## Part 501 – AUTHORIZATIONS

## SUBPART A – REVIEW AND APPROVAL

### § WI 501.01 Scope.

(b) (4) Non-NRCS employees who are not federal employees and are not licensed to practice engineering in Wisconsin but have received certification under Wisconsin Administrative Code (Chapter ATCP 50) from a Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Agricultural Engineer may be assigned job approval authority up to that certification rating level.

(5) Non-NRCS employees who are not federal employees and are not licensed to practice engineering in Wisconsin and have not received certification under Chapter ATCP 50 from a DATCP Agricultural Engineer may be assigned limited job approval authority (generally, Class I or II) and no animal waste management practices or embankment dam type structures.

(6) In all cases, assignment and receipt of job approval authority denotes acceptance of the Field Office Technical Guide as the design standard and quality assurance requirement. Assignment and receipt also denotes acceptance of individual and the employing agency responsibility for work performed or approved under the assigned authority.

### § WI 501.03 Compliance of engineering work with laws and regulations.

(a) (1) Technical assistance limitations and responsibility for compliance with laws and regulations.

When the proposed construction activities will damage other lands or property, or where the work or designed water levels must extend to land beyond the ownership of the cooperator, the employee shall not assist with construction layout until the necessary easements, rights of way, and other legal aspects have been resolved by the cooperator.

The cooperator will be responsible for securing all necessary permits and complying with all laws or ordinances. NRCS personnel will not interpret the law or act as an agent for cooperators in securing permits. NRCS personnel will advise the cooperator, prior to designing the practice, that there are or may be laws concerning this type of work and to obtain legal assistance as necessary.

Before assisting with a practice likely to require a permit, the cooperator should have, or agree to obtain, permits in accordance with state law and regulations. NRCS personnel will not give assistance under conditions where the cooperator declines to obtain a required permit or where litigation exists. NRCS personnel shall not be involved in situations where litigation exists regardless of documented evidence of a vested right. Assistance can be resumed or given after all litigation and controversial issues have been resolved.

(c) (4) All engineering work performed will be reviewed and approved by an individual with an appropriate level of job approval authority.

(5) Generally, construction plans will not be sealed by an NRCS licensed professional engineer.

(6) When specifically required by state law or local ordinance (floodplain/zoning), construction plans will be sealed.

(a) The requirement for sealing must be identified during the planning phase to ensure that all work is done under the direction of the responsible licensed professional engineer possessing the appropriate level of job approval authority.

(b) The State Conservation Engineer will be notified when any construction plans prepared by the NRCS will need to be sealed by a licensed professional engineer.

(c) Plans requiring sealing and prepared by non-registered engineering staff may be approved and sealed by a registered engineer with the appropriate job approval authority at the next higher organizational level.

**§ WI 501.04 Engineering Approval Authority.**

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

(7) (a) The Wisconsin Engineering Approval chart shown in WI 501.09, Exhibit 1, will be used for assigning job approval authority levels to NRCS and partnership employees when joint certification under Chapter ATCP 50 will not be issued.

(b) The chart shown in WI 501.09, Exhibit 2, will be used for assigning joint Wisconsin Engineering Approval and DATCP Agricultural Engineering Practitioner Certification under Chapter ATCP 50. Joint delegation of authority shall be utilized to the maximum extent practicable.

(c) Planning (Inventory and Evaluation), design, and construction of engineering practices must be approved by a person with appropriate engineering job approval authority before alternatives are presented, the design is finalized, or construction (installation) is commenced. Delegated approval levels do not restrict a person with a lesser approval authority from performing any work if someone with the proper job approval authority reviews and approves the finished work. Design changes made during construction must be approved in the same manner as the original project.

(d) It is expected that employees lacking final job approval authority will carry out functions (planning, surveys, design, drafting, preparing plans, verification of material requirements, adherence to permits, evaluation of survey check notes, preparation of as-built plans, etc.) as far as their knowledge and abilities permit. Persons must not make a determination or a commitment to a client on the feasibility of projects that exceed their planning job approval authority.

(8) (a) A project may consist of one application of a conservation practice (one waterway), more than one application of the same practice (two or more waterways), or the application of more than one type of conservation practice (waterway and grade stabilization structure). The job class for each practice application shall be determined using the practice controlling factor(s).

(i) For practices with multiple controlling factors, the factor with the highest assigned job class will determine the job class for the practice application.

(ii) A person approving a practice with multiple controlling factors must possess appropriate job approval authority for each controlling factor.

(b) Projects with more than one application of a conservation practice (either the same or different practice type) will be considered one job (system) if the operation of any one practice application can affect the operation of another practice application.

(9) The assigned level of job approval authority may be appealed by using the following steps in the stated order:

(a) Informal discussion with the engineer that recommended the authority. If not resolved, then:

(b) A written appeal to the State Conservation Engineer. The appeal shall include documentation of training and competence to support the requested job approval authority level.

