

ENGINEERING JOB APPROVAL AUTHORITY

Name:			Title:				Grade:		
Delegated By:			Title:				Date:		
Concurred By:			Title:				Date:		
Practice Code	Practice or Element	Limiting Factors	Job Class 2]					Max. Approval Limit 2]	
			Units	I	II	III	IV	Design	Construct

	ANY PRACTICE	Hazard potential as defined in Sect. 503	-	LOW	LOW	LOW	LOW		
	Hydrology Computations	Method Used	-	EFM2, or Drain. Curve	EFM2, TR-55, or Tx.Eng TN-210 18-TX8	ALL	ALL		
560	Access Road	Surface Treatment	Kind	Gravel	Gravel	Gravel	Gravel		
		Length Grade (Maximum)	ft %	1,000 2	2,000 3	3,000 4	5,000 10		
	Culvert (Includes storm-water conduits not associated with access road)	Pipe I.D. Monolithic concrete opening	in sq ft	18 None	24 None	36 None	60 8		
	Bridge	Span	ft	None	None	None	16		
326	Clearing and Snagging	Length of Reach	ft	None	None	None	10,000		
317	Composting Facility	Design Volume Poultry-Two Stage	cu ft	None	500	1,200	2,000		
348	Dam, Diversion	Stream Flow (25 yr. frequency)	cfs	None	None	None	1,000		
		Flow Diverted Height of Drop	cfs ft	None None	None None	None None	100 5		
402	Dam, Floodwater Retarding	1]						Refer to Dams and Structures. Use appropriate limiting factors.	

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349	Dam, Multiple Purpose	1]							Refer to Dams and Structures. Use appropriate limiting factors.
356	Dike 3]	Water Height Hazard	ft class	None III	1.5 III	3 III	6 III		
362	Diversion	Design Capacity	cfs	75	150	500	ALL		
199	Dry Hydrant	Design Capacity	gpm	500	750	ALL	ALL		
393	Filter Strip	Surface Area	ac	None	None	None	ALL		
400	Floodwater Diversion	Design Capacity Water Height	cfs ft	None None	None None	None None	300 4		
410	Grade Stabilization Structure	1]							Refer to Dams and Structures. Use appropriate limiting factors.
412	Grassed Waterway or Outlet	Design Capacity	cfs	75	200	500	ALL		
561	Heavy Use Area Protection	Area Treated by Vegetation Gravel	ac ac	3 1	10 2	20 5	ALL 10		
320	Irrigation Canal or Lateral	Design Capacity	cfs	None	None	None	200		
388	Irrigation Field Ditch	Design Capacity	cfs	3	15	25	25		
464	Irrigation Land Leveling	Cut Volume 4]	<u>cu yd</u> ac	100	200	300	ALL		

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552A	Irrigation Pit	1]							Refer to Dams and Structures and appropriate Irrigation System for limiting factors.
552B	Irrigation Regulating Reservoir	1]							Refer to Dams and Structures and appropriate Irrigation System for limiting factors.
436	Irrigation Storage Reservoir	1]							Refer to Dams and Structures and appropriate Irrigation System for limiting factors.
441	Irrigation System, Trickle 5]								
	Line Drip Emitters	System Area Design Capacity	ac gpm	10 20	20 40	40 80	320 650		
	Line Source Tubing or Porous Tubing	System Area Design Capacity	ac gpm	10 30	20 60	300 1300	ALL ALL		
	Mini-Sprinkler or Spray Emitters	System Area Design Capacity	ac gpm	10 30	20 60	300 1300	ALL ALL		
442	Irrigation System, Sprinkler 5]	System Area	ac	130	250	640	ALL		
443	Irrigation System, Surface and Subsurface 5]	System Area	ac	100	250	640	ALL		

