none	none	50	150	350	---	---
		Turbine pumps								
Design capacity	gpm	none	none	none	none	3500	---	---		
Static head	feet	none	none	none	none	350	---	---		
552A	Irrigation Pit	Design capacity See also Structure Criteria on page 5	ac. ft.	5	15	25	75	all	---	---
552B	Irrigation Regulating Reservoir	Design capacity See also Structure Criteria on page 5	ac. ft.	5	20	50	100	all	---	---
560	Access Road	Culvert Pipe: Inside dia. (includes stormwater conduits not associated with access road)	feet	1	2	3	4	6	---	---
561	Heavy Use Area Protection	Area Protected by:								
		Vegetative cover	acres	none	1	5	10	all	---	---
		Paved surfacing	acres	none	0.5	2	4	all	---	---
568	Recreation Facilities WELLS³ (Separate approval criteria applies to complimentary practices, such as: 362, 574, 600, 642, etc.)	Plan of development with engineering structures or involving construction equipment								
		Onsite water supply or sewage treatment	daily design capacity (people)	none	none	none	none	200	---	---
		Offsite public water supply and sewage treatment	daily design capacity (people)	none	none	none	none	400	---	---
574	Spring Development ⁴	Capacity	gpm	5	10	20	50	all	---	---
580	Streambank and Shoreline Protection	Bankfull Capacity	cfs	500	1000	2000	3000	4000	---	---
		Bankfull velocity	fps	2	4	6	8	10	---	---
		Water height above shoreline	feet	none	0.5	1	2	3	---	---

³ 642 -- Wells that will be used to furnish potable water must be designed under the direction of a licensed engineer.

⁴ Separate approval criteria applies to the complimentary practices 516 and 614 which are used simultaneously with 574.

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Practice Code	Job Type	Controlling Factors	Units	Job Class					Max. Approval Limits		
				I	II	III	IV	V	Design	Constr.	
582	Open Channel	Design capacity (Subcritical flow only)	cfs	50	100	200	500	1000	---	---	
		Design Velocity	fps	2	4	6	8	10	---	---	
		Design depth	feet	3	4	5	6	all	---	---	
584	Stream Channel Stabilization	Design capacity	cfs	200	400	600	800	1000	---	---	
		Design Velocity	fps	2	4	6	8	10	---	---	
587	Structure for Water Control	Design capacity See also Structure Criteria on page 5	cfs	5	50	100	300	500	---	---	
600	Terrace	Level	acres	80	160	240	320	all	---	---	
		Gradient	acres	120	240	320	all	all	---	---	
		Parallel	acres	80	160	240	320	all	---	---	
		Cut/Fill	acres	80	160	240	320	all	---	---	
		Tile outlet	acres	40	80	160	240	all	---	---	
606	Subsurface Drain	Area served	acres	20	80	160	320	all	---	---	
607	Surface Drainage										
607A	Field Ditch	Design Capacity	cfs	10	20	50	100	all	---	---	
608	Main or Lateral	Design Capacity	cfs	50	100	200	500	1000	---	---	
		Design velocity	fps	2	4	6	8	10	---	---	
614	Trough or Tank	Design capacity	gal.	1000	2000	5000	10000	all	---	---	
		Height	feet	3	5	8	all	all	---	---	
620	Underground Outlet										
		CLASS 1.	Pipe Diameter	inches	none	8	10	12	all	---	---
		CLASS 2.	Pipe Diameter	inches	none	8	12	18	24	---	---
		CLASS 3.	Pipe Diameter	inches	none	8	10	12	18	---	---
638	Water and Sediment Control Basin ⁵	Height	feet	4	6	8	10	15	---	---	
640	Waterspreading	Area Served	acres	200	500	1000	2000	all	---	---	
642	Well ⁶	Depth	feet	150	300	500	1000	all	---	---	
657	Wetland Restoration	Area ponded See also Structure Criteria on page 5	acres	1	5	25	100	all	---	---	
658	Wetland Creation										
659	Wetland Enhancement										

⁵ Separate approval criteria applies to complimentary practice 620 which is used simultaneously with 638.