(10) When an employee transfers to an office serviced by an engineer other than the delegating engineer shown on the job approval form, the individual's job approval authority will remain at the same level until the new delegating engineer has an opportunity to assess the employee's capabilities. The receiving engineer shall consult with the former engineer before recommending a new job approval authority.

(c) State Conservation Engineer's Engineering Job Approval Authority (Class VI-VIII)

(1) Class VI-VIII jobs should be identified as early as possible in the planning phase. A planning study defined in WI 510.01 shall be prepared following consultation with the State Conservation Engineer.

(2) All Class VI-VIII jobs require a predesign conference between the field engineer and the State Conservation Engineer or an assigned staff member from the multi-state design team. Predesign conferences may be conducted by telephone or may include an on-site review with various specialists participating.

(d) Associated plans and specifications.

(1) At the time that engineering plans are delivered to a cooperator, an acceptance statement must be signed and dated by the cooperator. Required wording for this cooperator statement is:

**I have reviewed and understand the construction plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any continued NRCS technical assistance or program cost sharing applied for. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these construction plans or specifications must be approved by the NRCS before installation. I assume all responsibility for negotiations and contract agreements with the construction contractors.**

(2) This statement may be on a separate sheet not attached to the construction plan. The cooperator's acceptance must include a reference to the plan it is being signed for and must be kept in the cooperator's file.

**§ WI 501.05 Post Reviews.**

(b) (3) State engineering quality reviews will be completed using Wisconsin Job Sheet 818, Engineering Quality Review Data. All quality review data and reports shall be filed under Engineering – Quality Reviews (210-4).

(a) When the quality reviewer does not have the appropriate level of job approval authority for the conservation practice being reviewed, the results must be concurred upon by an individual with the proper job approval.

(b) The State Conservation Engineer will make arrangements for the quality review of practices designed and/or approved by Area Engineers.

(c) The Performance Results System (PRS) should be used to determine the number of practices reported in any given time period. Practices to be reviewed should be distributed throughout the Service Center's area of responsibility. A minimum of one review should be made on each staff member who plans, designs, or certifies completed work.

(d) Quality reviews will be performed on a calendar-year basis.

(e) The Assistant State Conservation for Field Operations is responsible for determining that quality reviews are properly performed. They will also ensure necessary follow-up and corrective action to quality reviews and provide the State Conservationist with an annual quality review report and any necessary follow-up reports.

(f) Engineering items of the project such as resource concern identification, site investigations, survey note keeping, practice selection, practice components, design documentation, drafting, preparation of plans, verification of material requirements, adherence to permits, survey check notes, job diaries, preparation of as-built plans, and certification will be reviewed.

(g) The engineering items listed above pertinent to a cost sharing program's ranking eligibility criteria, application, contracts, and payments may also be reviewed or referred to other area staff.

(h) Missing calculations will be prepared by the designer and reviewed for accuracy and completeness by the quality reviewer.

## SUBPART A – REVIEW AND APPROVAL

### § WI 501.08 State approval authority for design of engineering practices.

The following engineering design approval (Class VI) has been delegated to John R. Ramsden, State Conservation Engineer, by the Director of the Conservation Engineering Division. This delegated authority represents the maximum limits of approval in Wisconsin for the items listed.

**WISCONSIN DELEGATED APPROVAL AUTHORITY (CLASS VI)**

1. Earth or Earth-Rock Dam Embankment and Foundations – Hazard Class “a” and “b” where:

   A. The effective height of the dam embankment and height-storage product (NEM 520.22(c) is not greater than the following:

| Class | Effective Height (Ft.) | Height-Storage Product (Ac. Ft.) |
|---|---|---|
| a | 40 | 4000 |
| b | 35 | 3000 |

   B. The foundation is without unusual complications which indicate the possible need for relief wells, blankets, grouting, dental concrete or other unusual foundation or embankment design features, such as cavernous limestone, faults, foundation materials with a high consolidation potential or high piping potential.

   C. Embankment designs provide for construction using natural soil and rock materials and are proportioned based upon proven NRCS experience. Only manufactured materials of proven quality are used.

   D. The dam is for grade stabilization and/or has a reservoir for a single or multiple purpose except for municipal and industrial water supply.

   E. Soil mechanics testing evaluation and interpretation, along with the design analysis, are done in conjunction with and have the approval of the multi-state design team.

2. Spillways for Water Control or Grade Stabilization.

   A. Drop inlet spillways consisting of:

      1. Pipe conduits of prefabricated reinforced concrete or corrugated metal pipe with coupling bands conforming to standards previously agreed to by the multi-state design team.

      2. Reinforced concrete and corrugated metal inlets, including trash racks, built from National Standard Detail Drawings or designed in conformance with standards previously agreed to by the multi-state design team.

      3. Reinforced concrete outlets built from National Standard Detail drawings or designed in conformance with criteria and standards contained in TR-46 and TR-49.

