MI501.00(a) General.

(1) The practice of engineering in Michigan is regulated by the Michigan Occupational Code (P.A. 299 of 1980, as amended). Sec. 2001(g) of the Michigan Occupational Code states, "'Practice of professional engineering' means professional services such as consultation, investigation, evaluation, planning, design or review of material and completed phases of work in construction, alteration or repair in connection with a public or private utility, structure, building, machine, equipment, process, work or project when the professional service requires the application of engineering principles or data."

(2) The state conservation engineer is the "person in responsible charge" for all engineering assistance provided by NRCS-Michigan as defined in Sec. 2001(d) of the Michigan Occupational Code. Sec. 2001(d) of the Michigan Occupational Code states, "'Person in responsible charge' means a person licensed under this article who determines technical questions of design and policy; advises the client; supervises and is in responsible charge of the work of subordinates; is the person whose professional skill and judgment are embodied in the plans, designs, plats, surveys, and advice involved in the services; and who supervises the review of material and completed phases of construction."

(3) The state conservation engineer has technical supervision for all NRCS-Michigan employees providing engineering technical assistance in Michigan.

MI501.00(e) General.

(e) Engineering plans referred to in this amendment include construction drawings, specifications, design documentation, and other supporting documentation. Engineering plans do not include preliminary design drawings prepared for the purpose of determining if permits are needed.

MI501.01(b) Scope.

(3) Section 2008(3) of the Michigan Occupational Code states, "A licensee shall not seal a plan, drawing, map, plat, report, specification or other document not prepared by the licensee or under supervision of the licensee as the person in responsible charge." Therefore, in Michigan:

(i) Non-NRCS employees will not be delegated engineering job approval authority by NRCS because they are not under the supervision of the state conservation engineer, and

(ii) NRCS cannot accept designs prepared by non-NRCS employees except where a licensed professional engineer prepared, signed, and sealed construction drawings, designs, and/or as-built drawings for USDA contracts where NRCS acceptance is required. Designs accepted under this exception shall be in accordance with NEM MI501.02(g)(3) and shall be signed by the qualified NRCS-Michigan person closest to the job. A qualified person is defined as an NRCS-Michigan employee who has the appropriate engineering job approval authority.

MI501.01(c) Scope

(c) The engineering job approval authority roles and responsibilities of NRCS-Michigan employees are as follows:

(1) State conservationist

(i) Ensures that NRCS engineering job approval authority policy is executed effectively within the state.

(2) State conservation engineer

(i) Develops NRCS-Michigan policy and procedures for approval of engineering work carried out in the state.
(ii) Ensures that the NRCS-Michigan engineering job approval system is consistent with NRCS national policy and state law.
(iii) Ensures that the NRCS-Michigan engineering job approval system enables NRCS-Michigan employees to effectively and efficiently provide high quality Inventory & Evaluation, Design, and Construction engineering technical assistance to customers.
(iv) Provides technical supervision for all NRCS-Michigan employees providing engineering technical assistance.
(v) Annually reviews and updates engineering job approval authority for all NRCS-Michigan area engineers.
(vi) Maintains license as professional engineer in the state of Michigan.

(3) Assistant state conservationist-field operations

(i) Ensures that NRCS engineering job approval authority policy is executed effectively within their area.
(ii) Concurs/agrees that NRCS-Michigan employees they supervise are capable of performing and representing NRCS at the level of responsibility for their delegated engineering job approval authority.
(iii) Works with district conservationists and core area staff to identify skills needed to plan, design, and install commonly implemented conservation engineering practices in their service center county(s).
(iv) Ensures that performance work plans for district conservationists and other service center NRCS-Michigan staff providing engineering technical assistance include the requirement to acquire and maintain Class II or III approval authority (including Inventory & Evaluation, Design, and Construction) for conservation engineering practices commonly implemented in their service center county(s).
(v) Ensures that quality assurance reviews for conservation engineering practices include a check of the job approval authority for the NRCS-Michigan employee(s) who approved the Inventory & Evaluation, Design, and Construction.
(vi) Ensures that the development and review of individual employee development plans address skills needed to plan, design, and install conservation engineering practices commonly implemented in their service center county(s) and address information from performance work plans and quality assurance reviews.

(vii) Ensures that performance reviews consider employee progress toward acquiring and maintaining required Class II or III engineering job approval authority and results of quality assurance reviews.