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447	Irrigation System, Tailwater Recovery 5]	Area Served (See also-Dams & Structures for other limiting factors)	ac	100	250	640	ALL		
428	Irrigation Water Conveyance	Canal Lining (Design Capacity)	cfs	5	25	75	100		
430	Irrigation Water Conveyance	Pipeline Capacity Inlets (ie. Wells)	gpm no.	500 2	1,000 4	2,500 6	3,500 ALL		
449	Irrigation Water Management	Area Served / Irrigation System	ac	160	320	640	ALL		
466	Land Smoothing	Area Smoothed	ac	160	320	640	ALL		
468	Lined Waterway or Outlet	Design Capacity	cfs	None	None	None	300		
500	Obstruction Removal	Length	ft	None	None	None	ALL		
582	Open Channel 6]	Design Capacity Design Velocity (Subcritical Flow Only)	cfs fps	None None	None None	None None	300 6		
516	Pipeline 7]	Length Inside Diameter Maximum Operating Pressure	ft. in psi	2,500 1.25 115	5,000 2 180	25,000 3 180	50,000 <4 216		
378A	Pond, Embankment	1]						Refer to Dams and Structures. Use appropriate limiting factors.	
378B	Pond, Excavated (Effective height <3 ft)	Open Channel Spillway Design Capacity	cfs	50	250	1000	ALL		

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521	Pond Sealing or Lining	Area	ac	None	1	5	7		
462	Precision Land Forming	Cut Volume 8]	<u>cu yd</u> ac	100	200	300	ALL		
532	Pumped Well Drain	Inside Diameter	in	None	None 1]	None	4		
533	Pumping Plant for Water Control								
	Windmill & Pump-jack Pumps	Design Capacity	gpm	5	10	20	55		
	Centrifugal Pumps	Design Capacity	gpm	None	None	300	1,000		
	Submersible Pumps	Design Capacity Static Head (water surface to ground - at pump)	gpm ft	10 250	20 300	100 350	300 350		
554	Regulating Water In Drainage Systems							See Limiting Factors for Type of Drainage.	
570	Runoff Management System	System Area	ac	5	50	ALL	ALL		
350	Sediment Basin	1]						Refer to Dams and Structures. Use appropriate limiting factors.	
574	Spring Development	Spring Flow	gpm	5	10	50	100		

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580	Streambank Protection								
	Beaches & Shorelines, Revetments Bulkheads, and Groins	Height above Mean High Tide or Mean High Water	ft	None	None	None	None		
	Streambanks: Vegetative Protection	Drainage Area	sq mi	None	None	None	20		
	Streambanks: Mechanical Protection	Capacity (Bankfull) Drainage Area Channel Depth at Low Bank	cfs sq mi ft	None None None	None None None	None None None	500 25 6		
584	Stream Channel Stabilization	Design Capacity	cfs	None	None	None	300		
587	Structure for Water Control	1]						Refer to Dams and Structures. Use appropriate limiting factors.	
606	Subsurface Drain	Area Served	ac	30	120	240	320		
607	Surface Drainage, Field Ditch	Area of System	ac	60	160	320	640		
608	Surface Drainage, Main or Lateral	Design Capacity Design Velocity	cfs	20 <5	50 <5	150 <5	300 <6		
600	Terrace 9]	Area of System for Type II Storm	ac	120	240	640	ALL		
		Type III Storm	ac	30	100	320	ALL		
614	Trough or Tank		-	ALL	ALL	ALL	ALL		

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620	Underground Outlet	Mainline Diameter Inlets	in.	8 Single	12 Multi.	15 Multi.	18 Multi.		
312	Waste Management System 10]	Design Capacity 1,000 lb. animal live weight	no.	100	300	500	1000		
		Permit Status		Non-	Non-	Non-	Non-		
313	Waste Storage Facility								
	Waste Storage Pond	Effective Height 11]	ft	None	3	10	15		
		Storage Volume	ac.ft.	None	10	10	15		
		(See Dams & Structures For Other Limiting Factors)							
	Litter Storage Facility	Storage Volume	1000 cu.ft.	20	40	ALL	ALL		
	Waste Storage Structure	Wall Height:							
		Above Ground	ft	None	None	None	8		
		Below ground	ft	None	None	None	8		
		Tank Span:							
		Above Ground	ft	None	None	None	8		
		Below Ground	ft	None	None	None	12		
359	Waste Treatment Lagoon	Anaerobic-Volume	1000 cu ft	None	None	None	650		
		Effective Height of Dam 11]	ft	None	None	None	15		
636	Water Harvesting Catchment	Area of System	ac	20	40	80	160		
638	Water & Sediment Control Basin	Drainage Area	ac	50	100	ALL	ALL		

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640	Water Spreading	Design Flow Rate at Each Inlet: Rangeland Cropland	cfs cfs	None None	None None	None None	1500 750		
642	Well	Casing Diameter	in	4	6	8	12		
657	Wetland Development or Restoration							Refer to Dams and Structures, Dikes, or Water and Sediment Control Basins for limiting factors.	