3. Streambank protection by riprap, including bedding, filters, grading and shaping as necessary, where:

   A. Bankfull capacity is less than 5,000 cubic feet per second.

   B. Height of protection above the average channel bottom does not exceed 15 feet.

   C. Drainage area is less than 500 square miles.

4. Waste storage facilities where the structural elements to be constructed are based on standard detail drawings approved by the multi-state design team.

**U.S. DEPARTMENT OF AGRICULTURE**
**NATURAL RESOURCES CONSERVATION SERVICE**
**ENGINEERING APPROVAL AUTHORITY**
**DELEGATION**

12/06

| | | | | | Original | Revised | Revised |
|---|---|---|---|---|---|---|---|
| EMPLOYEE: | | OFFICE: | | | | | |
| SIGNATURE: | | TITLE: | | DATE: | | | |
| CONCURRED BY: | | TITLE: | Supervisor | DATE: | | | |
| DELEGATED BY: | | TITLE: | | DATE: | | | |

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 560 | ACCESS ROAD | | GRADE | % | 10 | ALL | | | | | | |
| 575 | ANIMAL TRAILS AND WALKWAYS | | GRADE | % | ALL | | | | | | | |
| 360 | CLOSURE OF WASTE IMPOUNDMENTS | | NUMBER | EACH | ALL | | | | | | | |
| 362 | DIVERSION | | DRAINAGE AREA | ACRES | 10 | 20 | 40 | 160 | ALL | | | |
| 432 | DRY HYDRANT | | WATER SOURCE | — — | POND | STREAM | ALL | | | | | |
| | | | LIFT (STATIC HEAD) | FEET | 5 | 10 | 15 | ALL | | | | |
| | | | NOMINAL DIAMETER | INCHES | 4 | 6 | ALL | | | | | |
| 396 | FISH PASSAGE | DAM REMOVAL | | EACH | ALL | | | | | | | |
| 410 | GRADE STABILIZATION STRUCTURE | EARTHEN EMBANKMENTS (HAZARD CLASS "a" ONLY) | DRAINAGE AREA | ACRES | 20 | 80 | 320 | 640 | 2000(c) | | | |
| | | | EFFECTIVE HEIGHT (a) | FEET | 10 | 15 | 20 | 25 | 35 | | | |
| 350 | SEDIMENT BASIN (EXCEPT FOR ANIMAL WASTE) | | STORAGE (b) | AC. FT. | 5 | 15 | 30 | 50 | 85 | | | |
| | | | CONDUIT (SINGLE) | INCHES | 12 | 18 | 24 | 36 | 48 | | | |
| 378 | POND (EMBANKMENT) | | (STOR. VOL.)x(EFF. HT.) | — — | 500 | 1000 | 1500 | 2000 | 3000 | | | |
| 587 | STRUCTURE FOR WATER CONTROL | BOX DROP TO CULVERT | NET DROP | FEET | 2* | 3* | 4* | 4 | 6 | | | |
| | | | WEIR CAPACITY | C.F.S. | 100* | 200* | 300* | 400 | 500 | | | |
| 552 | IRRIGATION REGULATING RESERVOIR | TOEWALLS | NET DROP | FEET | 2* | 3* | 4* | 3 | 4 | | | |
| | | | WEIR CAPACITY | C.F.S. | 100* | 200* | 300* | 300 | 300 | | | |
| | | CHUTES | NET DROP | FEET | 4 | 6 | 8 | 10 | 12 | | | |
| | | | CAPACITY | C.F.S. | 50 | 100 | 200 | 250 | 300 | | | |
| 412 | GRASSED WATERWAY | | DRAINAGE AREA | ACRES | 50 | 200 | 600 | 1300 | ALL | | | |
| 561 | HEAVY USE AREA PROTECTION | | AREA | SQ. FT. | 10000 | 30000 | ALL | | | | | |
| 442<br>449 | IRRIGATION SYSTEM, SPRINKLER<br>IRRIGATION WATER MANAGEMENT | | AREA IRRIGATED | ACRES | 20 | 40 | 80 | ALL | | | | |
| 447 | IRRIGATION SYSTEM, TAILWATER RECOVERY | | PUMP CAPACITY | GPM | 300 | 500 | 1000 | ALL | | | | |
| 430 | IRRIGATION WATER CONVEYANCE | | CAPACITY (< 50 PSI) | GPM | 500 | 1000 | 2500 | 5000 | | | | |
| | AA (Aluminum) DD (Plastic) | | CAPACITY (≥ 50 PSI) | GPM | 300 | 500 | 1500 | 3500 | | | | |
| 468 | LINED WATERWAY OR OUTLET | | DESIGN CAPACITY (d) | C.F.S. | 10 | 30 | 100 | 150 | ALL | | | |