(4) Area engineer

(i) Determines technical proficiency level based on training, experience and demonstrated competence (Job Class I to V) for NRCS-Michigan employees providing engineering technical assistance in the area.
(ii) Delegates engineering job approval authority to NRCS-Michigan employees providing engineering technical assistance in the area.
(iii) Annually reviews and updates engineering job approval authority for NRCS-Michigan employees providing engineering technical assistance in the area.

(5) District conservationist

(i) Concurs/agrees that NRCS-Michigan employees they supervise are capable of performing and representing NRCS at the level of responsibility for their delegated engineering job approval authority
(ii) Identifies commonly implemented conservation engineering practices that address resource problems in their service center county(s). Works with employees, assistant state conservationist-field operations, and core area staff to identify skills needed to plan, design, and install those practices.
(iii) Ensures that individual employee development plans for NRCS-Michigan employees in the service center address skills needed to plan, design, and install conservation engineering practices commonly implemented in service center county(s) and address information from performance work plans and quality assurance reviews.

(6) Employee providing engineering technical assistance

(i) Ensures that the engineering technical assistance they provide is carried out in accordance with the established policy and procedures for NRCS-Michigan engineering job approval authority.
(ii) Completes Inventory & Evaluation, Design, and Construction approvals within limits of delegated authority.
(iii) Seeks opportunities to increase job approval authority by acquiring additional training (formal and OJT) and acquiring additional experience to demonstrate increased competence.
(iv) Maintains engineering job approval authority for conservation engineering practices commonly implemented in their service center county(s).

MI501.02 Technical Quality

Minimum documentation required to provide evidence of technical quality in engineering planning, design and installation assistance shall be as follows:

(a) Design surveys. Obtain field information needed to develop alternative designs, construction drawings, and specifications. Conduct soil borings or test pits at the construction site, as required. The survey field notes will include the boring logs. Survey field notes shall be complete and checked. The format of the notes will be similar to the format shown in Technical Release 62 (NEH Part 640, Field Surveys). Notes from surveys recorded on electronic data collectors will be in a form compatible with the data collector software.

(b) Design calculations. Make necessary calculations to evaluate design alternatives that may solve the conservation problem. Make final design calculations for the alternative selected. The final design calculations must be checked. Quantity calculations must be included in the design calculations.

(c) Construction drawings and specifications. Develop final construction drawings and specifications for the alternative the landowner and/or sponsor agree to install. Use standard drawings whenever possible. Do not revise standard drawings without approval authority for the practice as designed.

Construction drawings shall:

(1) Include the standard drawing cover sheet or another sheet with all the information contained on standard drawing cover sheet.

(2) Provide sufficient information so that someone unfamiliar with the job can locate the site and layout the construction using only the construction drawings.

(3) Provide sufficient information so that a capable contractor can construct the job without assistance other than basic layout.

(4) Indicate by initial and date, the individual(s) who designed, drafted, and checked each sheet of the construction drawings. Checking shall be in accordance with NEM MI501.04(b)(2)(v).

(5) Be approved in accordance with NEM MI501.04(b)(2). Approval of the construction drawings and specifications will be indicated by signature on the first sheet of the drawings in the appropriate location. Construction shall be in accordance with the approved construction drawings unless revision is approved in accordance with NEM MI501.04(b)(2)(vi).

(6) Construction drawings and specifications submitted to the state conservation engineer for review and approval will be checked in accordance with NEM Part MI501.04(b)(2)(v).

(d) Construction layout and construction check notes. Provide basic staking for construction. The purpose of the basic staking is to provide field information to enable a capable contractor to construct the practices in accordance with the approved construction drawings.

Conduct surveys and/or inspect construction to determine that the practice is constructed in accordance with the approved construction drawings and specifications. All items checked will be documented by survey notes and/or narrative descriptions. Survey notes will be in a format similar to Technical Release 62 (NEH Part 640, Field Surveys) survey notes. All deficiencies will be brought to the attention of the landowner and documented in the inspection records.

(e) Disposal of documentation information. The engineering documentation data shall be disposed of in accordance with the NRCS Records Guide (General Manual, Title 120, Part 408).

(f) Case file records. Records to maintain in the case file are listed in the Conservation Practice Support Data Documentation and Certification Requirements provided in NEM MI501.02(g).