DAMS and STRUCTURES 1]

		Hazard Class	-	a	a	a	a		
		Inventory Status	-	Non-	Non-	Non-	Non-		
		Effective Height of Dam 11]	ft	10	15	22	27		
		Storage x Height	ac-ft ²	500	750	1,100	1,100		
	Open Channel Spillway	Design Capacity	cfs	100	250	500	1,000		
	Prefabricated Conduits Single I.D. 12]								
	Drop Inlet:								
	Smooth Steel	Diameter	in	None	18	26	48		
	Corrug. Steel	Diameter	in	None	18	36	48		
	Aluminum	Diameter	in	None	18	36	36		
	Concrete	Diameter	in	None	12	24	30		
	PVC Plastic	Diameter	in	None	8	12	12		
	Hooded Inlet:								
	Smooth Steel	Diameter	in	8	18	26	30		
	Corrug. Steel	Diameter	in	None	18	24	30		
	Aluminum	Diameter	in	None	18	24	30		
	PVC Plastic	Diameter	in	8	10	12	12		

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DAMS and STRUCTURES 1] - CONT.

Prefabricated Conduits (Cont.) Single I.D. 12]	Hooded Drop Inlet:									
	Smooth Steel	Diameter	in	None	18	26	48			
	Corrug. Steel Aluminum	Diameter	in	None	18	24	48			
		Diameter	in	None	18	24	36			
	Pipe Drop: Smooth Steel	Total Head	ft	1	2	3	ALL			
		Diameter	in	18	26	26	48			
	Corrug. Steel Aluminum	Diameter	in	18	24	36	48			
		Diameter	in	18	24	36	36			
	PVC Plastic	Diameter	in	12	12	12	12			
	Siphon Spillway:	Smooth Steel	Diameter	in.	8	12	18	18		
			Diameter	in.	None	12	18	18		
		Aluminum PVC Plastic	Diameter	in.	None	12	18	18		
			Diameter	in.	8	12	12	12		
	Chutes	Net Drop	ft	None	None	8	12			
		Weir Depth	ft	None	None	2	3			
Weir Capacity		cfs	None	None	150	200				
Toewall Drop Structure (Metal or Timber)	Net Drop	ft	None	3	4	4				
	Weir Capacity	cfs	None	200	300	300				
Wire Panel Drop Structure	Net Drop	ft	None	None	4	4				
	Weir Capacity	cfs	None	None	100	100				

1] All with relatively impervious cutoff, simple foundation needs, and standard or proven designs not exceeding the limits set forth above.
 2] Refer to (NEM) Part 501, Subpart A for definitions.

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- 3] See Standard for Dike (Code 356) for definition of classes of dikes.
- 4] Units are based on plane of best fit for total field, on first analysis run.
- 5] Irrigation System - An irrigation pipe network and application system should be considered one irrigation system if all wells or water sources are tied together with irrigation water conveyances, with the following exception: irrigation systems can be subdivided by type of system (i.e. sprinkler or surface).
- 6] Velocity and "n" values do not exceed limits of TR-25, and grade control structures are not required.

- 7] Pipeline designed and installed greater than 4" in diameter, shall meet criteria found in the appropriate Irrigation Water Conveyance Standard-430.
 - 8] Units are based on design volume for precision land formed area.
 - 9] Terrace System size will be based on total field size not broken into numerous small watersheds within a field. Limits are based on geographic location and Figure 2, pg. 20, Texas Eng. Tech Note 210-18-TX5.
 - 10] Waste Management Systems on "dry" animal waste operations, whose only component practices are the primary responsibility of Ecological Sciences (i.e. waste utilization) and do not employ engineering structural practices for rainfall runoff diversion, waste storage, or treatment do not require engineering job approval authority. Policy concerning design and approval for these types of systems will be developed by the State Resource Conservationist.
 - 11] Effective height of dam is the difference in elevation in feet between the lowest open channel emergency spillway crest and the lowest point in the original profile along the centerline of the dam. If there is no open channel emergency spillway, the top of the dam becomes the upper limit.
 - 12] Multiple conduit installations require the approval of the State Conservation Engineer.
- NOTES: 1. Mine Reclamation -- Approval authority is limited to that of component practices of the job.
 2. There is no approval authority for any practice not included in this supplement.