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 634 | MANURE TRANSFER | | PUMPED | A.U. | 100 | 300 | ALL | | | | | |
| | | | GRAVITY | A.U. | 100 | 300 | ALL | | | | | |
| | | | | FEET | 150 | 250 | 400 | | | | | |
| | | | RECEPTION TANK (e) | EACH | STAND. DRAW. | ALL | | | | | | |
| 719 | MILKING CENTER WASTEWATER TREATMENT SYSTEM | | WASTEWATER PRODUCED | GPD | 200 | 300 | 400 | 500 | | | | |
| 500 | OBSTRUCTION REMOVAL | | OBSTRUCTION LOCATION | — — | LAND | STREAM | ALL | | | | | |
| 582 | OPEN CHANNEL | | DESIGN VELOCITY | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| 584 | CHANNEL STABILIZATION | | DESIGN CAPACITY | C.F.S. | 100 | 200 | 300 | 500 | 1000 | | | |
| 516 | PIPELINE | | LENGTH | FEET | 300 | 1000 | 2500 | 5000 | ALL | | | |
| | | | PRESSURE | P.S.I. | 25 | 50 | 100 | 200 | 300 | | | |
| 378 | POND (EXCAVATED) | | SURFACE AREA | ACRES | 1/2 | 1 | ALL | | | | | |
| 521A | POND SEALING OR LINING, FLEX. MEM. LINING | | AREA TREATED | ACRES | 1/4 | 1/2 | 1 | 2 | ALL | | | |
| 521C | POND SEALING OR LINING, BENTONITE TREATMENT | | AREA TREATED | ACRES | 1/4 | 1/2 | 1 | 2 | ALL | | | |
| 533 | PUMPING PLANT | PROPELLER PUMP | CAPACITY | GPM | 500 | 2000 | 7500 | | | | | |
| | | | STATIC HEAD | Ft. | 5 | 10 | 15 | | | | | |
| | | CENTRIFUGAL PUMP | CAPACITY | GPM | 500 | 1000 | 1500 | 2000 | 3500 | | | |
| | | | STATIC HEAD | Ft. | 50 | 100 | 200 | 300 | 350 | | | |
| | | TURBINE PUMP | CAPACITY | GPM | 500 | 1000 | 1500 | 2000 | 3500 | | | |
| | | | STATIC HEAD | Ft. | 50 | 100 | 200 | 350 | 500 | | | |
| 568 | RECREATION TRAIL AND WALKWAY | | LENGTH | MILES | 0.5 | ALL | | | | | | |
| 558 | ROOF RUNOFF STRUCTURE | | ROOF SIZE (EACH) | SQ. FT. | 1500 | 3000 | ALL | | | | | |
| 350 | SEDIMENT BASIN, LIVESTOCK | | WALL HT. (STANDARD) | FEET | 2* | 4* | 5* | 6* | 8* | | | |
| | | | WALL HT. (NON-STD.) | FEET | 2 | 4 | 5 | 6 | 8 | | | |
| | | | CONTRIBUTING AREA | SQ. FT. | 10000 | 30000 | ALL | | | | | |
| 725 | SINKHOLE TREATMENT | | NUMBER | EACH | ALL | | | | | | | |
| 572 | SPOIL SPREADING | | AREA | ACRES | 0.5 | ALL | | | | | | |
| 574 | SPRING DEVELOPMENT | | ESTIMATED FLOW | G.P.M. | ALL | | | | | | | |
| 578 | STREAM CROSSING | CULVERT | DRAINAGE AREA | ACRES | 10 | 20 | 40 | 160 | ALL | | | |
| | | LIVESTOCK AND EQUIPMENT STREAM CROSSING | VELOCITY | F.P.S. | 4 | 6 | 8 | 10 | ALL | | | |
| 580 | STREAMBANK AND SHORELINE PROTECTION | LAKESHORES | WAVE HEIGHT | FEET | 0.5 | 1 | 1.5 | 2 | 3 | | | |
| | | STREAMBANK PROTECTION | CAPACITY (f) | C.F.S. | 100 | 300 | 1000 | 2000 | 5000 | | | |
| | | | VELOCITY (f) | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| | | | CHANNEL MODIFICATION | FEET | 100 | 300 | 500 | 1000 | ALL | | | |
| | | | FISH HABITAT | FEET | 100 | 300 | 500 | 1000 | ALL | | | |

EMPLOYEE:

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 606 | SUBSURFACE DRAIN | | PIPE SIZE | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| 607 | SURFACE DRAINAGE; FIELD DITCH | | DRAINAGE AREA | ACRES | 10 | 20 | 50 | 100 | ALL | | | |
| 608 | SURFACE DRAINAGE, MAIN OR LATERAL | | DESIGN VELOCITY | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| | | | DESIGN CAPACITY | C.F.S. | 100 | 200 | 300 | 500 | 1000 | | | |
| 600 | TERRACE | GRADIENT | EMBANKMENT HEIGHT | FEET | 2 | 3 | ALL | | | | | |
| | | UNDERGROUND OUTLET | EMBANKMENT HEIGHT | FEET | 3 | 4 | 6 | 8 | ALL | | | |
| 620 | UNDERGROUND OUTLET | | PIPE SIZE | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| 313 | WASTE STORAGE FACILITY | STRUCTURAL FACILITIES | DESIGN STORAGE VOLUME | CU. FT. | 5000 | 25000 | 75000 | 150000 | 300000 | | | |
| | | | PREQUALIFIED (g) | EACH | ALL, subject to design capacity | | | | | | | |
| | | | WALL HT.(STANDARD) | FEET | 2* | 4* | 6* | 8* | 10* | | | |
| | | | WALL HT.(NON-STD.)(e) | FEET | 2 | 4 | 6 | 8 | 10 | | | |
| | | EARTHEN EMBANKMENT | EFFECTIVE HEIGHT (a) | FEET | 10 | 15 | 20 | 25 | ALL | | | |
| | | IN-PLACE EARTH POND | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | CLAY LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | GEO-MEMBRANE & GEO-SYNTHETIC CLAY LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | CONCRETE LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| 635 | WASTEWATER TREATMENT STRIP | INFILTRATION | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | | | | | | |
| | | OVERLAND | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | | | | | | |
| | | BUFFERS | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | 30000 | ALL | | | | |
| | | MILKING CENTER | VOLUME | G.P.D. | 200 | 300 | | | | | | |
| 638 | WATER AND SEDIMENT CONTROL BASIN | | EMBANKMENT HEIGHT | FEET | 5 | 10 | 15 | | | | | |
| | | | STORAGE (b) | AC. FT. | 5 | 10 | 15 | | | | | |
| 642 | WATER WELL | | DIAMETER | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| | | | ESTIMATED DEPTH | FEET | 100 | 200 | 300 | ALL | | | | |
| 614 | WATERING FACILITY | | NUMBER | EACH | ALL | | | | | | | |
| 351 | WELL DECOMMISSIONING | DRILLED WELL | ESTIMATED DEPTH | FEET | 100 | 300 | 500 | ALL | | | | |
| | | DRIVEN WELL POINT | ESTIMATED DEPTH | FEET | 10 | 25 | ALL | | | | | |
| | | DUG WELL | NUMBER | EACH | ALL | | | | | | | |
| 657 | WETLAND RESTORATION | SCRAPE | SURFACE AREA | ACRE | 1/2 | 1 | ALL | | | | | |
| | | TILE BREAK | DRAIN DIAMETER | INCHES | 6 | 12 | ALL | | | | | |
| | | DITCH PLUG | DEPTH | FEET | 4 | 6 | ALL | | | | | |
| | | | DRAINAGE AREA | ACRES | 80 | 160 | 320 | 640 | ALL | | | |
| | | EMBANKMENT | EFFECTIVE HEIGHT (a) | FEET | 4 | 6 | 10 | ALL | | | | |
| | | | DRAINAGE AREA | ACRES | 20 | 40 | 80 | 160 | | | | |
| | | | STORAGE (b) | AC. FT. | 5 | 15 | 30 | 50 | | | | |

EMPLOYEE:

* STANDARD DETAIL DRAWINGS

NOTES:

1. APPROVAL IS NOT GRANTED FOR PRACTICES NOT SHOWN.
2. OTHER RESTRICTIONS MAY APPLY AS NOTED.
3. TO OBTAIN COPIES OF THE ABOVE REFERENCED PRACTICE STANDARDS, SEE THE USDA-NRCS-WISCONSIN TECHNICAL GUIDE, SECTION IV.

FOOTNOTES:

a. DIFFERENCE IN ELEVATION IN FEET BETWEEN THE AUXILIARY SPILLWAY CREST (TOP OF EMBANKMENT IF NO AUXILIARY SPILLWAY) AND THE LOWEST POINT IN THE CROSS SECTION TAKEN ALONG THE CENTERLINE OF THE EMBANKMENT.
b. STORAGE - TOTAL STORAGE CAPACITY AT THE TOP OF THE DAM IN ACRE-FEET.
c. EFFECTIVE HEIGHT MUST BE LESS THAN 6 FEET.
d. LINED WATERWAY OR OUTLET (468) - THE JOB CLASS WILL BE BASED ON THE 10 YEAR 24 HOUR DURATION PEAK DISCHARGE.
e. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 AND WISCONSIN STANDARD DRAWINGS IN THE 740 SERIES ARE CLASSIFIED AS NON-STANDARD DRAWINGS.
f. MAXIMUM VELOCITY AND CHANNEL CAPACITY AT THE DESIGN STORM FREQUENCY OR WHEN OUT OF BANK FLOW OCCURS.
g. PREQUALIFIED STRUCTURES CAN BE FOUND IN CHAPTER 17 OF THE ENGINEERING FIELD HANDBOOK.