(g) Conservation Practice Support Data Documentation and Certification Requirements

(1) Applicable to All Engineering Practices

- Inventory and evaluation records
  - Conservation Assistance notes or special report
- Survey notes, where applicable
  - Design survey
  - Construction layout survey
  - Construction check survey
- Design records
  - Physical data, functional requirements and site constraints, where applicable
  - Soils/subsurface investigation report, where applicable
- Design and quantity calculations
- Construction drawings/specifications with:
  - Location map
  - Designed by and checked by names or initials
  - Approval signature
  - Job class designation
  - Initials or signatures from preconstruction conference
  - As-built notes
- Construction inspection records
  - Conservation Assistance notes or separate inspection records
  - Construction approval signature
- Record of any variances approved, where applicable
- Record of approvals of in-field changes affecting function and/or job class, where applicable
- Approved Comprehensive Nutrient Management Plan, where practice addresses manure and/or wastewater management on a livestock farm.

MI501.02(g)(2)

(2) Additional Requirements Applicable to Specific Engineering Practices

- Waste Storage Facility (313) with clay liner
  - Evaluation report (soils lab or qualified specialist) documenting suitability of liner material
- Agrichemical Containment Facility (702) or Waste Storage Facility (313) with a building and/or roof where building and/or roof was funded with USDA financial assistance
  - Certification of building and/or roof by Professional Engineer or Licensed Builder
- Well Decommissioning (351)
  - Abandoned Well Plugging Record form required by the state of Michigan signed/certified by licensed well driller or landowner
- Practices where the area disturbed during construction exceeds 1 acre and the Stormwater Phase II permit-by-rule applies
  - Signature of Certified Stormwater Operator on cover sheet of construction drawings. Recorded during the preconstruction conference.

(3) Additional Requirements Applicable to Engineering Practices Where Non-NRCS Staff Provide the Technical Assistance and NRCS Must Sign the Construction Drawings.

- Construction drawings with signature and seal of professional engineer on cover sheet along with statement:

  To the best of my professional knowledge, judgment and belief, the design, construction drawings and specifications meet applicable NRCS standards and specifications.

  _____ _____
  Iman Engineer, P.E. *Date*

- Construction drawings with NRCS acceptance by person with appropriate approval authority along with statement:

  NRCS is accepting these construction drawings and specifications on the basis that they have been signed and sealed by a registered professional engineer. Based on the information provided by the professional engineer, the design, construction drawings and specifications appear to meet applicable NRCS standards and specifications. Any deficiencies in the design, construction drawings or specifications are the responsibility of the professional engineer whose seal appears on the construction drawings.

  _____ _____
  NRCS Representative *Date*

- As-built construction drawings with signature and seal of professional engineer on cover sheet along with statement:

  To the best of my professional knowledge, judgment and belief, these practices are installed in accordance with the construction drawings and specifications and meet NRCS standards.

  _____ _____
  Iman Engineer, P.E. *Date*

MI501.03(c) Compliance of engineering work with laws and regulations.

(1) All engineering work designed by NRCS, other than designs and construction drawings requiring approval by a licensed professional engineer, shall, before being furnished to the user, be approved by the qualified NRCS-Michigan employee who is closest to the job. A qualified person is defined as an NRCS-Michigan employee who has the appropriate approval authority.

(2) All designs that require the signing and sealing of construction drawings by a licensed professional engineer must be approved by the state conservation engineer.

MI501.04(b)(2) In-state engineering job approval authority (Classes I through V).

(2) All engineering designs prepared by NRCS-Michigan shall be reviewed and approved by the qualified NRCS-Michigan person closest to the job. A qualified person is defined as an NRCS employee who has the appropriate approval authority. All NRCS-Michigan employees having responsibility for engineering work will be delegated engineering job approval authority using form MI-ENG-3, Michigan Engineering Job Approval Authority.

(i) For practices common to the county, Inventory and Evaluation (I&E) reports may be in the form of assistance notes, part of the conservation plan or other form accepted by the responsible assistant state conservationist-field operations. Approval signature is not required for practices common to the county. For practices not common to the county or of unusual complexity, the I&E report will be approved by someone with appropriate engineering job approval authority; approval signature and job class designation are required.

(ii) The person approving the design or the construction is responsible to assure that it is complete and in accordance with NRCS policy and procedures.