⁶ Wells that will be used to furnish potable water must be designed under the direction of a licensed engineer

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STRUCTURE CRITERIA:

Embankments and principal spillways are components of several different conservation practices. Their design and construction is to be consistent regardless of the conservation practice in which they are used. The following job classifications and controlling factors apply to the practices indicated below.

Practice Code	Job Type	Controlling Factors	Units	Job Class					Max. Approval Limits	
				I	II	III	IV	V	Design	Constr.
349	Relatively impervious cutoff, simple foundation needs, and standard or proven designs not exceeding the limits herein described:	Effective height	feet	8	15	25	30	35	---	---
378		Storage X height	ac. ft.	100	300	1000	2000	3000	---	---
402		Contributing drainage area	sq. mi.	0.5	1	2	5	10	---	---
410		Embankment over active fault		none	none	none	none	none	---	---
436		Conduit spillway (single)								
552A		CMP inside diameter	inches	12	18	24	36	48	---	---
552B		PVC inside diameter	inches	none	8	10	12	all	---	---
587		Box culvert								
657		area of opening	sq. ft.	none	none	none	12	16	---	---
658		Reinforced concrete structural spillway Type B, C, or F								
659		Net drop	feet	none	2	4	6	8	---	---
		Weir depth	feet	none	1	2	3	4	---	---
		Weir capacity	cfs	none	100	150	300	500	---	---
		Box inlet drop spillways								
		Net drop	feet	none	2	2	4	6	---	---
		Weir capacity	cfs	none	100	150	300	500	---	---
		Toe wall								
		Net drop	feet	none	2	3	4	4	---	---
		Weir capacity	cfs	none	50	100	200	300	---	---
		Reinforced concrete chutes of standard design with straight inlets								
		Net drop	feet	4	6	8	10	12	---	---
		Weir depth	feet	2	2	3	3	3	---	---
		Weir capacity	cfs	10	100	200	250	300	---	---
	Rock, Gabion or Concrete block chutes									
	Net drop	feet	none	4	4	8	12	---	---	
	Capacity	cfs	none	50	100	200	300	---	---	
	Slide gate									
	Head > 10 feet	cfs	none	20	50	100	200	---	---	
	Head < 10 feet	cfs	none	20	50	100	500	---	---	
	Siphon									
	Head	feet	none	none	3	5	10	---	---	
	Capacity	cfs	5	10	20	50	100	---	---	
	Long span supported pipe									
	Capacity	cfs	none	none	none	none	100	---	---	

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INVENTORY OF ENGINEERING SKILLS
(For use in determining the level of design and construction approval authority.)

Yes or No

DESIGN SKILLS:

- _____ Meets all Core Course Requirements for the Position
- _____ Can develop a stage storage table
- _____ Can balance Cut and Fill
- _____ Can develop a cost estimate
- _____ Can develop data input for Engineering Plan Development Software
- _____ Can use Engineering Plan Development Software
- _____ Can customize NE Series construction and material specifications for specific jobs
- _____ Knows where to use and how to complete standard base drawing sheets
- _____ Can assemble non-complex Plans and Contract information
- _____ Can assemble complex Plans and Contract information

CONSTRUCTION SKILLS:

- _____ Concrete and Steel placement (inspection only)
- _____ Concrete and Steel placement (inspection and concrete testing)
- _____ Conduit installation (steel pipe)
- _____ Conduit installation (plastic pipe)
- _____ Conduit installation (concrete pipe)
- _____ Conduit installation (aluminum pipe)
- _____ Conduit installation (steel pipe with cathodic protection)
- _____ Construction Surveys (Non-complex Plans, elevation/baseline/cross section surveys)
- _____ Construction Surveys (Complex Plans, radial layout and curves)
- _____ Drainfill (Proper Placement)
- _____ Drainfill (Gradation Testing)
- _____ Can judge if NE Series construction and material specifications are being followed
- _____ Can judge if PL-46 or NEH 20 construction and material specifications are being followed
- _____ Can judge if Standard Drawings are being followed
- _____ Can judge if construction complies with the terms of a non-complex contract
- _____ Can judge if construction complies with the terms of a complex contract
- _____ Can determine if Class C (method) compaction requirements are met
- _____ Can do the testing associated with Class A compaction requirements
- _____ Can judge if backfill adjacent to structures is adequate
- _____ Can do a field identification using the United Soil Classification System