EMPLOYEE:

**U.S. DEPARTMENT OF AGRICULTURE**
**NATURAL RESOURCES CONSERVATION SERVICE**
**ENGINEERING APPROVAL AUTHORITY**
**DELEGATION**

**WISCONSIN DEPARTMENT OF AGRICULTURE**
**TRADE AND CONSUMER PROTECTION**
**AGRICULTURAL ENGINEERING PRACTITIONER**
**CERTIFICATION**

12/06

| | | | | | Original | Revised | Revised |
|---|---|---|---|---|---|---|---|
| EMPLOYEE: | | OFFICE: | | | | | |
| SIGNATURE: | | TITLE: | | DATE: | | | |
| CONCURRED BY: | | TITLE: | Supervisor | DATE: | | | |
| CERTIFIED BY: | | TITLE: | DATCP Agricultural Engineer | DATE: | | | |
| DELEGATED BY: | | TITLE: | NRCS Engineer | DATE: | | | |

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 560 | ACCESS ROAD | | GRADE | % | 10 | ALL | | | | | | |
| 575 | ANIMAL TRAILS AND WALKWAYS | | GRADE | % | ALL | | | | | | | |
| 360 | CLOSURE OF WASTE IMPOUNDMENTS | | NUMBER | EACH | ALL | | | | | | | |
| 362 | DIVERSION | | DRAINAGE AREA | ACRES | 10 | 20 | 40 | 160 | ALL | | | |
| 432 | DRY HYDRANT | | WATER SOURCE | — — | POND | STREAM | ALL | | | | | |
| | | | LIFT (STATIC HEAD) | FEET | 5 | 10 | 15 | ALL | | | | |
| | | | NOMINAL DIAMETER | INCHES | 4 | 6 | ALL | | | | | |
| 396 | FISH PASSAGE | DAM REMOVAL | | EACH | ALL | | | | | | | |
| 410 | GRADE STABILIZATION STRUCTURE | EARTHEN EMBANKMENTS (HAZARD CLASS "a" ONLY) | DRAINAGE AREA | ACRES | 20 | 80 | 320 | 640 | 2000(c) | | | |
| | | | EFFECTIVE HEIGHT (a) | FEET | 10 | 15 | 20 | 25 | 35 | | | |
| 350 | SEDIMENT BASIN (EXCEPT FOR ANIMAL WASTE) | | STORAGE (b) | AC. FT. | 5 | 15 | 30 | 50 | 85 | | | |
| | | | CONDUIT (SINGLE) | INCHES | 12 | 18 | 24 | 36 | 48 | | | |
| 378 | POND (EMBANKMENT) | | (STOR. VOL.)x(EFF. HT.) | — — | 500 | 1000 | 1500 | 2000 | 3000 | | | |
| 587 | STRUCTURE FOR WATER CONTROL | BOX DROP TO CULVERT | NET DROP | FEET | 2* | 3* | 4* | 4 | 6 | | | |
| | | | WEIR CAPACITY | C.F.S. | 100* | 200* | 300* | 400 | 500 | | | |
| 552 | IRRIGATION REGULATING RESERVOIR | TOEWALLS | NET DROP | FEET | 2* | 3* | 4* | 3 | 4 | | | |
| | | | WEIR CAPACITY | C.F.S. | 100* | 200* | 300* | 300 | 300 | | | |
| | | CHUTES | NET DROP | FEET | 4 | 6 | 8 | 10 | 12 | | | |
| | | | CAPACITY | C.F.S. | 50 | 100 | 200 | 250 | 300 | | | |
| 412 | GRASSED WATERWAY | | DRAINAGE AREA | ACRES | 50 | 200 | 600 | 1300 | ALL | | | |
| 561 | HEAVY USE AREA PROTECTION | | AREA | SQ. FT. | 10000 | 30000 | ALL | | | | | |
| 442<br>449 | IRRIGATION SYSTEM, SPRINKLER<br>IRRIGATION WATER MANAGEMENT | | AREA IRRIGATED | ACRES | 20 | 40 | 80 | ALL | | | | |
| 447 | IRRIGATION SYSTEM, TAILWATER RECOVERY | | PUMP CAPACITY | GPM | 300 | 500 | 1000 | ALL | | | | |
| 430 | IRRIGATION WATER CONVEYANCE AA (Aluminum) DD (Plastic) | | CAPACITY (< 50 PSI) | GPM | 500 | 1000 | 2500 | 5000 | | | | |
| | | | CAPACITY (≥ 50 PSI) | GPM | 300 | 500 | 1500 | 3500 | | | | |
| 468 | LINED WATERWAY OR OUTLET | | DESIGN CAPACITY (d) | C.F.S. | 10 | 30 | 100 | 150 | ALL | | | |