(iii) All projects involving engineering assistance must have approved engineering design/construction drawings prior to beginning construction. Depending on the complexity and associated risk of the practice, engineering construction drawings may be simple, fill-in data sheets with specifications or be detailed construction drawings and specifications, as appropriate, to satisfactorily construct the practice or system of practices.

(iv) The responsible NRCS-Michigan employee shall indicate design approval by signature, title, and date on the cover or first sheet of the construction drawings and/or the engineering design report.

(v) Prior to approval, each engineering design/construction drawings shall be checked by a person who has knowledge of the design and construction procedure for the practice. The checker is responsible for the correctness of the design/construction drawings details. It is the checker's responsibility to determine if calculations, dimensions, table of estimated quantities, etc. are correct. The checker will indicate that the engineering design/construction drawings has been checked by placing his/her name or initials and date in the appropriate space in the title block on all computation sheets and all sheets in the construction drawings. For Classes I and II designs, the design/construction drawings check may be performed by the designer. For Classes III through VIII, the design/construction drawings shall be checked by a person other than the designer. All designs prepared an the service center or area level that require state conservation engineer approval shall be checked by the area engineer prior to submittal to the state conservation engineer, unless otherwise directed by the state conservation engineer.

(vi) Significant changes in the design/construction drawings or specifications shall be approved by a person with appropriate engineering job approval authority. Preferably, this should be the person who approved the original design/construction drawings. When changes must be approved without delay, verbal approval may be obtained to expedite the work. However, the completed record must include written approval of the changes. If changes in the design/construction drawings or specifications increase the engineering job class of the practice, the person approving those changes must have engineering job approval authority for the higher job class.

(vii) This policy does not limit the activity of any person with respect to gathering basic data, preparing I&E reports, preparing engineering designs/construction drawings, or performing construction inspection activities that may be beyond his/her engineering job approval authority. Conservation practice designs/construction drawings may be prepared and checked by any NRCS-Michigan employee with sufficient knowledge and experience regardless of their engineering job approval authority. This policy does not restrict a person with a lesser engineering job approval authority from performing any work if someone with appropriate authority reviews and approves the finished work. NRCS-Michigan construction assistance shall be performed by or under the direction of an NRCS-Michigan employee with construction engineering job approval authority that meets or exceeds the applicable controlling factors. The final construction check will be made and approved by an NRCS-Michigan employee with the appropriate construction engineering job approval authority. A construction check signed by an NRCS-Michigan employee with the appropriate engineering job approval authority must be obtained before the practice may be certified for payment of financial assistance. Construction approval may be in the form of a signed note on the As-Built construction drawings or other signed document accepted by the responsible assistant state conservationist-field operations.

(viii) Engineering job approval authority does not restrict an NRCS-Michigan employee from requesting assistance on jobs within his/her approval authority. There may be complicating features or situations where it is highly desirable to have advice from someone with more experience.

(ix) NRCS-Michigan employees will not commit assistance or stake out any work of improvement until all required design approvals and any required local, state or federal government approvals and permits have been secured.

(x) The engineering job class for each practice application shall be determined using the practice controlling factor(s) as defined in NEM MI501.09, NRCS-Michigan Engineering Job Approval Authority. For practices with multiple controlling factors, the controlling factor with the highest job class level will determine the required engineering job approval authority for the practice application. Projects with more than one application (either the same or different practice type) will be considered one job (system) if the operation of any one application can affect the operation of another application. For this situation, the NRCS-Michigan employee approving the design/construction drawings must have adequate delegated engineering job approval authority for all controlling factors of all the engineering practices included in the conservation system.

(xi) The engineering job class for the practice or system of practices will be clearly shown near the title block on the first sheet of the construction drawings.

(3) Qualified persons are to be delegated engineering job approval authority for engineering work they can approve in accordance with the job class definitions shown for each practice as defined in NEM MI501.09. An engineering job shall be approved only when all controlling factors of the engineering practice are within that NRCS-Michigan employee's engineering job approval authority. Form MI-ENG-3, Michigan Engineering Job Approval Authority, will be used for recording the engineering job approval authority delegated to an NRCS-Michigan employee. Form MI-ENG-3 contains all the engineering practices normally installed in the state.

MI501.04(b)(3)

The maximum engineering job approval authority delegated to an NRCS-Michigan employee will be entered for each practice controlling factor; for example, the approval authority will be delegated as 0, I, II, III, IV or V. A "0" (zero) or "-" engineering job approval authority indicates no authority is delegated for that controlling factor.

(4) Engineering job approval authority will be delegated to employees based on demonstrated competence, training received, and experience at the various stages of planning, design, and construction. A sustained workload is necessary to retain competence and engineering job approval authority for an engineering practice.

(i) Engineering job approval authority for NRCS-Michigan employees shall be requested by the employee's supervisor. The area engineer shall prepare a form MI-ENG-3 showing the NRCS-Michigan employee's engineering job approval authority by class for each controlling factor in each practice. The Individual Engineering Job Approval Authority for each category (inventory & evaluation, design, and construction) need not be the same for all controlling factors for any given practice. The area engineer may not delegate a design or construction engineering job approval authority class in any controlling factor above the class he/she is authorized to approve. The area engineer shall sign and date the cover sheet of form MI-ENG-3 and submit the entire form to the administrative supervisor for concurrence. If the area engineer is the employee's supervisor, the entire form shall be submitted to the assistant state conservationist-field operations for concurrence. Engineering job approval authority for service center staff having design and construction capability above the engineering job approval authority of the area engineer will be delegated by the state conservation engineer or his/her designee.

(ii) The original copy of form MI-ENG-3 shall be kept on file in the assistant state conservationist-field operations' office. Copies of the engineering job approval authority form will be provided to the employee's administrative supervisor, the employee, and the state conservation engineer.

(iii) All engineering job approval authorities shall be reviewed at least once a year. The area engineer shall review the individual engineering job approval authority for all NRCS-Michigan employees providing engineering technical assistance in the area.

(iv) When an NRCS-Michigan employee transfers, the employee shall provide a copy of their engineering job approval authority to their new supervisor.

(v) An NRCS administrative supervisor may request at any time that the area engineer make a reevaluation of the engineering job approval authority for an NRCS-Michigan employee under his/her supervision. Concurrence or revision of the engineering job approval authority shall be carried out as stated above.

(vi) An NRCS-Michigan employee may request a reevaluation of their engineering job approval authority at any time by making a written request to their administrative supervisor. The supervisor, if he or she concurs in the need for a reevaluation, will request the area engineer to make a reevaluation. Concurrence or revision of the engineering job approval authority shall be carried out as stated above.

MI501.04(c) State Conservation Engineer's engineering job approval authority (Classes VI through VIII).

(1) Engineering jobs above the Class V level involve complex engineering and often require significant expenditure of time at the state, regional, and national levels. Therefore, prior to commitment or expenditure of NRCS staffing, the assistant state conservationist-field operations will provide a description of the job to the state conservationist and request state conservation engineer assistance in preparing a design schedule for the job. The state conservation engineer will assist the assistant state conservationist-field operations with preparing that schedule including documenting design phases needed, special design requirements, and engineering specialist assistance needed.

(2) The state conservation engineer will work with the Tri-State (Ohio, Michigan, Indiana) Design Team, the National Design, Construction and Soil Mechanics Center, and/or the Conservation Engineering Division at National Headquarters to schedule needed assistance, conferences, reviews, etc., as appropriate.

(3) The current Class VI engineering job review authority for the NRCS state conservation engineer in Michigan is shown below:

Michigan Class VI Engineering Job Review Authority

Practice Code	Practice Name
348	Dam, Diversion
402	Dam
356	Dike
410	Grade Stabilization Structure
436	Irrigation Storage Reservoir
582	Open Channel
350	Sediment Basin
584	Channel Stabilization
580	Streambank and Shoreline Protection
587	Structure for Water Control
608	Surface Drain, Main or Lateral
313	Waste Storage Facility
359	Waste Treatment Lagoon

MI501.05 Engineering job review.

The state conservation engineer is to review at least five percent of the inventory & evaluations, designs, and construction approved by the area engineers each year. The area engineers are to review at least five percent of the inventory & evaluations, designs, and construction approved by the other engineering staff in the area.

See General Manual, Title 450, Part 407, for additional quality assurance review (spot check) policy and information.

MI501.09 Exhibit - NRCS-Michigan Engineering Job Approval Authority

FORM MI-ENG-3
5/2003
Sheet 1 of 5

NRCS-MICHIGAN ENGINEERING JOB APPROVAL AUTHORITY

NRCS-MICHIGAN EMPLOYEE NAME _____ TITLE _____ GRADE _____ LOCATION _____

DELEGATED BY: _____ TITLE _____ STATE Michigan
(Responsible NRCS-Michigan Engineer)

CONCURRED: _____ TITLE _____ DATE _____
(Supervisor)

NOTES

1. Engineering job approval authority is delegated based on the NRCS-Michigan employee's training, experience and demonstrated competence.
2. NRCS-Michigan employees shall not approve inventory & evaluations, designs, or construction for practices that exceed their Individual Approval Authority for that practice.
3. The Responsible NRCS-Michigan Engineer may recommend engineering job approval authority only up to the approval authority held by that engineer.
4. The controlling factor that results in the highest classification determines the Job Class. For example, a waste storage facility (pond) with animal capacity of 300 A.U. (Class IV), design depth of 8 feet (Class III), and effective height of 3 feet (Class II) is Job Class IV.
5. Engineering practices not included in this chart shall be referred to the State Conservation Engineer for approval.
6. Engineering job approval authority applies to new construction only. Refer to NEM 501.20-501.24 for repair and rehabilitation.
7. All jobs not listed or more complex than those listed shall be sent with documentation through the Area Engineer to the State Conservation Engineer for review and approval.
8. All jobs to be constructed under formal contract must be approved by the State Conservation Engineer.
9. All jobs requiring the signing and sealing of designs/construction drawings by a licensed professional engineer shall be approved by the State Conservation Engineer.
10. Job Class I-V for all practices is limited to low hazard potential as defined in NEM §503 and shall not alter the visual resources of beaches and shorelines on the Great Lakes.
11. Evaluations of Existing Components for Comprehensive Nutrient Management Plans may be approved only when the existing component practice(s) is within the NRCS-Michigan employee's Individual Engineering Job Approval Authority for Design.

ANNUAL REVIEW

Individual Engineering Job Approval Authority will be reviewed with the NRCS-Michigan employee annually and revised as needed. If no significant changes are made, the following table will be used to indicate that the review has been made by the appropriate NRCS-Michigan engineering personnel.

Reviewed By	Title	Comments	Date

DEFINITIONS OF INDIVIDUAL ENGINEERING JOB APPROVAL AUTHORITY CATEGORIES

Inventory and Evaluation (I&E) - On-site observations of an exploratory nature and preparation of appropriate and technically sound alternative solutions of sufficient intensity for the cooperator to make treatment decisions. May require assistance from higher levels for large or complex jobs. (See NEM 501 and 510.)

Design - Designing and checking all aspects of the supporting data, construction drawings and specifications to ensure that the planned practice will meet the purpose for which it is installed. 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 is installed in accordance with the approved construction drawings and specifications and meets NRCS standards. Approval signature is required. Jobs where inspection staffing plans are issued are noted on this chart. (See NEM 501 and 512.)

ABBREVIATIONS

A.U. - Animal Unit, equivalent to 1,000 pounds live weight
mech. - mechanical or structural
veg. - vegetated

FORM MI-ENG-3
4/2003
Sheet 2 of 5

NRCS-MICHIGAN ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class Definition					Individual Engineering Job Approval Authority		
				I	II	III	IV	V	I&E	Design	Const.
560	Access Road (Private)	Culvert (see Structure for Water Control)	-	-	-	-	-	-			
		Bridge Span	ft.	-	-	-	12	All			
		Length	mi.	0.5	1	2	4	All			
		Monolithic Concrete Opening	sq. ft.	-	-	-	16	All			
		Surface	type	Gravel	Gravel	Gravel	Paved	All			
702	Agrichemical Containment Facility Note: - Earth berms and concrete blocks must have manufacturer installed synthetic liner - Agrichemical Containment Facilities with long term pesticide storage are Class V	Secondary Containment Structure	-	-	-	Earth Berm	Earth Berm or Concrete Block (8 cu. ft. min. block)	All			
575	Animal Trails and Walkways	Surface Treatment	type	veg.	veg. & mulch	veg., mulch & aggregate	veg., mulch & aggregate	All			
326	Clearing and Snagging	Drainage Area	sq. mi.	-	-	20	100	All			
		Channel Length	ft.	-	-	500	2,000	All			
360	Closure of Waste Impoundments	Impoundment	type	-	-	-	excavated	All			
317	Composting Facility	Waste	type	-	-	-	manure	All			
		Composting Method	method	-	-	-	windrows	All			
		Roof - clear span	ft.	-	-	-	40	All			
356	Dike	Water Height	ft.	-	-	3	6	12			
		Hazard	class	-	-	III	III	III			
362	Diversion	Design Discharge	cfs	25	50	100	200	All			
432	Dry Hydrant	Capacity	gpm	-	-	250	500	All			
412	Grassed Waterway	Drainage Area	ac.	50	100	200	400	All			
		Design Slope	%	> 0.5	> 0.5	> 0.5	> 0.5	All			
561	Heavy Use Area Protection	Surface Area	ac.	0.5	1	2	4	All			
		Surface Treatment	type	veg.	veg. & mulch	veg., mulch & aggregate	veg., mulch & aggregate	All			
449	Irrigation Water Management	Irrigated Area	ac.	40	80	160	320	All			
468	Lined Waterway or Outlet	Design Capacity	cfs	-	50	100	200	All			

FORM MI-ENG-3
5/2003
Sheet 3 of 5

NRCS-MICHIGAN ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class Definition					Individual Engineering Job Approval Authority		
				I	II	III	IV	V	I&E	Design	Const.
516	Pipeline	Maximum Operating Pressure	psi	-	-	15	50	300			
		Delivery Rate	gpm	-	-	20	60	All			
		Length	mile	-	-	0.5	2	All			
378	Pond (Excavated)	Surface Area at Design High Water	ac.	0.2	0.5	1	2	All			
521-C	Pond Sealing or Lining - Bentonite Sealant	Surface Area at Design Depth	ac.	-	-	0.2	1	All			
		Design Depth [2]	ft.	-	-	8	10	All			
521-A	Pond Sealing or Lining - Flexible Membrane	Surface Area at Design Depth	ac.	-	-	0.2	1	All			
		Design Depth [2]	ft.	-	-	8	10	All			
566	Recreation Land Grading and Shaping	Area Treated	ac.	1	2	5	10	All			
568	Recreation Trail and Walkway	Length	mi.	0.2	0.5	1	2	All			
558	Roof Runoff Structure	Roof Area	sq.ft.	2,500	5,000	10,000	20,000	All			
574	Spring Development	Capacity	gpm	1	2	5	10	All			
580	Streambank and Shoreline Protection										
	- Beaches and Shorelines Note: NRCS will not provide design or construction assistance to solve erosion problems created by wave action on the open and unprotected shores of the Great Lakes.	Height Above Shoreline (Mean High Water)	ft.	-	-	-	3	3			
		Protection Method	type	-	-	-	veg.	All			
	- Streambanks (Bankfull velocity must be ≤10 fps)	Drainage Area	sq.mi.	-	-	25	50	All			
		Bankfull Capacity (At channel depth)	cfs	-	-	250	1,000	5,000			
		Channel Depth (Bottom of channel to lowest top of bank)	ft.	-	-	6	8	All			
		Protection Method	type	-	-	veg. & mech.	veg. & mech.	All			
395	Streambank Habitat Management										
	- Streamside Structure (does not reduce cross-sectional area)	Drainage Area	sq.mi.	-	-	25	50	All			
		Bankfull Capacity (At channel depth)	cfs	-	-	250	1,000	All			
		Channel Depth (Bottom of channel to lowest top of bank)	ft.	-	-	6	8	All			
	- In-Stream Structure (within cross- sectional flow)	Drainage Area	sq.mi.	-	-	5	25	All			
		Bankfull Capacity (At channel depth)	cfs	-	-	50	250	All			
728	Stream Crossing and Livestock Access	With Culverts (See Structure for Water Control)									
		Without Culverts	traffic	-	-	livestock	vehicles	All		[2]	

FORM MI-ENG-3
5/2003
Sheet 4 of 5

NRCS-MICHIGAN ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class Definition					Individual Engineering Job Approval Authority		
				I	II	III	IV	V	I&E	Design	Const.
606	Subsurface Drain	Inside Diameter	in.	4	6	8	12	All			
		Area Drained	ac.	40	80	160	320	All			
607	Surface Drainage - Field Ditch	Area Drained	ac.	40	80	160	320	All			
608	Surface Drainage - Main or Lateral (Design velocity must be ≤ 10 fps)	Area Drained	ac.	160	320	640	3,200	All			
		Design Capacity	cfs	50	100	200	300	1,000			
600	Terrace	Area Controlled (Total system)	ac.	10	20	50	100	All			
		Fill Height [6]	ft.	3	4	5	6	6			
620	Underground Outlet	Inside Diameter	in.	4	8	12	18	All			
313	Waste Storage Facility (Storage capacity must be ≤ 2,000,000 cu.ft.)	Animal Capacity (Animal Units contributing manure to the storage facility)	A.U.	-	-	200	500	All			
	- Pond	Design Depth [2]	ft.	-	-	8	10	All			
		Fill Height [6]	ft.	-	-	5	10	All			
	- Structure - Below Ground	Wall Height [3]	ft.	-	-	6	8	All		[2]	
		Tank Span (Beam span; with slats or solid cover)	ft.	-	-	-	10	All		[2]	
	- Structure - Above Ground	Wall Height [3]	ft.	-	-	6	10	All		[2]	
		Tank Span (Beam span; with slats or solid cover)	ft.	-	-	10	16	All		[2]	
		Roof - clear span	ft.	-	-	-	40	All			
638	Water and Sediment Control Basin	Area Controlled (Total system)	ac.	10	20	50	100	All			
		Fill Height [6]	ft.	3	4	5	6	All			
614	Watering Facility	Capacity	gal.	500	1,000	2,000	5,000	All			
642	Well	Diameter	in.	-	4	5	6	All			
		Estimated Depth	ft.	-	100	200	300	All			
351	Well Decommissioning	Well Type	type	-	-	dug	dug or driven	All		[2]	
658 659 657	Wetland Creation Wetland Enhancement Wetland Restoration	Structures and Embankments - Refer to Dams and Structures or other structural practice, as appropriate.	-	-	-	-	-	-			
		Existing Drainage System	type	subsurface	subsurface or surface	All	All	All			
		Wetland Area	ac.	5	10	25	50	All			

FORM MI-ENG-3
5/2003
Sheet 5 of 5

NRCS-MICHIGAN ENGINEERING JOB APPROVAL AUTHORITY

Code	Practice Name	Controlling Factors	Units	Job Class Definition					Individual Engineering Job Approval Authority		
				I	II	III	IV	V	I&E	Design	Const.
DAMS AND STRUCTURES											
410 378 350 587	Grade Stabilization Structure Pond (Embankment) Sediment Basin Structure for Water Control	All must have relatively impervious cutoff and simple foundation needs. Dam classification must be Low Hazard Class and the product of storage (acres-feet) times effective height (feet) equals 3,000 or less. Dams and structures must not be located over an active fault.	Drainage Area	ac.	20	100	200	500	12,800			
			Effective Height 1/	ft.	4	6	8	16	35			
	Pipe (Single barrel) - Includes culverts											
	- Pressure flow		Inside Diameter	in.	-	-	12	24	All			
			Controlled Head	ft.	-	-	10	20	All			
	- Nonpressure flow		Inside Diameter	in.	10	12	18	24	All			
	Drop Spillway		Net Drop	ft.	-	-	2	4	All		2/	
	(Box Inlet and Straight Drop)		Weir Capacity	cfs	-	-	50	200	All		2/	
	Chute											
	- Geotextile Reinforced Vegetated		Net Drop	ft.	3	5	6	8	All		2/	
			Design Capacity	cfs	10	20	40	60	All		2/	
	- Concrete Block		Net Drop	ft.	4	6	8	10	All		2/	
			Weir Depth	ft.	1.0	1.5	2.0	2.5	All		2/	
			Weir Capacity	cfs	50	75	100	150	All		2/	
	- Rock Riprap		Net Drop	ft.	-	-	6	8	All		2/	
			Weir Capacity	cfs	-	-	50	100	All		2/	
			Weir Depth	ft.	-	-	1.5	2.0	All		2/	

Footnotes:

1/ Effective Height - Difference in elevation between the emergency spillway crest (top of embankment if no emergency spillway) and the lowest point in the original cross-section along the centerline of the embankment.

2/ Design approval limited to standard drawings approved by the NRCS-Michigan State Conservation Engineer.

3/ Wall Height - The distance in feet from the top of the floor inside the storage facility to the top of the wall.

4/ Must use standard details prepared by Bat Conservation International, Inc.

5/ Design Depth - Total depth required to store manure, bedding, wastewater, accumulated precipitation during storage period, 25-year 24-hour storm precipitation, and residual solids plus freeboard.

6/ Fill Height - Difference in elevation between the top of the embankment and the lowest point in the original cross-section along the centerline of the embankment.