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 634 | MANURE TRANSFER | | PUMPED | A.U. | 100 | 300 | ALL | | | | | |
| | | | GRAVITY | A.U. | 100 | 300 | ALL | | | | | |
| | | | | FEET | 150 | 250 | 400 | | | | | |
| | | | RECEPTION TANK (e) | EACH | STAND. DRAW. | ALL | | | | | | |
| 719 | MILKING CENTER WASTEWATER TREATMENT SYSTEM | | WASTEWATER PRODUCED | GPD | 200 | 300 | 400 | 500 | | | | |
| 500 | OBSTRUCTION REMOVAL | | OBSTRUCTION LOCATION | — — | LAND | STREAM | ALL | | | | | |
| 582 | OPEN CHANNEL | | DESIGN VELOCITY | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| 584 | CHANNEL STABILIZATION | | DESIGN CAPACITY | C.F.S. | 100 | 200 | 300 | 500 | 1000 | | | |
| 516 | PIPELINE | | LENGTH | FEET | 300 | 1000 | 2500 | 5000 | ALL | | | |
| | | | PRESSURE | P.S.I. | 25 | 50 | 100 | 200 | 300 | | | |
| 378 | POND (EXCAVATED) | | SURFACE AREA | ACRES | 1/2 | 1 | ALL | | | | | |
| 521A | POND SEALING OR LINING, FLEX. MEM. LINING | | AREA TREATED | ACRES | 1/4 | 1/2 | 1 | 2 | ALL | | | |
| 521C | POND SEALING OR LINING, BENTONITE TREATMENT | | AREA TREATED | ACRES | 1/4 | 1/2 | 1 | 2 | ALL | | | |
| 533 | PUMPING PLANT | PROPELLER PUMP | CAPACITY | GPM | 500 | 2000 | 7500 | | | | | |
| | | | STATIC HEAD | Ft. | 5 | 10 | 15 | | | | | |
| | | CENTRIFUGAL PUMP | CAPACITY | GPM | 500 | 1000 | 1500 | 2000 | 3500 | | | |
| | | | STATIC HEAD | Ft. | 50 | 100 | 200 | 300 | 350 | | | |
| | | TURBINE PUMP | CAPACITY | GPM | 500 | 1000 | 1500 | 2000 | 3500 | | | |
| | | | STATIC HEAD | Ft. | 50 | 100 | 200 | 350 | 500 | | | |
| 568 | RECREATION TRAIL AND WALKWAY | | LENGTH | MILES | 0.5 | ALL | | | | | | |
| 558 | ROOF RUNOFF STRUCTURE | | ROOF SIZE (EACH) | SQ. FT. | 1500 | 3000 | ALL | | | | | |
| 350 | SEDIMENT BASIN, LIVESTOCK | | WALL HT. (STANDARD) | FEET | 2* | 4* | 5* | 6* | 8* | | | |
| | | | WALL HT. (NON-STD.) | FEET | 2 | 4 | 5 | 6 | 8 | | | |
| | | | CONTRIBUTING AREA | SQ. FT. | 10000 | 30000 | ALL | | | | | |
| 725 | SINKHOLE TREATMENT | | NUMBER | EACH | ALL | | | | | | | |
| 572 | SPOIL SPREADING | | AREA | ACRES | 0.5 | ALL | | | | | | |
| 574 | SPRING DEVELOPMENT | | ESTIMATED FLOW | G.P.M. | ALL | | | | | | | |
| 578 | STREAM CROSSING | CULVERT | DRAINAGE AREA | ACRES | 10 | 20 | 40 | 160 | ALL | | | |
| | | LIVESTOCK AND EQUIPMENT STREAM CROSSING | VELOCITY | F.P.S. | 4 | 6 | 8 | 10 | ALL | | | |
| 580 | STREAMBANK AND SHORELINE PROTECTION | LAKESHORES | WAVE HEIGHT | FEET | 0.5 | 1 | 1.5 | 2 | 3 | | | |
| | | STREAMBANK PROTECTION | CAPACITY (f) | C.F.S. | 100 | 300 | 1000 | 2000 | 5000 | | | |
| | | | VELOCITY (f) | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| | | | CHANNEL MODIFICATION | FEET | 100 | 300 | 500 | 1000 | ALL | | | |
| | | | FISH HABITAT | FEET | 100 | 300 | 500 | 1000 | ALL | | | |

EMPLOYEE:

| STD. CODE | PRACTICE | SUB-PRACTICE | CONTROLLING FACTORS | UNITS | JOB CLASS | | | | | MAX APPROVAL LIMIT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | V | PLNG | DESIGN | CONST |
| 606 | SUBSURFACE DRAIN | | PIPE SIZE | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| 607 | SURFACE DRAINAGE; FIELD DITCH | | DRAINAGE AREA | ACRES | 10 | 20 | 50 | 100 | ALL | | | |
| 608 | SURFACE DRAINAGE, MAIN OR LATERAL | | DESIGN VELOCITY | F.P.S. | 2 | 4 | 6 | 8 | 10 | | | |
| | | | DESIGN CAPACITY | C.F.S. | 100 | 200 | 300 | 500 | 1000 | | | |
| 600 | TERRACE | GRADIENT | EMBANKMENT HEIGHT | FEET | 2 | 3 | ALL | | | | | |
| | | UNDERGROUND OUTLET | EMBANKMENT HEIGHT | FEET | 3 | 4 | 6 | 8 | ALL | | | |
| 620 | UNDERGROUND OUTLET | | PIPE SIZE | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| 313 | WASTE STORAGE FACILITY | STRUCTURAL FACILITIES | DESIGN STORAGE VOLUME | CU. FT. | 5000 | 25000 | 75000 | 150000 | 300000 | | | |
| | | | PREQUALIFIED (g) | EACH | ALL, subject to design capacity | | | | | | | |
| | | | WALL HT.(STANDARD) | FEET | 2* | 4* | 6* | 8* | 10* | | | |
| | | | WALL HT.(NON-STD.)(e) | FEET | 2 | 4 | 6 | 8 | 10 | | | |
| | | EARTHEN EMBANKMENT | EFFECTIVE HEIGHT (a) | FEET | 10 | 15 | 20 | 25 | ALL | | | |
| | | IN-PLACE EARTH POND | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | CLAY LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | GEO-MEMBRANE & GEO-SYNTHETIC CLAY LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| | | CONCRETE LINER | DESIGN CAPACITY | CU.FT. | 60000 | 200000 | 500000 | 1M | 2M | | | |
| 635 | WASTEWATER TREATMENT STRIP | INFILTRATION | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | | | | | | |
| | | OVERLAND | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | | | | | | |
| | | BUFFERS | CONTRIBUTING AREA | SQ. FT. | 5000 | 10000 | 30000 | ALL | | | | |
| | | MILKING CENTER | VOLUME | G.P.D. | 200 | 300 | | | | | | |
| 638 | WATER AND SEDIMENT CONTROL BASIN | | EMBANKMENT HEIGHT | FEET | 5 | 10 | 15 | | | | | |
| | | | STORAGE (b) | AC. FT. | 5 | 10 | 15 | | | | | |
| 642 | WATER WELL | | DIAMETER | INCHES | 4 | 6 | 8 | 12 | ALL | | | |
| | | | ESTIMATED DEPTH | FEET | 100 | 200 | 300 | ALL | | | | |
| 614 | WATERING FACILITY | | NUMBER | EACH | ALL | | | | | | | |
| 351 | WELL DECOMMISSIONING | DRILLED WELL | ESTIMATED DEPTH | FEET | 100 | 300 | 500 | ALL | | | | |
| | | DRIVEN WELL POINT | ESTIMATED DEPTH | FEET | 10 | 25 | ALL | | | | | |
| | | DUG WELL | NUMBER | EACH | ALL | | | | | | | |
| 657 | WETLAND RESTORATION | SCRAPE | SURFACE AREA | ACRE | 1/2 | 1 | ALL | | | | | |
| | | TILE BREAK | DRAIN DIAMETER | INCHES | 6 | 12 | ALL | | | | | |
| | | DITCH PLUG | DEPTH | FEET | 4 | 6 | ALL | | | | | |
| | | | DRAINAGE AREA | ACRES | 80 | 160 | 320 | 640 | ALL | | | |
| | | EMBANKMENT | EFFECTIVE HEIGHT (a) | FEET | 4 | 6 | 10 | ALL | | | | |
| | | | DRAINAGE AREA | ACRES | 20 | 40 | 80 | 160 | | | | |
| | | | STORAGE (b) | AC. FT. | 5 | 15 | 30 | 50 | | | | |

EMPLOYEE:

* STANDARD DETAIL DRAWINGS

NOTES:

1. APPROVAL/CERTIFICATION IS NOT GRANTED FOR PRACTICES NOT SHOWN.
2. OTHER RESTRICTIONS MAY APPLY AS NOTED.
3. TO OBTAIN COPIES OF THE ABOVE REFERENCED PRACTICE STANDARDS, SEE THE USDA-NRCS-WISCONSIN TECHNICAL GUIDE, SECTION IV, OR APPENDIX G OF ATCP50, WISCONSIN ADMINISTRATIVE CODE.

FOOTNOTES:

a. DIFFERENCE IN ELEVATION IN FEET BETWEEN THE AUXILIARY SPILLWAY CREST (TOP OF EMBANKMENT IF NO AUXILIARY SPILLWAY) AND THE LOWEST POINT IN THE CROSS SECTION TAKEN ALONG THE CENTERLINE OF THE EMBANKMENT.
b. STORAGE - TOTAL STORAGE CAPACITY AT THE TOP OF THE DAM IN ACRE-FEET.
c. EFFECTIVE HEIGHT MUST BE LESS THAN 6 FEET.
d. LINED WATERWAY OR OUTLET (468) - THE JOB CLASS WILL BE BASED ON THE 10 YEAR 24 HOUR DURATION PEAK DISCHARGE.
e. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 AND WISCONSIN STANDARD DRAWINGS IN THE 740 SERIES ARE CLASSIFIED AS NON-STANDARD DRAWINGS.
f. MAXIMUM VELOCITY AND CHANNEL CAPACITY AT THE DESIGN STORM FREQUENCY OR WHEN OUT OF BANK FLOW OCCURS.
g. PREQUALIFIED STRUCTURES CAN BE FOUND IN CHAPTER 17 OF THE ENGINEERING FIELD HANDBOOK.

EMPLOYEE: